

ICAP Past Papers  
Compiled

# CMA Made Easy (Volume – II)



**Autumn 2009 till Autumn 2021**

(Past Paper Questions, Suggested Solutions, Examiner Comments & Marking Scheme)

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**Spring 2022**

(As per new  
Education Scheme)

ICAP Past Papers Compiled



## PREFACE

Assalam o Alaikum dear all !!!

The Examinations of ICAP are a demanding test of student's ability to master the wide range of knowledge and skills required of the modern professionals. Subject of "Cost & Management Accounting (CAF-03)" is one of the efforts made by ICAP in this context for enhancing student's knowledge about numerical aspects of management accounting which forms the basis of decision making in corporate world scenarios.

Recently we have witnessed a huge dilemma of unavailability of study material and practice bank for all subjects of CAF due to emergence of Education Scheme 2021. As the syllabi of different subjects have been changed and the sequence of chapters also have been restructured therefore everyone is finding it really difficult to cope up with the change and align the existing study material including practice question as per the requirements of the change.

The same issue was experienced in CMA paper where all the students were eagerly looking for a question bank of ICAP Past exams as per new structure (incorporating changes in syllabus, contents and the chapter sequence etc). Therefore a dire need emerged to have a comprehensive question bank of all ICAP past paper cross referenced with the latest chapters of the CMA book.

By the Grace of ALMIGHTY, I have been able to compile a databank of all past exams for which solutions have been available by the ICAP along with the relevant examiner comments and marking scheme (where available). So please use this booklet as a practice kit for practicing your ICAP Past Paper questions with following features

- All ICAP Past Exam Questions from Autumn 2009 till Spring 2021
- All suggested solutions of the aforesaid attempts
- All examiner comments from Autumn 2011 till Spring 2021
- All marking schemes from Autumn 2015 till Spring 2021
- Autumn 2021 Question Paper attached as a Mock at end of book
- Keeping the structure of individual question paper and related documents intact so that the students may become familiar with that format and its handling.
- Reference of all the questions that either have been now moved to CAF 06 (MFA) or have become outdated due to new syllabus
- A comprehensive index linking all the things in a structured sequence (Chapter wise questions in a descending order from latest to previous attempts)

Please note that all the data have been taken from Public databank of ICAP for the students and no solution or other area of the said data have been changed or altered; moreover references to the all the data can be seen throughout this book. Accordingly this is important to quote the caveats / disclaimer by ICAP on the relevant website along with this data for all users' attention.

### **Extracts from the ICAP website:**

*"The suggested answers to examination questions have been developed by the Directorate of Education and Training of ICAP based on standards, laws, rules, regulations, theories and practice as applicable on the date of examination, except as stated otherwise. These answers are not meant to provide the assessment criteria against the particular examination questions. The purpose of these suggested answers is only to guide the students in their future studies for ICAP's examinations, without seeking to suggest a solution for the present incumbents, in any way. However, there are alternative solution(s) to the questions which are also considered by the Examination Department while marking the answer scripts.*

*Although reasonable care has been taken to ensure correctness in the preparation of these answers, the Directorate does not take responsibility for any deviation of views, opinion or answers suggested by any other person or persons. Similarly, the Council of the Institute of Chartered Accountants of Pakistan assumes no responsibility for the errors or omissions in the suggested answers. Nevertheless, if any error or omission is noticed, it should be brought to the notice of the Senior Director Education and Training for information.*

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Although reasonable efforts have been put to make the book free from majority of the errors, nevertheless absolute assurance is never possible due to inherent limitations in the process of compilations and indexing. So if you find anything missing or some other logical misclassification in this book notes please mail us about such issues by giving rationale at our mail id [syedatifabidi@gmail.com](mailto:syedatifabidi@gmail.com)“ or [jz@canotes.net](mailto:jz@canotes.net)

I am especially thankful to my old student and colleague “**Ata-ush-Shafi**” for helping me in the compilation by providing all the missing parts of the data, I would not have been able to compile and present the book in its current form without that support.

Hope this book would Insha’Allah be serving you with extensive past exam practice. Please note that the first preference while practicing the past papers should be given to **Autumn 2014 and onwards questions** representing a bit latest trend as per new syllabus.

***There are no copyrights attached to this book. Anyone can use, take extracts from it or can even use this in own name as his/her own working (I am not putting any watermark in the book). The main purpose of this book is to facilitate the students of CMA for having sufficient past exam practice; So if anyone is using the content without using the name of the author/compiler, I have no issues as far as students are being served.***

May ALLAH bless all of you with success in every exam of both lives.

Please also remember us in your prayers

Talib e Dua wa Dua’go !!!

Atif Abidi (ACA) & Team

[www.canotes.net](http://www.canotes.net)

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October 13<sup>th</sup>, 2021

## CAF 03 (CMA) - COMPILED PAST PAPERS BANK (AUTUMN 2009 TILL AUTUMN 2021)

Sr.	Question Reference	Marks	Relevant Page Number				Notes area for students (to note any points or references)
			Question	Suggested Solutions	Examiner Comments	Marking Scheme	

### Inventory Valuation (Ch # 1)

Sr.	Question Reference	Marks	Question	Suggested Solutions	Examiner Comments	Marking Scheme
1	Q.4 - Spring 2021	9	347	353	358	360
2	Q.7(a) - Autumn 2019	5	292	297	301	303
3	Q.4 - Autumn 2012	15	69	74	81	-
4	Q.8 - Spring 2012	5	58	64	67	-
5	Q.2 - Autumn 2010	15	24	27	-	-
6	Q.1 - Spring 2010	15	12	16	-	-

### Inventory Management (Ch # 2)

Sr.	Question Reference	Marks	Question	Suggested Solutions	Examiner Comments	Marking Scheme
1	Q.2 - Autumn 2020	13	325	331	340	343
2	Q.7 - Spring 2020	12	309	317	321	323
3	Q.4(b) - Spring 2019	7	273	279	285	287
4	Q.4 - Autumn 2018	15	257	261	267	269
5	Q.6 - Spring 2018	17	244	248	252	254
6	Q.2 - Spring 2017	10	204	209	218	222
7	Q.4 - Autumn 2016	5	188	194	199	202
8	Q.7 - Autumn 2015	13	153	159	163	165
9	Q.1(b) - Spring 2014	9	112	116	121	-
10	Q.1 - Spring 2013	20	84	88	95	-
11	Q.1 - Spring 2012	10	55	59	65	-
12	Q.6 - Autumn 2011	18	46	51	54	-
13	Q.6a(ii) - Spring 2011	1.5	36	40	-	-
14	Q.2 - Spring 2010	15	12	16	-	-
15	Q.4 - Autumn 2009	14	2	8	-	-

### Basic Concepts of Cost and its types including Overheads (Ch # 3)

Sr.	Question Reference	Marks	Question	Suggested Solutions	Examiner Comments	Marking Scheme
1	Q.5 - Spring 2021	10	347	354	358	361
2	Q.3 - Autumn 2017	8	225	230	237	239
3	Q.5 - Spring 2016	12	169	177	183	185
4	Q.7(b) - Autumn 2014	10	127	133	137	-
5	Q.2 - Spring 2014	12	112	117	121	-
6	Q.7 - Autumn 2013	16	101	107	111	-
7	Q.5 - Autumn 2013	12	100	106	110	-
8	Q.1(a)(b) - Autumn 2013	15	98	102	109	-
9	Q.4 - Spring 2013	10	85	91	96	-
10	Q.3(a) - Autumn 2012	10	69	73	81	-
11	Q.2 - Spring 2012	10	55	59	65	-
12	Q.3(b) - Autumn 2011	4	44	49	53	-
13	Q.2(a) - Autumn 2011	9	43	47	53	-
14	Q.1 - Autumn 2011	18	43	47	53	-
15	Q.2 - Spring 2011	16	34	37	-	-
16	Q.1 - Autumn 2010	13	23	27	-	-
17	Q.7 - Spring 2010	7	15	21	-	-
18	Q.6 - Autumn 2009	14	3	10	-	-
19	Q.2 - Autumn 2009	12	1	6	-	-

### Labor Costing (Ch # 4)

Sr.	Question Reference	Marks	Question	Suggested Solutions	Examiner Comments	Marking Scheme
1	Q.3 - Spring 2014	14	113	117	121	-
2	Q.6(a) - Autumn 2013	11	100	107	111	-
3	Q.3 - Spring 2013	11	85	91	96	-
4	Q.3(b) - Autumn 2012	5	69	74	81	-
5	Q.2 - Autumn 2012	10	68	72	81	-
6	Q.3 - Spring 2012	15	56	60	65	-
7	Q.2(b) - Autumn 2011	5	44	47	53	-
8	Q.3 - Spring 2011	15	34	38	-	-

### Cost Flow and Accounting Entries (Ch # 5)

Sr.	Question Reference	Marks	Question	Suggested Solutions	Examiner Comments	Marking Scheme
1	Q.6(b) - Spring 2011	16	36	40	-	-
2	Q.7 - Autumn 2010	12	26	31	-	-

## CAF 03 (CMA) - COMPILED PAST PAPERS BANK (AUTUMN 2009 TILL AUTUMN 2021)

Sr.	Question Reference	Marks	Relevant Page Number				Notes area for students (to note any points or references)
			Question	Suggested Solutions	Examiner Comments	Marking Scheme	

### Job and Service costing (Ch # 6)

1	Q.4 - Spring 2018	13
2	Q.6 - Autumn 2014	11
3	Q.6a (iv) - Spring 2011	1.5
4	Q.1 - Autumn 2009	14

243	247	251	253
126	132	136	-
36	40	-	-
1	5	-	-

### Process Costing (Ch # 7)

1	Q.1 - Spring 2021	13
2	Q.3(a) - Autumn 2019	4
3	Q.1 - Spring 2019	12
4	Q.3 - Spring 2017	13
5	Q.3 - Autumn 2016	16
6	Q.6 - Spring 2016	11
7	Q.4 - Spring 2015	17
8	Q.1 - Autumn 2014	15
9	Q.6(b) - Autumn 2013	3
10	Q.3 - Spring 2010	22

345	350	357	360
290	294	300	302
271	276	284	287
205	210	218	222
188	193	199	202
170	178	183	185
139	144	149	-
124	128	134	-
101	107	111	-
13	17	-	-

### Joint & By Product Costing (Ch # 8)

1	Q.5 - Spring 2020	15
2	Q.1 - Autumn 2018	16
3	Q.1 - Autumn 2017	15
4	Q.1 - Autumn 2015	12
5	Q.5 - Spring 2013	16
6	Q.7(a) - Spring 2012	10

308	316	320	323
255	259	265	269
224	229	236	239
151	155	161	165
86	92	97	-
58	63	66	-

### Marginal Absorption Costing (Ch # 9)

1	Q.3 - Autumn 2020	11
2	Q.3(b) - Autumn 2019 ***	15
3	Q.6(a,c) - Spring 2017	5
4	Q.3(a,c,d) - Spring 2015	11
5	Q.4 - Spring 2014	16
6	Q.7(b) - Spring 2012	5
7	Q.6a(i) - Spring 2011	1.5
8	Q.4 - Autumn 2010	20

325	333	341	343
290	294	300	302
206	213	219	223
139	143	148	-
113	118	122	-
58	64	67	-
36	40	-	-
25	29	-	-

\*\*\* Students are recommended to do this question 2 after completing the topic of Process costing as this is a mix question of both the topics

### Standard Costing & Variance Analysis (Ch 10 & 11)

1	Q.5 - Autumn 2020	20
2	Q.1 - Spring 2020	15
3	Q.4 - Autumn 2019	10
4	Q.5 - Spring 2019	16
5	Q.5 - Spring 2018	14
6	Q.7 - Autumn 2017	17
7	Q.6(b) - Spring 2017	8
8	Q.7 - Autumn 2016	19
9	Q.3 - Spring 2016	20
10	Q.4 - Autumn 2015	19
11	Q.3(b) - Spring 2015	6
12	Q.4 - Autumn 2014	16
13	Q.2 - Spring 2013	16
14	Q.3(a) - Autumn 2011	15
15	Q.6 - Autumn 2010	18
16	Q.4 - Spring 2010	20
17	Q.7 - Autumn 2009	16

327	336	341	344
304	310	319	322
290	295	300	302
273	280	285	287
243	247	251	253
227	233	238	240
206	213	219	223
190	195	200	203
168	174	182	185
152	156	162	165
139	143	148	-
125	130	135	-
84	90	95	-
44	48	53	-
26	30	-	-
13	19	-	-
4	11	-	-



**CAF 03 (CMA) - COMPILED PAST PAPERS BANK (AUTUMN 2009 TILL AUTUMN 2021)**

Sr.	Question Reference	Marks	Relevant Page Number				Notes area for students (to note any points or references)
			Question	Suggested Solutions	Examiner Comments	Marking Scheme	

**Target Costing (Ch # 12)**

1	Q.7 - Spring 2021	12
2	Q.8 - Spring 2019	10
3	Q.6 - Autumn 2018	11
4	Q.1 - Spring 2017	10
5	Q.6 - Spring 2015	16

349	356	359	361
275	282	286	288
258	263	268	270
204	209	217	222
141	146	150	-

**Breakeven - CVP (Ch # 13)**

1	Q.1 - Autumn 2019	12
2	Q.7 - Spring 2019	8
3	Q.2 - Autumn 2018	11
4	Q.3 - Spring 2018	10
5	Q.8 - Autumn 2017	12
6	Q.9 - Spring 2017	8
7	Q.5 - Autumn 2016	11
8	Q.8 - Spring 2016	10
9	Q.3 - Autumn 2015	5
10	Q.1 - Spring 2015	17
11	Q.2 - Autumn 2014	11
12	Q.6 - Spring 2014	16
13	Q.5 - Spring 2014	13
14	Q.6 - Spring 2013	12
15	Q.7 - Autumn 2012	10
16	Q.4 - Spring 2012	20
17	Q.5 - Spring 2011	14
18	Q.3 - Autumn 2010	10
19	Q.3 - Autumn 2009	14

289	293	299	302
275	282	286	288
256	260	266	269
242	246	251	253
228	235	238	240
208	216	220	223
189	194	200	202
171	179	184	186
152	156	161	165
138	142	147	-
124	129	134	-
114	120	123	-
114	119	122	-
86	93	97	-
71	78	82	-
56	61	66	-
35	39	-	-
24	28	-	-
2	7	-	-

**Relevant Cost & Decision Making (Ch 14 & 15)**

1	Q.6(a) - Spring 2021	15
2	Q.4 - Autumn 2020	17
3	Q.4 - Spring 2020	20
4	Q.7(b) - Autumn 2019	18
5	Q.2 - Spring 2019	11
6	Q.3 - Autumn 2018	9
7	Q.1 - Spring 2018	10
8	Q.6 - Autumn 2017	12
9	Q.8 - Spring 2017	13
10	Q.6 - Autumn 2016	12
11	Q.7 - Spring 2016	12
12	Q.9 - Autumn 2015	16
13	Q.5 - Spring 2015	16
14	Q.7(a) - Autumn 2014	4
15	Q.5 - Autumn 2014	18
16	Q.7 - Spring 2014	16
17	Q.1(a) - Spring 2014	4
18	Q.2 - Autumn 2013	11
19	Q.1(c) - Autumn 2013	4
20	Q.7 - Spring 2013	15
21	Q.8 - Autumn 2012	10
22	Q.5 - Autumn 2012	10
23	Q.5 - Spring 2012	15
24	Q.5 - Autumn 2011	16
25	Q.6a (iii) - Spring 2011	1.5
26	Q.4 - Spring 2011	14
27	Q.5 - Autumn 2010	12
28	Q.6 - Spring 2010	6
29	Q.5 - Spring 2010	15

348	355	358	361
326	334	341	344
307	314	320	322
292	297	301	303
271	277	284	287
256	260	266	269
241	245	250	253
227	233	237	240
207	215	220	223
189	195	200	202
170	179	184	186
154	160	164	166
140	145	149	-
127	133	137	-
126	130	136	-
115	120	123	-
112	116	121	-
98	103	109	-
98	102	109	-
87	94	97	-
71	78	83	-
70	75	82	-
57	62	66	-
45	50	54	-
36	40	-	-
35	39	-	-
25	30	-	-
14	21	-	-
14	20	-	-

**Mock Paper (Autumn 2021 ICAP Paper)**

excluding Q1 not being part of syllabus now

## CAF 03 (CMA) - COMPILED PAST PAPERS BANK (AUTUMN 2009 TILL AUTUMN 2021)

Sr.	Question Reference	Marks	Relevant Page Number				Notes area for students (to note any points or references)
			Question	Suggested Solutions	Examiner Comments	Marking Scheme	

**Topics moved to CAF 06 - MFA (should not be done while practicing)**

### Budgeting

Q.3 - Spring 2021	20	346	352	358	360
Q.1 - Autumn 2020	19	324	329	340	343
Q.2 - Spring 2020	18	305	312	319	322
Q.5 - Autumn 2019	16	291	296	300	303
Q.6 - Spring 2019	16	274	281	285	288
Q.7 - Autumn 2018	18	258	264	268	270
Q.7 - Spring 2018	16	244	249	252	254
Q.5 - Autumn 2017	16	226	232	237	239
Q.4 - Spring 2017	13	205	212	219	222
Q.1 - Autumn 2016	15	187	191	198	202
Q.1 - Spring 2016	16	167	172	181	185
Q.6 - Autumn 2015	14	153	158	163	165
Q.4 - Autumn 2013	16	99	104	110	-
Q.6 - Spring 2012	10	57	63	66	-
Q.1 - Spring 2011	19	33	37	-	-
Q.5 - Autumn 2009	16	3	9	-	-

### Financial Instruments

Q.2(b) - Spring 2021	6	345	351	357	360
Q.6 - Spring 2020	4	308	317	320	323
Q.4 a) - Spring 2019	5	272	279	285	287
Q.5 a) - Autumn 2018	3	257	262	267	270
Q.2 a) - Spring 2018	3	242	245	250	253
Q.5 - Spring 2017	4	206	213	219	222
Q.9 - Autumn 2016	6	190	197	201	203
Q.2 - Spring 2016	5	168	173	182	185
Q.5 - Autumn 2015	6	152	157	162	165

### Time Value of Money

Q.6(b) - Spring 2021	10	348	356	359	361
Q.6 - Autumn 2020	20	328	338	342	344
Q.3 - Spring 2020	16	306	313	320	322
Q.2 - Autumn 2019	14	289	294	299	302
Q.3 - Spring 2019	15	272	278	284	287
Q.5(b) - Autumn 2018	17	257	262	267	270
Q.2(b) - Spring 2018	17	242	246	250	253
Q.4 - Autumn 2017	15	225	231	237	239
Q.7 - Spring 2017	16	207	214	220	223
Q.2 - Autumn 2016	11	188	192	199	202
Q.4 - Spring 2016	8	169	176	182	185
Q.2 - Autumn 2015	9	151	155	161	165
Q.2 - Spring 2015	17	138	142	148	-
Q.3 - Autumn 2014	15	125	129	135	-

### Sustainability Reporting

Q.2(a) - Spring 2021	5	345	351	357	360
Q.6 - Autumn 2019	6	291	297	301	303
Q.2 - Autumn 2017	5	224	230	237	239
Q.8 - Autumn 2016	5	190	196	201	203
Q.9 - Spring 2016	6	171	180	184	186
Q.8 - Autumn 2015	6	154	159	164	166

**Questions required not to be done (Kindly delete the following questions not being part of syllabus now)**

Q.3 - Autumn 2013	12	99	104	110	-
Q.1 - Autumn 2012	15	68	72	80	-
Q.6 - Autumn 2012	15	70	76	82	-
Q.4 - Autumn 2011	15	45	49	53	-

# Syllabus Outline of CAF 03

Syllabus Ref	Grid	Teaching Hours	Weightage
A	Costs associated with the production	40-50	35-45
B	Cost flow	20-30	20-30
C	Cost management planning and decisions	40-50	30-40
	<b>Total</b>	<b>110-130</b>	<b>100</b>

Grid A – Cost Associated with Production	Grid B – Cost Flow	Grid C – Cost Management planning & decisions
Chapter 1 - Inventory Valuation	Chapter 7 - Process Costing	Chapter 2 - Inventory Management
Chapter 3 - Overheads	Chapter 8 - Joint and By Products	Chapter 13 - Cost-volume-profit
Chapter 4 - Labor Costing	Chapter 10 - Standard costing	Chapter 14 - Relevant Costs
Chapter 5 - Cost Flow in Production	Chapter 11 - Variance analysis	Chapter 15 - Decision making techniques
Chapter 6 - Job and Service costing	Chapter 12 - Target Costing	
Chapter 9 - Marginal Costing and Absorption Costing		

## Cost & Management Accounting - Past Papers Analysis - Chapter Wise

	A.21	S.21	A.20	S.20	A.19	S.19	A.18	S.18	A.17	S.17	A.16	S.16	A.15	S.15	A.14	Total	%	Syllabus
Ch # 1 - Inventory Valuation	15	9			5											29		
Ch # 3 - Overheads		10							8			12			10	40		
Ch # 4 - Labor costing																0		
Ch # 5 - Cost flow in production																0		
Ch # 6 - Job and service costing								13							11	24		
Ch # 9 - Marginal costing and absorption costing			11		15				5					11		42		
	15	19	11	0	20	0	0	13	8	5	0	12	0	11	21	135	13%	35%-45%
Ch # 7 - Process costing	10	13			4	12				13	16	11		17	15	111		
Ch # 8 - Joint By Product				15			16		15				12			58		
Ch # 10 & 11 - Standard costing & Variance analysis	20		20	15	10	16		14	17	8	19	20	19	6	16	200		
Ch # 12 - Target costing		12				10	11			10				16		59		
	30	25	20	30	14	38	27	14	32	31	35	31	31	39	31	428	42%	20%-30%
Ch # 2 - Inventory Management			13	12		7	15	17		10	5		13			92		
Ch # 14 & 15 - Relevant costs & Decision Making	19	15	17	20	18	11	9	10	12	13	12	12	16	16	22	222		
Ch # 13 - Cost-volume-profit (CVP) analysis	16				12	8	11	10	12	8	11	10	5	17	11	131		
	35	15	30	32	30	26	35	37	24	31	28	22	34	33	33	445	44%	30%-40%
<b>New Total (old Pattern)</b>	<b>80</b>	<b>59</b>	<b>61</b>	<b>62</b>	<b>64</b>	<b>64</b>	<b>62</b>	<b>64</b>	<b>64</b>	<b>67</b>	<b>63</b>	<b>65</b>	<b>65</b>	<b>83</b>	<b>85</b>	<b>1008</b>		
<b>Topics moved to the syllabus of MFA (CAF 06).....</b>																		
Old Ch # 9 - Budgeting		20	19	18	16	16	18	16	16	13	15	16	14			197		
Old Ch # 16 - Introduction to financial instruments		6		4		5	3	3		4	6	5	6			42		
Old Ch # 17 - Time value of money	20	10	20	16	14	15	17	17	15	16	11	8	9	17	15	220		
Old Ch # 18 - Sustainability reporting		5			6				5	5	6	6				33		
	20	41	39	38	36	36	38	36	36	33	37	35	35	17	15	492	33%	
<b>Cost &amp; Management Accounting - Grand Total</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>1500</b>		

Cost & Management Accounting - Past Papers Analysis - Marks Wise

	A.21	S.21	A.20	S.20	A.19	S.19	A.18	S.18	A.17	S.17	A.16	S.16	A.15	S.15	A.14	Total	%
<b>Super Important Chapters / Areas</b>																	
Ch # 14 & 15 - Relevant costs & Decision Making	19	15	17	20	18	11	9	10	12	13	12	12	16	16	22	222	22%
Ch # 10 & 11 - Standard costing & Variance analysis	20		20	15	10	16		14	17	8	19	20	19	6	16	200	20%
Ch # 13 - Cost-volume-profit (CVP) analysis	16				12	8	11	10	12	8	11	10	5	17	11	131	13%
	55	15	37	35	40	35	20	34	41	29	42	42	40	39	49	553	55%

**Important Chapters / Areas**

Ch # 7 - Process costing	10	13			4	12				13	16	11		17	15	111	11%
Ch # 2 - Inventory Management			13	12		7	15	17		10	5		13			92	9%
Ch # 12 - Target costing		12				10	11			10				16		59	6%
Ch # 8 - Joint By Product				15			16		15				12			58	6%
	10	25	13	27	4	29	42	17	15	33	21	11	25	33	15	320	32%

**Slightly Less Important Chapters**

Ch # 9 - Marginal costing and absorption costing			11		15					5				11		42	4%
Ch # 3 - Overheads		10							8			12			10	40	4%
Ch # 1 - Inventory Valuation	15	9			5											29	3%
Ch # 6 - Job and service costing								13							11	24	2%
Ch # 4 - Labor costing																0	0%
Ch # 5 - Cost flow in production																0	0%
	15	19	11	0	20	0	0	13	8	5	0	12	0	11	21	135	13%

**New Total (old Pattern)**

80	59	61	62	64	64	62	64	64	64	67	63	65	65	83	85	1008	100%
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**Topics moved to the syllabus of MFA (CAF 06).....**

Old Ch # 9 - Budgeting		20	19	18	16	16	18	16	16	13	15	16	14			197	
Old Ch # 16 - Introduction to financial instruments		6		4		5	3	3		4	6	5	6			42	
Old Ch # 17 - Time value of money	20	10	20	16	14	15	17	17	15	16	11	8	9	17	15	220	
Old Ch # 18 - Sustainability reporting		5			6				5		5	6	6			33	
	20	41	39	38	36	36	38	36	36	33	37	35	35	17	15	492	
	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	1500	100%



**THE INSTITUTE OF CHARTERED ACCOUNTANTS OF PAKISTAN**

Intermediate Examinations Autumn 2009



September 11, 2009

**COST ACCOUNTING**

(MARKS 100)

**Module D**

(3 hours)

Q.1 Ahmer and Company is engaged in production of engineering parts. It receives bulk orders from bicycle manufacturers and follows job order costing. On July 1, 2008 two jobs were in progress whereas two jobs were opened during the year. The details are as follows:

	<b>JOBS</b>			
	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
Work in process – opening (Rs.)	1,400,000	2,500,000	-	-
Raw material issued from stores (Rs.)	800,000	1,200,000	1,500,000	600,000
Direct labour hours worked (Hours)	20,000	30,000	15,000	18,000
Rate of direct labour per hour (Rs.)	20	18	16	15

Other related information is as follows:

- (i) Factory overhead is applied to the jobs at Rs. 10 per labour hour.
- (ii) Actual factory overheads for the year amounted to Rs. 900,000.
- (iii) Under/over applied factory overheads are charged to profit and loss account.
- (iv) Job A was completed during the year. All the goods were shipped to the customers.
- (v) Job B was also completed during the year. However, about 10% of the goods were rejected during inspection. These were transferred to Job C where they will be used after necessary adjustments.

**Required:**

Prepare journal entries to record all the above transactions.

(14)

Q.2 Following information has been extracted from the records of RT Limited for August 2009:

	<b>Departments</b>				
	<b>Production</b>			<b>Service</b>	
	<b>P-1</b>	<b>P-2</b>	<b>P-3</b>	<b>S-1</b>	<b>S-2</b>
Budgeted machine hours	60,000	100,000	120,000		
Actual machine hours	60,500	110,000	100,000		
Budgeted labour hours	50,000	200,000	75,000		
Actual labour hours	55,000	190,000	75,000		
Budgeted material cost (Rs. '000)	50,000	40,000	3,000		
Actual material cost (Rs. '000)	50,000	42,000	3,200		
Budgeted overheads (Rs. '000)	1,200	2,000	2,250	600	700
Actual overheads (Rs. '000)	1,250	2,000	1,800	500	750
Services provided by S-1	20%	30%	40%	-	10%
Services provided by S-2	30%	40%	20%	10%	-
Basis of overhead application	Machine hours	Labour hours	75% of Material cost		

**Required:**

- (a) Allocate costs of service departments using repeated distribution method.
- (b) Compute department wise over / under applied overheads.

(12)

(2)

Q.3 Solvent Limited has two divisions each of which makes a different product. The budgeted data for the next year is as under:

	Product A	Product B
	Rupees	
Sales	200,000,000	150,000,000
Direct material	45,000,000	30,000,000
Direct labour	60,000,000	45,000,000
Factory overheads	35,000,000	15,000,000
Price per unit	20	25

Details of factory overheads are as follows:

- (i) Product A is stored in a rented warehouse whose rent is Rs. 0.25 million per month. Product B is required to be stored under special conditions. It is stored in a third party warehouse and the company has to pay rent on the basis of space utilized. The rent has been budgeted at Rs. 0.12 million per month.
- (ii) Indirect labour has been budgeted at 20% of direct labour. 70% of the indirect labour is fixed.
- (iii) Depreciation for assets pertaining to product A and B is Rs. 6.0 million and Rs. 2.0 million respectively.
- (iv) 80% of the cost of electricity and fuel varies in accordance with the production in units and the total cost has been budgeted at Rs. 4.0 million.
- (v) All other overheads are fixed.

**Required:**

Compute the break-even sales assuming that the ratio of quantities sold would remain the same, as has been budgeted above.

(14)

Q.4 (a) Karachi Limited is a large retailer of sports goods. The company buys footballs from a supplier in Sialkot. Karachi Limited uses its own truck to pick the footballs from Sialkot. The truck capacity is 2,000 footballs per trip and the company has been getting a full load of footballs at each trip, making 12 trips each year.

Recently the supplier revised its prices and offered quantity discount as under:

Quantity	Unit price (Rs.)
2,000	400
3,000	390
4,000	380
6,000	370
8,000	360

Other related data is given below:

- All the purchases are required to be made in lots of 1,000 footballs.
- The cost of making one trip is Rs. 15,000. The company has the option to hire a third party for transportation which would charge Rs. 9 per football.
- The cost of placing an order is Rs. 2,000.
- The carrying cost of one football for one year is Rs. 80.

**Required:**

- (i) Work out the most economical option.
- (ii) Compute the annual savings in case the company revises its policy in accordance with the computation in (i) above.

(10)

(b) Briefly describe:

- |                     |                   |
|---------------------|-------------------|
| (i) Stock out costs | (ii) Lead time    |
| (iii) Reorder point | (iv) Safety stock |

(04)



(3)

Q.5 Smart Limited has prepared a forecast for the quarter ending December 31, 2009, which is based on the following projections:

(i) Sales for the period October 2009 to January 2010 has been projected as under:

	<b>Rupees</b>
October 2009	7,500,000
November 2009	9,900,000
December 2009	10,890,000
January 2010	10,000,000

Cash sale is 20% of the total sales. The company earns a gross profit at 20% of sales. It intends to increase sales prices by 10% from November 1, 2009, however since there would be no corresponding increase in purchase prices the gross profit percentage is projected to increase. Effect of increase in sales price has been incorporated in the above figures.

- (ii) All debtors are allowed 45 days credit and are expected to settle promptly.
- (iii) Smart Limited follows a policy of maintaining stocks equal to projected sale of the next month.
- (iv) All creditors are paid in the month following delivery. 10% of all purchases are cash purchases.
- (v) Marketing expenses for October are estimated at Rs. 300,000. 50% of these expenses are fixed whereas remaining amount varies in line with the value of sales. All expenses are paid in the month in which they are incurred.
- (vi) Administration expenses paid for September were Rs. 200,000. Due to inflation, these are expected to increase by 2% each month.
- (vii) Depreciation is provided @ 15% per annum on straight line basis. Depreciation is charged from date of purchase to the date of disposal.
- (viii) On October 31, 2009 office equipment having book value of Rs. 500,000 (40% of the cost) on October 1, 2009 would be replaced at a cost of Rs. 2,000,000. After adjustment of trade-in allowance of Rs. 300,000 the balance would have to be paid in cash.
- (ix) The opening balances on October 1, 2009 are projected as under:

	<b>Rupees</b>
Cash and bank	2,500,000
Trade debts – related to September	5,600,000
Trade debts – related to August	3,000,000
Fixed assets at cost (20% are fully depreciated)	8,000,000

**Required:**

- (a) Prepare a month-wise cash budget for the quarter ending December 31, 2009.
- (b) Prepare a budgeted profit and loss statement for the quarter ending December 31, 2009. (16)

Q.6 Toy Limited is engaged in the production of a single product. On the basis of past history, the management has estimated the cost of production per unit, as follows:

	<b>Rupees</b>
Raw material – 5 kg @ Rs. 40 per kg	200
Labour – 10 hours @ Rs. 25 per hour	250
Variable overheads – 60% of direct labour	150
Total	600

The annual production requirement is 100,000 units.

(4)

The management has been deeply concerned with the performance of its labour as it has been witnessing various inefficiencies. The industrial relations department has recently carried out a study under the guidance of a consultant. It has put forward a plan whereby the company's wage policy is to be revised as under:

- Rate of wages would be increased by 12%.
- Workers who perform their tasks in less than the estimated time of 10 hours per unit would be given a premium of Rs. 18 per hour saved.

The consultant is of the view that the following efficiencies can be brought about by introducing the above change:

- (i) Raw material input per unit includes wastage of 7%. It would reduce to 3% .
- (ii) 70% of the workers would work more efficiently and improve their efficiency by 20%.
- (iii) Overheads will be reduced to 55% of the revised cost of direct labour (including premium).
- (iv) The quality of production will improve and the rate of rejection will be reduced from 4% to 3%. Rejected units are sold for Rs. 150 each.

**Required:**

Determine whether it would be beneficial for the company to adopt the wage plan recommended by the industrial relations department.

(14)

Q.7 Excellent Limited makes and sells a single product. The standard cost card for the product, based on normal capacity of 45,000 units per month is as under:

	Rupees
Material 60 kgs at Re. 0.60 per kg	36.00
Labour ½ hour at Rs. 50.00 per hour	25.00
Variable factory overheads, 30% of direct labour cost	7.50
Fixed factory overheads	6.50
<b>Total</b>	<b>75.00</b>

Actual data for the month of August 2009 is as under:

Work in process on August 1, 2009 (60% converted)	Units	10,000
Started during the month	Units	50,000
Transferred to finished goods	Units	48,000
Work in process on August 31, 2009 (50% converted)	Units	10,000
Material purchased at Re. 0.50 per kg	Rs.	1,750,000
Material issued to production	Kgs	3,100,000
Direct labour at Rs. 52 per hour	Rs.	1,300,000
Actual factory overheads (including fixed costs of Rs. 290,000)	Rs.	600,000

The company uses FIFO method for inventory valuation.

All materials are added at the beginning of the process. Conversion costs are incurred evenly throughout the process. Inspection takes place when the units are 80% complete. Under normal conditions, no spoilage should occur.

**Required:**

- (a) Quantity and equivalent production schedules for material and conversion costs.
- (b) Material, labour and overhead variances. (Use four variance method for overheads)

(16)

(THE END)



<p><b>COST ACCOUNTING</b> Suggested Answers Intermediate Examinations – Autumn 2009</p>
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Ans.1

Ahmer and Company  
General Journal entries

Date	Particulars	Ledger folio	Debit	Credit
1	Work in process A Work in process B Work in process C Work in process D Raw material <i>(Issuance of raw material to WIP)</i>		800,000 1,200,000 1,500,000 600,000	4,100,000
2	Work in process A (20,000*20) Work in process B (30,000*18) Work in process C (15,000*16) Work in process D (18,000*15) Payroll <i>(Direct labour cost allocated to WIP)</i>		400,000 540,000 240,000 270,000	1,450,000
3	Work in process A (20,000*10) Work in process B (30,000*10) Work in process C (15,000*10) Work in process D (18,000*10) Factory overheads applied <i>(Factory overheads applied to WIP @ Rs. 10 per direct labour hours)</i>		200,000 300,000 150,000 180,000	830,000
4	Factory overheads applied Profit and loss account (900,000-830,000) Factory overheads Control <i>(Factory overheads applied transferred to overheads control a/c and under applied overheads charged to P&amp;L account)</i>		830,000 70,000	900,000
5	Finished goods A (1,400,000+800,000+400,000+200,000) Work in process A <i>(Job A completed and transferred to finished goods)</i>		2,800,000	2,800,000
6	Finished goods – B 90% of (2,500,000+1,200,000+540,000+300,000) Work in process C 10% of (2,500,000+1,200,000+540,000+300,000) Work in process B <i>(Job B completed and transferred to finished goods, 10% rejected items transferred to Job C)</i>		4,086,000 454,000	4,540,000
7	Cost of goods sold Finished goods A Finished goods B <i>(Jobs A and B delivered and transferred to cost of goods sold.)</i>		6,886,000	2,800,000 4,086,000
		Rs.	21,506,000	21,506,000

<p><b>COST ACCOUNTING</b> Suggested Answers Intermediate Examinations – Autumn 2009</p>
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Ans.2

RT LIMITED  
Allocation of overheads

(a) Allocation of Service dept. cost to production dept. - Repeated distribution method:

	Production Dept.			Service Dept.	
	P1	P2	P3	S1	S2
	----- Rupees in thousand -----				
Actual overheads as given	1,250	2,000	1,800	500	750
S1 overheads allocation %	20%	30%	40%		10%
S2 overheads allocation %	30%	40%	20%	10%	
Allocation of S2 cost	225	300	150	75	(750)
Allocation of S1 cost	115	172	230	(575)	58
Allocation of S2 cost	17	23	11	6	(58)
Allocation of S1 cost	1	2	3	(6)	
Allocation from service dept.	358	497	394		
<b>TOTAL</b>	<b>1,608</b>	<b>2,497</b>	<b>2,194</b>		

(b) Over / under applied overheads:

	P1	P2	P3
Actual overheads after allocation from service dept.	1,608	2,497	2,194
Application of overheads to production:			
P1 Machine hours basis $\{(1,200/60,000)*60,500\}$	1,210		
P2 Labour hours basis $\{(2,000/200,000)*190,000\}$		1,900	
P3 75% of material cost $(3,200*75\%)$			2,400
Overheads applied	1,210	1,900	2,400
Overheads under / (over) applied	398	597	(206)

**COST ACCOUNTING**  
Suggested Answers  
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Ans.3

Solvent Limited

	Product A	Product B	Total
Sale – units	10,000,000	6,000,000	16,000,000
Sales price per unit	20	25	
Sales in Rupees	200,000,000	150,000,000	350,000,000
<b>Less: Variable costs</b>			
Direct material	45,000,000	30,000,000	-
Direct labour	60,000,000	45,000,000	-
Variable overheads (Note 1)	5,600,000	5,340,000	-
	110,600,000	80,340,000	190,940,000
Contribution margin	Rs. 89,400,000	69,660,000	159,060,000
Contribution margin % to sales			45.446%
Break even sales :			
Total 39,060,000/0.45446			85,948,699
A (Qty) $85,948,699/350,000,000*10,000,000$	2,455,677		
B (Qty) $85,948,699/350,000,000*6,000,000$		1,473,406	
Sales in Rs.	49,113,542	36,835,157	
<b>Note 1: Variable &amp; fixed overheads:</b>			
Total overheads as given	35,000,000	15,000,000	50,000,000
Variable overheads:			
- Rent based on space utilized 120,000 * 12	-	1,440,000	-
- Indirect labour 60,000,000*20%*30%	3,600,000		
45,000,000*20%*30%		2,700,000	-
- Electricity & fuel (4,000,000*80%)/16,000,000*10,000,000	2,000,000	-	-
(4,000,000*80%)/16,000,000*6,000,000	-	1,200,000	-
Variable overheads	5,600,000	5,340,000	10,940,000
Fixed costs (Total overheads-Variable overheads)	29,400,000	9,660,000	39,060,000

**COST ACCOUNTING**  
Suggested Answers  
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Ans.4 (a.i)

Karachi Limited

Price per football	A	400	390	380	370	360
Annual purchases (nos.)	B	24,000	24,000	24,000	24,000	24,000
Purchase cost	A × B	9,600,000	9,360,000	9,120,000	8,880,000	8,640,000
Minimum order size	C	2,000	3,000	4,000	6,000	8,000
No. of orders (B÷C)	D	12.00	8.00	6.00	4.00	3.00
Ordering cost	D × 2,000	24,000	16,000	12,000	8,000	6,000
Trips per order (C÷2,000)	E	1.00	1.00 + (hired transport)	2.00	3.00	4.00
Total no. of trips (D×E)	F	12.00	8.00	12.00	12.00	12.00
Transportation cost	F×15,000	180,000	120,000	180,000	180,000	180,000
Hired transportation cost	8,000 units×9		72,000			
Average inventory (C÷2)	G	1,000	1,500	2,000	3,000	4,000
Inventory carrying cost	G × 80	80,000	120,000	160,000	240,000	320,000
<b>Total cost</b>	<b>Rs.</b>	<b>9,884,000</b>	<b>9,688,000</b>	<b>9,472,000</b>	<b>9,308,000</b>	<b>9,146,000</b>

(a.ii) The most economical option is to purchase 3 lots of 8,000 footballs each against the existing purchases of 12 lots of 2,000 footballs. The saving will be as under:

Cost for 12 lots of 2,000 footballs each.	9,884,000
Cost for 03 lots of 8,000 footballs each.	9,146,000
Cost saving	Rs. <u>738,000</u>

- (b) (i) **Stock out Costs:**  
These costs result from not having enough inventories in stock to meet customers' needs. These costs include lost sales, customers' ill will, and the costs of expediting orders for goods not in stock.
- (ii) **Lead Time:**  
The time period between placing an order till the receipt of the goods from suppliers is called lead time.
- (iii) **Reorder Point:**  
The point of time when an order is required to be placed or production to be initiated to replenish depleted stocks is called reorder point. It is determined by multiplying the lead time and average usage.
- (iv) **Safety Stock:**  
To minimize stock outs on account of increased demand or delays in delivery etc., a buffer stock is often maintained. Such a buffer stocks is called Safety stock.



**COST ACCOUNTING**  
Suggested Answers  
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Ans.5

**SMART LIMITED**  
Cash budget for the quarter October - December 2009

		October	November	December
		Rupees in '000'		
Opening cash and bank balances		2,500	1,476	1,428
Cash receipts:				
Cash sales		1,500	1,980	2,178
Collection from debtors	Note 1	5,800	5,800	6,960
Total receipts		7,300	7,780	9,138
		9,800	9,256	10,566
Cash payments:				
Cash purchases	Note 2	720	792	727
Creditors	Note 2	5,400	6,480	7,128
Marketing expenses - Fixed (300/2)		150	150	150
Marketing expenses - Variable	Note 3	150	198	218
Admin. Expenses (2% increase per month)		204	208	212
Purchase of equipment (2,000-300)		1,700		
Total payments		8,324	7,828	8,435
Closing cash and bank balances		1,476	1,428	2,131

**Profit & Loss Account**  
for the quarter ending December 31, 2009

Sales (7,500+9,900+10,890)		28,290
Cost of goods sold:		
Opening stock (80% of October sale of Rs. 7,500)		6,000
Purchases (7,200+7,920+7,273)		22,393
Goods available for sale		28,393
Closing stock (Purchases of Dec. 2009)		(7,273)
		21,120
Gross profit		7,170
Admin. & Marketing expenses:		
Marketing expenses - Fixed		450
Marketing expenses - variable	Note 3	566
Admin. Expenses		624
Depreciation	Note 4	259
Loss on replacement of machinery {500-(1,250*15%/12=16)-300}		184
		2,083
NET PROFIT		5,087

Note 1 - Cash collection from sales:

	Oct.09	Nov.09	Dec. 09	Jan. 10
Total sale	7,500	9,900	10,890	10,000
Cash sale (20% of total)	1,500	1,980	2,178	
Credit sale (80% of total)	6,000	7,920	8,712	
Cash from debtors:				
2nd. fortnight of August	3,000			
1st. fortnight of September (5,600/2)	2,800			
2nd. fortnight of September (5,600/2)		2,800		
1st. fortnight of October (6,000/2)		3,000		
2nd. fortnight of October (6,000/2)			3,000	
1st. fortnight of November (7,920/2)			3,960	
	5,800	5,800	6,960	

**COST ACCOUNTING**  
Suggested Answers  
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Note 2 - Purchases:

Sale	7,500	9,900	10,890	10,000
Sale price increase	0%	10%	10%	10%
Sales excluding price increase effect	7,500	9,900/1.10	10,890/1.10	10,000/1.10
	7,500	9,000	9,900	9,091
Projected purchases based on next month sales	9,000*0.80	9,900*0.80	9,091*0.80	
	7,200	7,920	7,273	
Cash purchases 10%	720	792	727	
Credit purchases 90%	6,480	7,128	6,545	
Payment to creditors (Last month's balance of creditors)	(7,500*0.8*0.9)	5,400	6,480	7,128

Note 3 - Variable marketing expenses:

Sales	7,500	9,900	10,890	-
Variable marketing expenses	300 / 2	150/7,500*9,900	150/7,500*10,890	-
	150	198	218	-

Note 4 – Depreciation

		Oct.09	Nov.09	Dec. 09	Jan. 10
Fixed assets at cost	8,000	-	-	-	-
Less: Fully depreciated assets 20%	(1,600)	-	-	-	-
	6,400	80	-	-	-
Disposals on Oct. 31 at cost (500,000/40%)	(1,250)	-	-	-	-
	5,150	-	-	-	-
Additions on October 31 at cost	2,000	-	-	-	-
	7,150	-	89	89	-

Ans.6

Toy Limited  
Analyses of new wage plan

(a) Raw material consumption and wastage:	
Raw material consumption per unit – current	5.000
Present wastage (5*7/100)	(0.350)
Raw material forming part of finished product	4.650
Raw material consumption per unit as revised (4.650/0.97)	4.794
Saving in raw material consumption (5.000-4.794)*100,000*40	824,000
(b) Labour cost:	
Labour hours – current	10.00
Saving in labour hours due to efficiency (10*70%*20%)	(1.40)
Labour hours – revised	8.60
Labour cost: Revised wages (8.60*25*1.12)	240.80
Premium on hours saved (1.40*18)	25.20
Revised labour cost per unit	266.00
Increase in labour cost (Rs. 266-250)*100,000	(1,600,000)
(c) Overheads:	
Current overheads per unit	150.00
Revised overheads per unit (266*0.55)	146.30
Saving in overheads (150-146.3)*100,000	370,000
(d) Rejections:	
Present rejections {(100,000/0.96)-100,000}	4,167.00
Rejections in the new situation {(100,000/0.97)-100,000}	3,093.00
Present cost of rejections of 4,167 units @ Rs. 450 (600-150)	1,875,150.00
Revised cost of rejection for 3,093 units: {(4.794*40)+266+146.30-150}*3,093	1,404,408.00

**COST ACCOUNTING**  
Suggested Answers  
Intermediate Examinations – Autumn 2009

Decrease in rejection (1,875,150.00-1,404,408.00)	470,742
Net Saving (824,000-1,600,000+ 370,000+470,742)	64,742

Ans. 7

Excellent Limited				
1	<b>Quantity schedule:</b>			
	Units in process at beginning		10,000	
	Units started during the month		50,000	60,000
	Units transferred to finished goods		48,000	
	Units in process at the end of the month		10,000	
	Loss of units (Balance quantity)		2,000	60,000
2	<b>Equivalent units, FIFO method:</b>		<b>Material</b>	<b>Conv. Cost</b>
	Transfer to finished goods		48,000	48,000
	WIP - beginning (60% converted)		(10,000)	(6,000)
	WIP - closing (50% converted)		10,000	5,000
			48,000	47,000
	Abnormal loss of units (80% converted)		2,000	1,600
	Equivalent units produced during the month		50,000	48,600
3	<b>Variances:</b>	<b>Qty.</b>	<b>Rate</b>	<b>Amount</b>
	1) Material price variance			
	Actual quantity used @ actual rate	3,100,000	0.50	1,550,000
	Actual quantity used @ standard rate	3,100,000	0.60	1,860,000
		<b>Favourable</b>		310,000
	2) Material quantity variance			
	Actual quantity used at standard rate	3,100,000	0.60	1,860,000
	Standard quantity allowed at standard rate	3,000,000	0.60	1,800,000
		<b>Adverse</b>		(60,000)
	3) Labour rate variance			
	Actual hours worked at actual rate	25,000	52.00	1,300,000
	Actual hours worked at standard rate	25,000	50.00	1,250,000
		<b>Adverse</b>		(50,000)
	4) Labour efficiency variance			
	Actual hours worked at standard rate	25,000	50.00	1,250,000
	Standard hours allowed at standard rate	24,300	50.00	1,215,000
		<b>Adverse</b>		(35,000)
	5) Factory overhead spending variance			
	Actual fixed & variable overheads			600,000
	Budgeted overheads:			
	Fixed overheads	45,000/2	22,500	13.00
	Variable OH based on actual hrs at std. rate	25,000	15.00	375,000
				667,500
		<b>Favourable</b>		67,500
	6) Variable overhead efficiency variance			
	Actual hrs. worked at standard rate	25,000	15.00	375,000
	Standard hrs. allowed at standard rate	(48,600/2)	24,300	15.00
		<b>Adverse</b>		(10,500)
	7) Fixed overhead efficiency variance			
	Actual hrs. worked at standard rate	25,000	13.00	325,000
	Standard hrs. allowed at standard rate	(48,600/2)	24,300	13.00
		<b>Adverse</b>		(9,100)
	8) Idle capacity variance			
	Actual capacity utilized at standard rate	25,000	13.00	325,000
	Available capacity at standard rate	(45,000/2)	22,500	13.00
		<b>Favourable</b>		32,500

(THE END)



**THE INSTITUTE OF CHARTERED ACCOUNTANTS OF PAKISTAN**

Intermediate Examinations Spring 2010



March 5, 2010

**COST ACCOUNTING**

(MARKS 100)

**Module D**

(3 hours)

Q.1 XYZ Limited manufactures four products. The related data for the year ended December 31, 2009 is given below:

	A	B	C	D
Opening stock:				
- Units	10,000	15,000	20,000	25,000
- Cost (Rs.)	70,000	120,000	180,000	310,000
- NRV (Rs.)	75,000	110,000	180,000	300,000
Production in units	50,000	60,000	75,000	100,000
Costs of goods produced (Rs.)	400,000	600,000	825,000	1,200,000
Variable selling costs (Rs.)	60,000	80,000	90,000	100,000
Closing stock (units)	5,000	10,000	15,000	24,000
Unit cost of purchase from market (Rs.)	10.50	11.00	11.50	13.00
Selling price per unit (Rs.)	10.00	12.00	12.00	12.50
Damaged units included in closing stock	300	600	800	1,500
Unit cost to repair damaged units (Rs.)	3.00	2.00	2.50	3.50
Stock valuation method in use	Weighted Average	Weighted Average	FIFO	FIFO

The company estimates that in January 2010 selling expenses would increase by 10%.

**Required:**

Compute the amount of closing stock that should be reported in the balance sheet as on December 31, 2009.

(15)

Q.2 Modern Distributors Limited (MDL) is a distributor of CALTIN which is used in various industries and its demand is evenly distributed throughout the year.

The related information is as under:

- (i) Annual demand in the country is 240,000 tons whereas MDL's share is 32.5% thereof.
- (ii) The average sale price is Rs. 22,125 per ton whereas the profit margin is 25% of cost.
- (iii) The annual variable costs associated with purchasing department are expected to be Rs. 4,224,000 during the current year. It has been estimated that 10% of the variable costs relate to purchasing of CALTIN.
- (iv) Presently, MDL follows the policy of purchasing 6,500 tons at a time.
- (v) Carrying cost is estimated at 1% of cost of material.
- (vi) MDL maintains a buffer stock of 2,000 tons.

**Required:**

Compute the amount of savings that can be achieved if MDL adopts the policy of placing orders based on Economic Order Quantity.

(15)

(2)

- Q.3 Smart Processing Limited produces lubricants for industrial machines. Material COX is introduced at the start of the process in department A and subsequently transferred to department B. Normal loss in department A is 5% of the units transferred.

In department B, material COY is added just after inspection which takes place when the production is 60% complete. 10% of the units processed are evaporated before the inspection stage. However, no evaporation takes place after adding material COY. During the year, actual evaporation in department B was 10% higher than the estimated normal losses because of high level of Sulphur contents in natural gas used for processing.

Other details for the year ended December 31, 2009 are as under:

	Department A	Department B
	----- Rupees -----	
Opening work in process	2,184,000	2,080,000
Material input - 600,000 Litres	17,085,000	
- 500,000 Litres		9,693,000
Labour	8,821,000	6,389,000
Overheads	2,940,000	3,727,000

	Department A			Department B		
	Litres	Completion %		Litres	Completion %	
		Material	Conversion costs		Material	Conversion costs
Opening WIP	64,500	100	60	40,000	100	60
Closing WIP	24,000	100	70	50,000	100	80

Conversion costs are incurred evenly throughout the process in both departments. The company uses FIFO method for inventory valuation.

**Required:**

- (a) Equivalent production units
- (b) Cost of abnormal loss and closing WIP
- (c) Cost of finished goods produced

(22)

- Q.4 You have recently been appointed as the Financial Controller of Watool Limited. Your immediate task is to prepare a presentation on the company's performance for the recently concluded year. You have noticed that the records related to cost of production have not been maintained properly. However, while scrutinizing the files you have come across certain details prepared by your predecessor which are as follows:

- (i) Annual production was 50,000 units which is equal to the designed capacity of the plant.
- (ii) The standard cost per unit of finished product is as follows:

Raw material X	6 kg at Rs. 50 per kg
Raw material Y	3 kg at Rs. 30 per kg
Labour- skilled	1.5 hours at Rs. 150 per hour
Labour- unskilled	2 hours at Rs. 100 per hour
Factory overheads	Variable overheads per hour are Rs. 100 for skilled labour and Rs. 80 for unskilled labour. Fixed overheads are Rs. 4,000,000.

- (iii) Data related to variation in cost of materials is as under:

Material X price variance	Rs. 95,000 (Adverse)
Material Y actual price	6% below the standard price
Material X quantity variance	Nil
Material Y quantity variance	Rs. 150,000 (Adverse)



(3)

- (iv) Opening raw material inventories comprised of 25 days of standard consumption whereas closing inventories comprised of 20 days of standard consumption.
- (v) Actual labour rate for skilled and unskilled workers was 10% and 5% higher respectively.
- (vi) Actual hours worked by the workers were 168,000 and the ratio of skilled and unskilled labour hours was 3:4 respectively.
- (vii) Actual variable overheads during the year amounted to Rs. 16,680,000. Fixed overheads were 6% more than the budgeted amount.

**Required:**

- (a) Actual purchases of each type of raw materials.
- (b) Labour and overhead variances. (20)

Q.5 Areesh Limited deals in various products. Relevant details of the products are as under:

	<b>AW</b>	<b>AX</b>	<b>AY</b>	<b>AZ</b>
Estimated annual demand (units)	5,000	10,000	7,000	8,000
Sales price per unit (Rs.)	150	180	140	175
<b>Material consumption:</b>				
Q (kg)	2	2.5	1.5	1.75
S (kg)	0.5	0.6	0.4	0.65
Labour hours	2	2.25	1.75	2.5
Variable overheads (based on labour cost)	75%	80%	100%	90%
Fixed overheads per unit (Rs.) (based on 80% capacity utilization)	10	20	14	16
<b>Machine hours required:</b>				
Processing machine hours	5	6	8	10
Packing machine hours	2	3	2	4

Company has a long term contract for purchase of material Q and S at a price of Rs. 15 and Rs. 20 per kg respectively. Wage rate for 8 hours shift is Rs. 200.

The estimated overheads given in the above table are exclusive of depreciation expenses. The company provides depreciation on number of hours used basis. The depreciation on each machine based on full capacity utilization is as under:

	<b>Hours</b>	<b>Rs.</b>
Processing machine	150,000	150,000
Packing machine	100,000	50,000

The company has launched an advertising campaign to promote the sale of its products. Rs. 2 millions have been spent on such campaign. This cost is allocated to the products on the basis of sale.

**Required:**

Compute the number of units of each product that the company should produce in order to maximize the profit and also compute the product wise and total contribution at optimal product mix. (15)

Q.6 Briefly describe the following terms giving an example in each case:

- (a) Opportunity cost
- (b) Sunk cost
- (c) Relevant cost (06)

(4)

Q.7 The records of direct labour hours and total factory overheads of IMI Limited over first six months of its operations are given below:

	<b>Direct labour</b>	<b>Total factory overheads</b>
	<b>Hours in 000</b>	<b>Rs. in 000</b>
September 2009	50	14,800
October 2009	80	17,000
November 2009	120	23,800
December 2009	40	11,900
January 2010	100	22,100
February 2010	60	16,150

The management is interested in distinguishing between the fixed and variable portion of the overheads.

**Required:**

Using the least square regression method, estimate the variable cost per direct labour hour and the total fixed cost per month.

(07)

**(THE END)**

**COST ACCOUNTING**  
Suggested Answers  
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Ans.1

		A	B	C	D
		<b>Units</b>			
Opening stock		10,000	15,000	20,000	25,000
Production during the period	<b>A</b>	50,000	60,000	75,000	100,000
Goods available for sale	<b>B</b>	60,000	75,000	95,000	125,000
Closing Stock	<b>C</b>	(5,000)	(10,000)	(15,000)	(24,000)
Sale	<b>D</b>	55,000	65,000	80,000	101,000
		<b>Rupees</b>			
<b>Cost of goods available for sale:</b>					
Opening stock valuation at lower of cost and NRV)		70,000	110,000	180,000	300,000
Cost of production for the period	<b>E</b>	400,000	600,000	825,000	1,200,000
Cost of goods available for sale	<b>F</b>	470,000	710,000	1,005,000	1,500,000
<b>Closing stock cost</b>					
A & B (W/Avg.):	<b>F / B × C</b>	39,167	94,667		
C & D (FIFO):	<b>E / A × C</b>			165,000	288,000
Selling expenses - current year	<b>H</b>	60,000	80,000	90,000	100,000
Sales price - per unit	<b>I</b>	10.0	12.0	12.0	12.5
Total sales price of closing stock	<b>C × I</b>	50,000	120,000	180,000	300,000
Selling costs	<b>H / D × C × 1.1</b>	(6,000)	(13,538)	(18,563)	(26,139)
Repair cost of damaged units		(900)	(1,200)	(2,000)	(5,250)
<b>NRV of Closing stock</b>		43,100	105,262	159,438	268,611
<b>Value of closing stock (At lower of cost and NRV)</b>		39,167	94,667	159,438	268,611

Ans.2

Purchase department's variable cost:	Rs.	4,224,000
Costs applicable to product CALTIN - 10% of above	Rs.	422,400
<b>Ordering costs per purchase order</b>		
Annual purchases of CALTIN (tons) [240,000 × 32.5%]	Tons	78,000
Existing size of purchase order (tons)	Tons	6,500
No. of orders (78,000 / 6,500)	Orders	12
Ordering cost per order (422,400/12)	Rs.	35,200
<b>Carrying costs per ton (22,125 / 1.25 × 1%)</b>	Rs. Per Ton	177

$$\text{Computation of EOQ} = \sqrt{\frac{2 \times 78,000 \text{ tons} \times 35,200}{177}} = 5,570 \text{ tons}$$

		EOQ	Existing
Demand of CALTIN	Tons	78,000	78,000
Order quantity	Tons	5,570	6,500
No. of orders		14	12
Average inventory excluding buffer stock (order quantity / 2)	Tons	2,785	3,250
Buffer stock	Tons	2,000	2,000
Average inventory	Tons	4,785	5,250
Cost of placing orders (Rs 35,200 per order)	Rupees	492,800	422,400
Carrying cost ([Avg. Inventory × Rs. 177)	Rupees	846,945	929,250
Total costs	Rupees	1,339,745	1,351,650
Savings on adoption of EOQ	Rupees	11,905	



**COST ACCOUNTING**  
Suggested Answers  
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**Ans.3 (a) EQUIVALENT PRODUCTION UNITS**

*Quantity Schedule (in litres)*

	Dept. A	Dept. B
WIP opening	64,500	40,000
Started in process / material added	600,000	500,000
Received from preceding department	-	610,000
	664,500	1,150,000
Transferred out to B (664,500-24,000)x100/105	610,000	-
Transferred to finished goods (1,150,000-50,000-61,000-6,100)	-	1,032,900
WIP closing	24,000	50,000
Normal loss – A (664,500-24,000)x5/105	30,500	-
Normal loss – B (10% x 610,000)	-	61,000
Abnormal loss – B (10% x 61,000)	-	6,100
	664,500	1,150,000

*Equivalent production unit (in litres)*

	Department A		Department B	
	Material	Conversion	Material	Conversion
Units completed and transferred out	610,000	610,000	1,032,900	1,032,900
Opening Inventory (60% completed)	(64,500)	(38,700)	(40,000)	(24,000)
Abnormal loss (B: 6,100 x 60%)	-	-	-	3,660
Closing inventory (A: 70%, B: 80%)	24,000	16,800	50,000	40,000
	569,500	588,100	1,042,900	1,052,560

**(b) COST OF ABNORMAL LOSS AND CLOSING WIP**

	Department A			Department B		
	Quantity	Rate	Amount	Quantity	Rate	Amount
<b>Cost of abnormal loss (Department B)</b>	<b>Units</b>	<b>Rs.</b>	<b>Rs.</b>	<b>Units</b>	<b>Rs.</b>	<b>Rs.</b>
From department A (610,000 x 10% x 10%)				6,100	(W-2) 54.60	333,044
Labour (60%)				3,660	6.07	22,216
Overheads (60%)				3,660	3.54	12,956
			-			<b>368,216</b>
<b>WIP-closing costs</b>						
From department A	-	-	-	50,000	(W-2) 28.42	1,421,000
Material	24,000	30.00	720,000	50,000	9.29	464,500
Labour (70%, 80%)	16,800	15.00	252,000	40,000	6.07	242,800
Overheads (70%, 80%)	16,800	5.00	84,000	40,000	3.54	141,600
			<b>1,056,000</b>			<b>2,269,900</b>

**(c) COST OF GOODS TRANSFERRED TO FINISHED GOODS**

	Rupees
Total costs charged to department (W-1)	51,863,000
Less: WIP closing costs (Computed above)	(2,269,900)
Less: Cost of abnormal loss (Computed above)	(368,216)
Costs transferred to finished goods	<b>49,224,884</b>

**COST ACCOUNTING**  
Suggested Answers  
Intermediate Examinations – Spring 2010

**W-1: Cost charged to department:**

	Department A			Department B		
	Equivalent Units	Cost (Rs.)	Unit cost (Rs.)	Equivalent Units	Cost (Rs.)	Unit cost (Rs.)
WIP - opening inventory		2,184,000			2,080,000	
Cost from department A					29,974,000	
Material	569,500	17,085,000	30.00	1,042,900	9,693,000	9.29
Labour	588,100	8,821,000	15.00	1,052,560	6,389,000	6.07
Overheads	588,100	2,940,000	5.00	1,052,560	3,727,000	3.54
Total cost to be accounted for		31,030,000	50.00		51,863,000	

**W-2: Allocation of cost received from department A:**

	Quantity	Amount (Rs.)	Unit cost (Rs.)
Units received from A	610,000		
Normal loss at 10%	(61,000)		
	549,000	*29,974,000	54.60
Abnormal loss at 1%	(6,100)	(333,044)	54.60
Units after inspection	542,900	29,640,956	54.60
Addition of material COY	500,000		
	1,042,900	29,640,956	28.42

\*Rs. 31,030,000 (Total cost) – Rs. 1,056,000 (Closing WIP) = Rs. 29,974,000

**COST ACCOUNTING**  
Suggested Answers  
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Ans.4	Actual quantity purchased:	Material X		Material Y	
		Standard consumption quantities	$50,000 \times 6$	300,000	$50,000 \times 3$
Quantity used in excess of standard usage (adverse quantity variance)		0	$150,000/30$	5,000	
Ending inventory	$300,000 \times 20/365$	16,438	$150,000 \times 20/365$	8,219	
Opening stock	$300,000 \times 25/365$	(20,548)	$150,000 \times 25/365$	(10,274)	
Actual purchase quantity	kg	<b>295,890</b>	kg	<b>152,945</b>	
<b>Actual cost of purchase:</b>					
Actual quantity purchased at standard rate	$295,890 \times 50$	14,794,500	$152,945 \times 30$	4,588,350	
Price paid above / (below) the standard rate {adverse / (favorable) price variance}		95,000	$4,588,350 \times 0.06$	(275,301)	
Actual cost of purchase	Rs.	<b>14,889,500</b>	Rs.	<b>4,313,049</b>	

**Labour and overhead variances:**

	Skilled labour		Unskilled labour	
<b>Labour rate variance:</b>				
Actual hours at standard rate	$168,000 \times 3/7 \times 150$	10,800,000	$168,000 \times 4/7 \times 100$	9,600,000
Rate variance 10% & 5%	<b>Adverse</b>	<b>(1,080,000)</b>	<b>Adverse</b>	<b>(480,000)</b>
<b>Labour efficiency variance:</b>				
Standard hours for 50,000 units at standard rate	$50,000 \times 1.5 \times 150$	11,250,000	$50,000 \times 2 \times 100$	10,000,000
Actual hours for 50,000 units at standard rate	$168,000 \times 3/7 \times 150$	10,800,000	$168,000 \times 4/7 \times 100$	9,600,000
	<b>Favourable</b>	<b>450,000</b>	<b>Favourable</b>	<b>400,000</b>
<b>Overheads spending variance:</b>				
Actual hours at standard rate-skilled	$168,000 \times 3/7 \times 100$	7,200,000		
Actual hours at standard rate-unskilled	$168,000 \times 4/7 \times 80$	7,680,000		
Fixed overheads as budgeted		4,000,000		
		18,880,000		
Actual variable overheads		16,680,000		
Actual fixed overheads	$4,000,000 \times 1.06$	4,240,000		
		20,920,000		
Spending variance	<b>Adverse</b>	<b>(2,040,000)</b>		
<b>Overheads efficiency variance:</b>				
Standard hours for 50,000 units at standard rate				
Skilled	$50,000 \times 1.5 \times 100$	7,500,000		
Unskilled	$50,000 \times 2 \times 80$	8,000,000		
		15,500,000		
Actual hours for 50,000 units at standard rate				
Skilled	$168,000 \times 3/7 \times 100$	7,200,000		
Unskilled	$168,000 \times 4/7 \times 80$	7,680,000		
		14,880,000		
	<b>Favourable</b>	<b>620,000</b>		



**COST ACCOUNTING**  
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Ans.5

		AW	AX	AY	AZ	Total
Sale price		150.00	180.00	140.00	175.00	
<b>Less: Variable cost</b>						
Material Q at Rs 15		30.00	37.50	22.50	26.25	
Material S at Rs 20		10.00	12.00	8.00	13.00	
Labour cost at Rs. 25 per hour		50.00	56.25	43.75	62.50	
Overheads		37.50	45.00	43.75	56.25	
		127.50	150.75	118.00	158.00	
<b>Contribution margin per unit</b>	Rs	<b>22.50</b>	<b>29.25</b>	<b>22.00</b>	<b>17.00</b>	
<b>Annual demand</b>	Units	<b>5,000</b>	<b>10,000</b>	<b>7,000</b>	<b>8,000</b>	
<b>Possible production under each machine:</b>						
<b>Processing machine:</b>						
Machine hours required per unit		5.00	6.00	8.00	10.00	
Average CM per hour		4.50	4.88	2.75	1.70	
Production priority		2	1	3	4	
No. of units that can be produced in available hours in order of CM priority (Restricted to annual demand)		5,000	10,000	7,000	900	
<b>Hours required</b>	Hours	<b>25,000</b>	<b>60,000</b>	<b>56,000</b>	<b>9,000</b>	<b>150,000</b>
<b>Contribution margin</b>	Rs.	<b>112,500</b>	<b>292,500</b>	<b>154,000</b>	<b>15,300</b>	<b>574,300</b>
Production for product 'Z' has to be restricted to 900 units due to limited number of machine hours.						
<b>Packing machine:</b>						
Machine hours required per unit		2.00	3.00	2.00	4.00	
Average CM per hour		11.25	9.75	11.00	4.25	
Production priority		1	3	2	4	
No. of units that can be produced in available hours in order of CM priority (Restricted to annual demand)		5,000	10,000	7,000	8,000	
<b>Hours required</b>	Hours	<b>10,000</b>	<b>30,000</b>	<b>14,000</b>	<b>32,000</b>	<b>86,000</b>

**Conclusion :**

The packing machine can meet the full demand but capacity of processing machine is limited. Therefore, product mix of processing machine will be manufactured.

**Assumption:**

It has been assumed that the wage rate per eight hours is divisible.

**COST ACCOUNTING**  
Suggested Answers  
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**Ans.6 (a) Opportunity cost:**

An opportunity cost is a cost that measures the opportunity that is lost or sacrificed when the choice of one course of action requires that an alternative course of action be given up.

**Example**

A company has an opportunity to obtain a contract for the production of Z which will require processing on machine X which is already working at full capacity. The contract can only be fulfilled by reducing the present output of machine X which will result in reduction of profit contribution by Rs. 200,000.

If the company accepts the contract, it will sacrifice a profit contribution of Rs. 200,000 from the lost output of product Z. This loss of Rs. 200,000 represents an opportunity cost of accepting the contract.

**(b) Sunk cost**

A sunk cost is a historical or past cost that the company has already incurred. These costs cannot be changed/recovered in any case and are ignored while making a decision.

**Example**

A company mistakenly purchased a machine that does not completely suit its requirements. The price of the machine already paid is a sunk cost and will not be considered while deciding whether to sell the machine or use it.

**(c) Relevant cost:**

The predicted future costs that would differ depending upon the alternative courses of action, are called relevant costs.

**Example**

A company purchased a raw material few years ago for Rs. 100,000. A customer is prepared to purchase it for Rs. 60,000. The material is not otherwise saleable but can be sold after further processing at a cost of Rs. 30,000.

In this case, the additional conversion cost of Rs. 30,000 is relevant cost whereas the raw material cost of Rs. 100,000 is irrelevant.

**Ans.7**

	Direct labour Hours (x)	Overheads (y)	(xy)	(x <sup>2</sup> )
September 2009	50	14,800	740,000	2,500
October 2009	80	17,000	1,360,000	6,400
November 2009	120	23,800	2,856,000	14,400
December 2009	40	11,900	476,000	1,600
January 2010	100	22,100	2,210,000	10,000
February 2010	60	16,150	969,000	3,600
	450	105,750	8,611,000	38,500

$$b \text{ (Variable cost per unit)} = \frac{n(\sum xy) - (\sum x)(\sum y)}{n(\sum x^2) - (\sum x)^2} = \frac{6 \times 8,611,000 - 450 \times 105,750}{6(38,500) - (450)^2} = 143.1053$$

**COST ACCOUNTING**  
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$$\mathbf{a} \text{ (Fixed costs per month)} = \frac{(\sum y) - b(\sum x)}{n} = \frac{(105,750 - 143.11(450))}{6} = 6,892$$

**(THE END)**





The Institute of Chartered Accountants of Pakistan

## Cost Accounting

Intermediate Examinations – Autumn 2010  
Module D

September 3, 2010  
100 marks - 3 hours

Q.1 Ahsan Enterprises (AE) produces three products Alpha, Beta and Gamma. The management has some reservations on the method of costing. Consequently, the cost accountant has reviewed the records and gathered the following information:

(i) The costs incurred during the latest quarter were as follows:

	<b>Rupees</b>
Direct material	240,000
Direct labour	1,680,000
Indirect wages – machine maintenance	600,000
– stores	360,000
– quality control	468,000
– cleaning and related services	400,000
Fuel and power	2,800,000
Depreciation on plant, machinery and building	1,560,000
Insurance on plant and machinery	240,000
Insurance on building	60,000
Stores, spares and supplies consumed	1,800,000
Rent, rates and taxes	1,200,000

(ii) The production report for the previous quarter depicted the following information:

	Production (units)	Direct labour hours per unit	Machine hours per unit	Inspection hours per unit
Alpha	12,000	20.00	6.00	2.0
Beta	20,000	5.00	8.00	3.0
Gamma	45,000	4.00	10.00	4.0

(iii) Other relevant details are as follows:

	Alpha	Beta	Gamma
Factory space utilization	40%	35%	25%
Cost of machinery (Rs. in thousands)	6,000	4,000	3,000
Stores consumption (Rs. in thousands)	720	270	810
No. of units inspected	600	400	1,350

The rate of depreciation for plant and machinery is 10% per annum.

**Required:**

- (a) Determine the factory overhead cost per unit for products Alpha, Beta and Gamma by using single factory overhead rate based on direct labour hours.
- (b) Recalculate the factory overhead cost per unit, for each product, by allocating individual expenses on the basis of specific utilisation of related facilities. (13 marks)

Q.2 Quality Limited (QL) is a manufacturer of washing machines. The company uses perpetual method for recording and weighted average method for valuation of inventory.

The following information pertains to a raw material (SRM), for the month of June 2010.

- (i) Opening inventory of SRM was 100,000 units having a value of Rs. 80 per unit.
- (ii) 150,000 units were purchased on June 5, at Rs. 85 per unit
- (iii) 150,000 units were issued from stores on June 6.
- (iv) 5,000 defective units were returned from the production to the store on June 12.
- (v) 150,000 units were purchased on June 15 at Rs. 88.10 per unit.
- (vi) On June 17, 50% of the defective units were disposed off as scrap, for Rs. 20 per unit, because these had been damaged on account of improper handling at QL.
- (vii) On June 18, the remaining defective units were returned to the supplier for replacement under warranty.
- (viii) On June 19, 5,000 units were issued to production in replacement of the defective units which were returned to store.
- (ix) On June 20, the supplier delivered 2,500 units in replacement of the defective units which had been returned by QL.
- (x) 150,000 units were issued from stores on June 21.
- (xi) During physical stock count carried out on June 30, 2010 it was noted that closing inventory of SRM included 500 obsolete units having net realizable value of Rs. 30 per unit. 4,000 units were found short.

**Required:**

Prepare necessary journal entries to record the above transactions.

*(15 marks)*

Q.3 Naseem (Private) Limited (NPL) is a manufacturer of industrial goods and is launching a new product. The production will be carried out using existing facilities. However, the capacity of a machine would have to be increased at a cost of Rs. 3.0 million.

The budgeted costs per unit are as under:

Imported material	1.3 kg at Rs. 750 per kg
Local material	0.5 kg at Rs. 150 per kg
Labour	2.0 hours at Rs. 300 per hour
Variable overheads	Rs. 200 per labour hour
Selling & administration cost - variable	Rs. 359

Other relevant details are as under:

- (i) Net weight of each unit of finished product will be 1.6 kg.
- (ii) During production, 5% of material input will evaporate. The remaining waste would be disposed off at a rate of Rs. 80 per kg.
- (iii) The cost of existing plant is Rs. 10 million. The rate of depreciation is 10% per annum.
- (iv) Administration and other fixed overheads amount to Rs. 150,000 per month. As a result of the introduction of the new product, these will increase to Rs. 170,000 per month. The management estimates that 20% of the facilities would be used for the new product.
- (v) The company fixes its sale price at variable cost plus 25%.
- (vi) Applicable tax rate for the company is 35%.

**Required:**

Compute the sales quantity and value, required to achieve a targeted increase of Rs. 4.5 million in after tax profit.

*(10 marks)*



Q.4 Mazahir (Pakistan) Limited manufactures and sells a consumer product Zee. Relevant information relating to the year ended June 30, 2010 is as under:

Raw material per unit	5 kg at Rs. 60 per kg
Actual labour time per unit (same as budgeted)	4 hours at Rs. 75 per hour
Actual machine hours per unit (same as budgeted)	3 hours
Variable production overheads	Rs. 15 per machine hour
Fixed production overheads	Rs. 6 million
Annual sales	19,000 units
Annual production	18,000 units
Selling and administration overheads (70% fixed)	Rs. 10 million

Salient features of the business plan for the year ending June 30, 2011 are as under:

- (i) Sale is budgeted at 21,000 units at the rate of Rs. 1,100 per unit.
- (ii) Cost of raw material is budgeted to increase by 4%.
- (iii) A quality control consultant will be hired to check the quality of raw material. It will help improve the quality of material procured and reduce raw material usage by 5%. Payment will be made to the consultant at Rs. 2 per kg.
- (iv) The management has negotiated a new agreement with labour union whereby wages would be increased by 10%. The following measures have been planned to improve the efficiency:
  - 30% of the savings in labour cost, would be paid as bonus.
  - A training consultant will be hired at a cost of Rs. 300,000 per annum to improve the working capabilities of the workers.
 On account of the above measures, it is estimated that labour time will be reduced by 15%.
- (v) Variable production overheads will increase by 5%.
- (vi) Fixed production overheads are expected to increase at the rate of 8% on account of inflation. Fixed overheads are allocated on the basis of machine hours.
- (vii) The company has a policy of maintaining closing stock at 5% of sales. In order to avoid stock-outs, closing stock would now be maintained at 10% of sales. The closing stocks are valued on FIFO basis.

**Required:**

- (a) Prepare a budgeted profit and loss statement for the year ending June 30, 2011 under marginal and absorption costing.
- (b) Reconcile the profit worked out under the two methods. (20 marks)

Q.5 Jaseem Limited manufactures a stationery item in three different sizes. All the sizes are manufactured at a plant having annual capacity of 1,800,000 machine hours.

Relevant data for each product is given below:

	Small Size	Medium Size	Large Size
Sales price per unit (Rs.)	75	90	130
Direct material cost per unit (Rs.)	25	32	35
Labour hours per unit	3	4	5
Variable overheads per unit (Rs.)	5	7	8
Machine hours per unit	2	4	5
Demand (Units)	210,000	150,000	180,000
Minimum production required (Units)	100,000	100,000	100,000

Other relevant information is as under:

- (i) Cost of the monthly payroll is Rs. 1,500,000.
- (ii) Fixed overheads are Rs. 110,000 per month and are allocated on the basis of machine hours.

**Required:**

Recommend the number of units to be produced for each size. (12 marks)

- Q.6 ABC Limited produces and markets a single product. The company operates a standard costing system. The standard cost card for the product is as under:

Sale price	Rs. 600 per unit
Direct material	2.5 kg per unit at Rs. 50 per kg
Direct labour	2.0 hours per unit at Rs. 100 per hour
Variable overheads	Rs. 25 per direct labour hour
Fixed overheads	Rs. 10 per unit
Budgeted production	500,000 units per month

The company maintains finished goods inventory at 25,000 units throughout the year. Actual results for the month of August 2010 were as under:

		Rupees in '000
Sales	480,000 units	295,000
Direct material	950,000 kgs	55,000
Direct labour	990,000 hours	105,000
Variable overheads		26,000
Fixed overheads		5,100

**Required:**

Reconcile budgeted profit with actual profit using the relevant variances (2 variances each for sale, raw material and labour and 4 variances for overheads). (18 marks)

- Q.7 Pakair Limited manufactures special tools. Information pertaining to payroll costs for the month of April 2010 is as under:

Department	Gross salaries excluding overtime	Overtime	Income tax Deductions
	Rupees in thousands		
Machining	1,000	75	25
Assembly	400	40	15
Tool room	25	5	-
Warehouse	75	15	-

Details of other benefits are as under:

- (i) 35 paid leaves are allowed per year including annual, casual and sick leaves.
- (ii) Annual bonus equal to one month salary is paid in June.
- (iii) The company maintains a contributory Provident Fund in which 8.33% of the monthly salary is contributed by the employer as well as the employees.
- (iv) During April 2010, the employees availed leaves that cost Rs. 85,000.
- (v) Advances paid and recovered during the month amounted to Rs. 17,000 and Rs. 28,000 respectively.
- (vi) The company follows a policy of accruing bonus and paid leaves on a monthly basis.

**Required:**

Prepare journal entries to record payroll and its disbursements. (12 marks)

(THE END)



**COST ACCOUNTING**  
Suggested Answers  
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A.1 (a) **Factory overheads cost per unit based on direct labour hours used:**

		Alpha	Beta	Gamma	Total
Production (no. of units)	A	12,000	20,000	45,000	77,000
Direct labour hours per unit		20	5	4	
Total direct labour hours	B	240,000	100,000	180,000	520,000
Allocation of overheads (9,488,000/520,000 × B)	Rs. C	4,379,077	1,824,615	3,284,308	9,488,000
Cost per unit	Rs. (C / A)	364.92	91.23	72.98	

(b) **Factory overheads cost per unit based on utilisation of facilities:**

	Allocation basis	Alpha	Beta	Gamma	Total
Production (no. of units)	A	12,000	20,000	45,000	77,000
Machine hours per unit		6	8	10	
<b>Total machine hours</b>	*1	<b>72,000</b>	<b>160,000</b>	<b>450,000</b>	<b>682,000</b>
Units inspected		600	400	1,350	2,350
Per unit inspection hours		2	3	4	
<b>Total no. of hours for units inspected</b>	*2	<b>1,200</b>	<b>1,200</b>	<b>5,400</b>	<b>7,800</b>
<b>Overhead allocation:</b>					
Indirect wages:					
- Machine maintenance	Machine hours	63,343	140,763	395,894	600,000
- Stores	Store consumption	144,000	54,000	162,000	360,000
- Quality control	Inspected hours	72,000	72,000	324,000	468,000
- Cleaning and related services	Factory space utilisation	160,000	140,000	100,000	400,000
Fuel and power	Machine hours	295,601	656,892	1,847,507	2,800,000
Depreciation on plant and machinery	Machinery cost	600,000	400,000	300,000	1,300,000
Depreciation on building (1,560,000-1,300,000)	Factory space utilisation	104,000	91,000	65,000	260,000
Insurance on plant and machinery	Cost of Machinery	110,769	73,846	55,385	240,000
Insurance on building	Factory space utilisation	24,000	21,000	15,000	60,000
Stores, spares and supplies consumed	Actual	720,000	270,000	810,000	1,800,000
Rent, rates and taxes	Factory space utilisation	480,000	420,000	300,000	1,200,000
<b>Total overheads</b>	B	<b>Rs. 2,773,714</b>	<b>2,339,500</b>	<b>4,374,786</b>	<b>9,488,000</b>
Cost per unit	(B/A)	<b>Rs. 231.14</b>	<b>116.98</b>	<b>97.22</b>	

A.2 **Journal entries:**

		Debit	Credit
<b>Rupees</b>			
5-Jun-2010	Raw material	12,750,000	
	Account payable (150,000 x 85)		12,750,000
	<b>(Cost of material purchased)</b>		
6-Jun-2010	Work in process	12,450,000	
	Raw material		12,450,000
	<b>(Issue of raw material to production)</b>		
12-Jun-2010	Raw material	415,000	
	Work in process		415,000
	<b>(Defective material returned from the production)</b>		
15-Jun-2010	Raw material	13,215,000	
	Account payable (150,000 x 88.1)		13,215,000
	<b>(Cost of material purchased)</b>		
17-Jun-2010	Cash (2,500 x 20)	50,000	
	Factory overheads	165,000	
	Raw material		215,000

**COST ACCOUNTING**  
Suggested Answers  
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	<b>(Defective units sold as scrapped)</b>		
18-Jun-2010	Account payable	212,500	
	Raw material		212,500
	<b>(Defective material returned to the supplier)</b>		
19-Jun-2010	Work in process	430,050	
	Raw material		430,050
	<b>(Replacement of defective material to production by the store)</b>		
20-Jun-2010	Raw material	212,500	
	Account payable (2,500 x 85)		212,500
	<b>(Goods returned were replaced by the supplier)</b>		
21-Jun-2010	Work in process	12,900,000	
	Raw material		12,900,000
	<b>(Issue of raw material to production)</b>		
30-Jun-2010	Factory overheads - {500 x (86-30)} (obsolete items)	28,000	
	Factory overheads - (4,000 x 86) (shortages)	344,000	
	Raw material		372,000
	<b>(Cost of obsolete and shortages charged to factory overheads)</b>		

Date	Particulars	Receipts /(Issues)		
		Quantity	Rate	Rupees
01-Jun-2010	Balance	100,000	80.00	8,000,000
05-Jun-2010	purchases	150,000	85.00	12,750,000
	<b>Balance</b>	<b>250,000</b>	<b>83.00</b>	<b>20,750,000</b>
06-Jun-2010	Issues	(150,000)	83.00	(12,450,000)
12-Jun-2010	Returned from production	5,000	83.00	415,000
15-Jun-2010	Purchases	150,000	88.10	13,215,000
	<b>Balance</b>	<b>255,000</b>	<b>86.00</b>	<b>21,930,000</b>
17-Jun-2010	Defective goods sold	(2,500)	86.00	(215,000)
18-Jun-2010	Returned to supplier	(2,500)	85.00	(212,500)
	<b>Balance</b>	<b>250,000</b>	<b>86.01</b>	<b>21,502,500</b>
19-Jun-2010	Replacement to production	(5,000)	86.01	(430,050)
20-Jun-2010	Replacement by supplier	2,500	85.00	212,500
	<b>Balance</b>	<b>247,500</b>	<b>86.00</b>	<b>21,284,950</b>

**A.3 Variable cost per unit:**

	Qty.	Rate	Cost per unit
	Kg.		Rupees
Imported raw material	1.30	750	975.00
Local material	0.50	150	75.00
Total input	1.80		1,050.00
Sale of wastage {1.8-1.6-(0.05*1.8)}	0.11	80	(8.80)
Cost of material per unit			1,041.20
Skilled labour (2 hours @ Rs.300)			600.00
Overheads (2 hours @ Rs. 200)			400.00
Selling and administration cost			359.00
			<b>2,400.20</b>

**Required contribution margin:**

Fixed overheads	
- Depreciation on cost of additional capacity (3,000,000*10%)	300,000
- Incremental administration and other fixed overheads (170,000-150,000)*12	240,000
Required profit after tax Rs. 4,500,000	
Gross profit required before tax (4,500,000/0.65)	6,923,077
Total contribution margin	<b>7,463,077</b>

**COST ACCOUNTING**  
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Sales price per unit at variable cost plus 25% (2,400.20*1.25)	Rs.	<u>3,000.25</u>
Contribution margin per unit sale (3,000.25 – 2400.20)	Rs.	<u>600.05</u>
Sales in units (7,463,077 / 600.05)	Units	<u>12,437</u>

A.4

	Units	Marginal Costing	Absorption Costing	Marginal Costing	Absorption Costing
		Cost per unit	Cost per unit	Rupees	
Sales	21,000	1,100		23,100,000	23,100,000
<b>Cost of goods sold</b>					
Opening stock	950	300+300+45	300+300+45+333.33	612,750	929,414
Production for the year	22,150	648.5	648.5+306.09	14,364,275	21,144,169
Closing inventory	2,100	648.5	648.5+306.09	(1,361,850)	(2,004,639)
				13,615,175	20,068,944
Variable selling and administration cost	21,000	157.89		3,315,690	
<b>Contribution margin / Gross profit</b>				<b>6,169,135</b>	<b>3,031,056</b>
Selling and administration costs			((21,000*157.89) + 7,000,000)		10,315,690
Fixed cost - production			W -2	6,780,000	
Fixed cost - Selling & administration			(70%*10,000,000)	7,000,000	
<b>Net loss</b>				<b>(7,610,865)</b>	<b>(7,284,634)</b>
<b>Profit reconciliation:</b>					
<b>In absorption costing fixed costs:</b>					
- Brought forward from the last year through opening inventory			950*333.33	(316,664)	
- Carried forward to the next year through closing inventory			2,100*306.09	642,789	
- Rounding of difference				106	
				<b>(7,284,634)</b>	<b>(7,284,634)</b>

**W-1: Variable cost per unit for 2010-11**

Raw material	(5*0.95*60*1.04)	296.40
Raw material inspection	(5*0.95*2)	9.50
Labour	(4*0.85*75*1.1)	280.50
Labour incentive cost	30%*(4*0.15*75*1.1)	14.85
Variable production overheads	15*1.05*3	47.25
Variable production costs		648.50
Variable selling and admin. costs	(30%*10,000,000)/19,000	157.89
		<u>806.39</u>

**W-2: Fixed production cost for 2010-11**

Annual fixed production overheads	(6,000,000*1.08)	6,480,000
Training consultant cost		300,000
		<u>6,780,000</u>

**W-3: Fixed production cost per unit**

Year ended June 30, 2010	6,000,000/18,000	333.33
Year ended June 30, 2011	6,780,000/22,150	306.09

**W-4: Production for the year**

		<b>Units</b>
Sales		21,000
Opening inventory	19,000* 5%	(950)
Closing inventory	21,000*10%	2,100
Production for the year		<u>22,150</u>



<p><b>COST ACCOUNTING</b> Suggested Answers Intermediate Examinations – Autumn 2010</p>
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A.5

	Small size	Medium size	Large size
Sales price	75.00	90.00	130.00
Direct material cost	(25.00)	(32.00)	(35.00)
Variable overheads	(5.00)	(7.00)	(8.00)
<b>Contribution margin</b>	<b>45.00</b>	<b>51.00</b>	<b>87.00</b>
Machine hours	2.00	4.00	5.00
Contribution margin per hour	22.50	12.75	17.40
<b>Priority based on contribution per machine hour</b>	<b>1</b>	<b>3</b>	<b>2</b>

Units to be produced:

	Small size	Medium size	Large size	Machine hours
Minimum production - Units	100,000	100,000	100,000	
Hours consumed for minimum production	200,000	400,000	500,000	1,100,000
<b>Units in excess of minimum production in CM priority:</b>				
Small size - Units	110,000			220,000
Large size - Units			80,000	400,000
Medium size - Units		20,000		80,000
<b>Total</b>	<b>210,000</b>	<b>120,000</b>	<b>180,000</b>	<b>1,800,000</b>

A.6

	Description	Quantity			Variance
		Qty.	Rate	Amount	Fav./.(Adv.)
		in '000		Rupees in '000	
	Budgeted gross profit (600-125-200-50-10)	500	215		107,500
	Actual gross profit (295,000-55,000-105,000-26,000-5,100)				103,900
	<b>Decrease in profit</b>				<b>3,600</b>
	<b>Profit variation due to Favourable/(Adverse) variances:</b>				<b>+/(-) in profit</b>
1	<b>Sales price variance</b>				
	Actual sales at actual price			295,000	
	Actual sales at standard price	480	600	288,000	7,000
2	<b>Sales volume variance</b>				
	Actual units sold at standard profit	480	215	103,200	
	Budgeted units sold at standard profit	500	215	107,500	(4,300)
3	<b>Material price variance</b>				
	Actual quantity used at actual rate			55,000	
	Actual quantity used at standard rate	950	50	47,500	(7,500)
4	<b>Material usage variance</b>				
	Actual quantity used at standard rate	950	50	47,500	
	Standard quantity used at standard rate (480 × 2.5)	1,200	50	60,000	12,500



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5	<b>Labour rate variance</b>				
	Actual hours used at actual rate			105,000	
	Actual hours used at standard rate	990	100	99,000	(6,000)
6	<b>Labour efficiency variance</b>				
	Actual hours used at standard rate	990	100	99,000	
	Standard hours used at standard rate (480 × 2)	960	100	96,000	(3,000)
7	<b>Factory overheads spending variance</b>				
	Actual fixed and variable overheads			31,100	
	Budgeted overheads:				
	Budgeted fixed overheads	500	10	5,000	
	Variable overheads based on actual hours used at standard rate	990	25	24,750	
				29,750	(1,350)
8	<b>Variable overheads efficiency variance</b>				
	Actual hours used at standard rate	990	25	24,750	
	Standard hours used at standard rate (480 × 2)	960	25	24,000	(750)
9	<b>Fixed overheads efficiency variance</b>				
	Actual units produced	480	10	4,800	
	Standard production in actual hours (990/2)	495	10	4,950	(150)
10	<b>Fixed overheads capacity variance</b>				
	Capacity used at standard (990/2)	495	10	4,950	
	Capacity available	500	10	5,000	(50)
	<b>Decrease in profit</b>				<b>(3,600)</b>

**A.7 Journal entries**

	Debit	Credit
	Rupees in '000	
Payroll expense	2,030.83	
Provision for vacations pay (vacations availed during the month)	85.00	
Payroll payable (1,635-193+85)		1,527.00
Contribution to provident fund payable (Co. & employees)		250.00
Provision for bonus		125.00
Provision for vacation pay		145.83
Employees' income tax payable		40.00
Advance against salary		28.00
(To record payroll cost, liability and provisions)		
Work in process (1,338.88+545.56)	1,884.44	
Factory overheads (36.60+109.79)	146.39	
Payroll expenses		2,030.83
(To allocate payroll cost to WIP and factory overheads)		
Advance against salary	17.00	
Payroll payable	1,527.00	
Contribution to provident fund payable (Co. & employees)	250.00	
Employees' income tax payable	40.00	
Bank		1,834.00

**COST ACCOUNTING**  
Suggested Answers  
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(To record disbursement of payroll and payment of liabilities)						
		Machining	Assembly	Tool room	Stores	Total
		WIP			Overheads	
		Rupees in '000				
<b>Cost</b>						
Payroll cost	<b>A</b>	1,000.00	400.00	25.00	75.00	1,500.00
Overtime		75.00	40.00	5.00	15.00	135.00
		<b>1,075.00</b>	<b>440.00</b>	<b>30.00</b>	<b>90.00</b>	<b>1,635.00</b>
Employer's contribution to PF	(A*0.833)	83.33	33.34	2.09	6.25	125.00
Provision for year-end bonus	(A/12)	83.33	33.34	2.08	6.25	125.00
Provision for paid vacation	(A*35/360)	97.22	38.89	2.43	7.29	145.83
		<b>1,338.88</b>	<b>545.56</b>	<b>36.60</b>	<b>109.79</b>	<b>2,030.83</b>
<b>Deductions from employees:</b>						
Employee income tax		25.00	15.00	-	-	40.00
Employees' contribution to PF	(A*0.833)	83.33	33.33	2.08	6.25	125.00
Salary advance recoveries						28.00
		<b>108.33</b>	<b>48.33</b>	<b>2.08</b>	<b>6.25</b>	<b>193.00</b>

(THE END)



The Institute of Chartered Accountants of Pakistan

## Cost Accounting

Intermediate Examination – Spring 2011  
Module D

March 11, 2011  
100 marks - 3 hours

- Q.1 (a) The management of Opal Limited (OL) is in the process of preparing next year's budget and has gathered the following information:

(i)	Sales	180,000 units per month @ Rs. 110 per unit
(ii)	Material "A"	75% of finished product @ Rs. 45 per unit
(iii)	Material "B"	25% of finished product @ Rs. 30 per unit
(iv)	Yield	80%
(v)	Labour Rate	Rs. 18,000 per month
(vi)	Average working hours in a month	200 hours
(vii)	Time required for each unit of product	20 minutes
(viii)	Variable overhead	Rs. 15 per unit of raw material consumed
(ix)	Fixed Overhead	Rs. 10,000,000 per annum

**Required:**

Assuming there is no beginning or ending inventory of the product, calculate OL's budgeted gross profit for the next year. (06 marks)

- (b) The Board of Directors of Opal Limited while reviewing next year's budgeted margins, as calculated in (a) above, expressed their serious concerns on the projected profits. After careful analysis of all activities by a cross-functional team of OL, the directors approved a plan of action to improve the overall performance of the company.

The salient features of their plan are as under:

- (i) Import of Material "A" from abroad at a cost of Rs. 48 per unit, this is expected to improve the overall yield by 12.5%.
- (ii) Based on a detailed study, the installation of a new system of production has been proposed. The expected cost of the system is Rs. 7.5 million with an expected useful life of 5 years. An incentive scheme for the workers have also been proposed by allowing them to share 45% of the time saved for making each unit of product.  
The above measures are expected to reduce the average time for making each unit of product by 30%.
- (iii) Introduction of improved management standards which is expected to reduce the variable overheads by 20%.
- (iv) Re-assessment of controllable fixed overhead expenses. This is likely to reduce OL's existing fixed overheads by 15%.

**Required:**

In view of the preceding improvement plan and the data provided in (a) above, calculate OL's revised budgeted gross profit for the next year. (13 marks)



- Q.2 Amber Limited (AL) manufactures a single product. Following information pertaining to the year 2010 has been extracted from the records of the company's three production departments.

	Department	Material	Labour	Machine
		Rs. in million	Hours	
<b>Budgeted</b>	A	80	200,000	400,000
	B	150	500,000	125,000
	C	120	250,000	350,000
<b>Actual</b>	A	80	220,000	340,000
	B	150	530,000	120,000
	C	120	240,000	320,000

AL produced 3.57 million units during the period. The budgeted labour rate per hour is Rs. 120. The overheads for department-A is budgeted at Rs. 5.0 million, for department-B at 15% of labour cost and for department-C at 5% of prime cost of the respective departments. Actual overheads for department A, B and C are Rs. 5.35 million, Rs. 8.90 million and Rs. 7.45 million respectively.

Overheads are allocated on the following basis:

Department-A	Machine hours
Department-B	Labour hours
Department-C	% of prime cost

There was no beginning or ending inventory in any of the production departments.

**Required:**

- (a) Budgeted overhead application rate for each department. *(05 marks)*
- (b) The total and departmental actual cost for each unit of product. *(08 marks)*
- (c) The over or under applied overhead for each department. *(03 marks)*

- Q.3 Zircon Limited (ZL) manufactures and supplies footballs for both domestic and international markets. Following information is available from the company's records.

Number of skilled workers	250
Standard working hours per month	200
Actual hours per unit of product	1.5
Standard labour rate per hour (Rupees)	42
Variable overhead rate per labour hour (Rupees)	75

The company manufactures 40,000 footballs per month. Overtime is paid to the workers at the rate of 75% over and above the standard wage rate.

In order to increase the production efficiency and reduce the cost of conversion, the management is currently evaluating various wage incentive plans. The production manager has suggested the following options to the management.

**Option 1:** Introduce a piece wage system at the rate of Rs. 72 per unit. It is expected to improve the current production efficiency from 65% to 78%.

**Option 2:** Introduce a monthly group bonus plan with a guaranteed wage of Rs. 48 per hour based on a standard 1.4 hours per unit of product. This plan is expected to reduce the overtime by 60%.

**Required:**

Evaluate the above options in contrast with the existing scheme and advise the management about the most economical option. *(15 marks)*



- Q.4 Topaz Limited (TL) is the manufacturer of consumer durables. Pearl Limited, one of the major customers, has invited TL to bid for a special order of 150,000 units of product Beta.

Following information is available for the preparation of the bid.

- (i) Each unit of Beta requires 0.5 kilograms (kg) of material "C". This material is produced internally in batches of 25,000 kg each, at a variable cost of Rs. 200 per kg. The setup cost per batch is Rs. 80,000. Material "C" could be sold in the market at a price of Rs. 225 per kg. TL has the capacity to produce 100,000 kg of material "C"; however, the current demand for material "C" in the market is 75,000 kg.
- (ii) Every 100 units of product Beta requires 150 labour hours. Workers are paid at the rate of Rs. 9,000 per month. Idle labour hours are paid at 60% of normal rate and TL currently has 20,000 idle labour hours. The standard working hours per month are fixed at 200 hours.
- (iii) The variable overhead application rate is Rs. 25 per labour hour. Fixed overheads are estimated at Rs. 22 million. It is estimated that the special order would occupy 30% of the total capacity. The production capacity of Beta can be increased up to 50% by incurring additional fixed overheads. The fixed overhead rate applicable to enhanced capacity would be 1.5 times the current rate. The utilized capacity at current level of production is 80%.
- (iv) The normal loss is estimated to be 4% of the input quantity and is determined at the time of inspection which is carried out when the unit is 60% complete. Material is added to the process at the beginning while labour and overheads are evenly distributed over the process.
- (v) TL has the policy to earn profit at the rate of 20% of the selling price.

**Required:**

Calculate the unit price that TL could bid for the special order to Pearl Limited. (14 marks)

- Q.5 Emerald Limited (EL) is engaged in the manufacture and sale of a single product. Following statement summarizes the performance of EL for the first two quarters of the financial year 20X2:

	Quarter 1	Quarter 2
Sales volume in units	580,000	540,000
	<b>Rs in '000</b>	
Sales revenue	493,000	464,400
<b>Cost of Goods sold</b>		
Material	(197,200)	(183,600)
Labour	(98,600)	(91,800)
Factory overheads	(84,660)	(80,580)
	(380,460)	(355,980)
<b>Gross Profit</b>	112,540	108,420
Selling and distribution expenses	(26,500)	(25,500)
Administrative expenses	(23,500)	(23,500)
	(50,000)	(49,000)
<b>Net Profit</b>	62,540	59,420

In the second quarter of the year EL increased the sale price, as a result of which the sales volume and net profit declined. The management wants to recover the shortfall in profit in the third quarter. In order to achieve this target, the product manager has suggested a reduction in per unit price by Rs. 15.

The marketing director however, is of the opinion that if the price of the product is reduced further, the field force can sell 650,000 units in the third quarter. It is estimated that to produce more than 625,000 units the fixed factory overheads will have to be increased by Rs. 2.5 million.

**Required:**

- (a) Compute the minimum number of units to be sold by EL at the reduced price, to recover the shortfall in the second quarter profits.
- (b) Determine the minimum price which could be charged to maintain the profitability calculated in (a) above, if EL wants to sell 650,000 units. (14 marks)

- Q.6 (a) Briefly describe the following terms:  
 (i) Marginal cost      (ii) Stock out cost      (iii) Sunk cost      (iv) Cost unit  
(06 marks)

- (b) Sapphire limited (SL) fabricates parts for auto manufacturers and follows job order costing. The company's head office is situated in Lahore but the factory is in Karachi. A separate set of records is kept at the head office and at the factory. Following details were extracted from SL's records for the month of February 2011.

	Jobs		
	A	B	C
Materials issued to production (units)			
▪ Material X	40,000	-	10,000
▪ Material Y	-	75,000	25,000
Direct labour hours worked (hours)	6,000	9,000	15,000
Labour rate per hour (Rs.)	75	60	65

The other related information is as follows:

- (i) Materials purchased on account:
  - 100,000 units of material X at Rs. 25 per unit
  - 150,000 units of material Y at Rs. 35 per unit
- (ii) The head office prepared the payroll and deducted 8% for payroll taxes. The payroll amounted to Rs. 3.0 million out of which Rs. 1.0 million pertained to selling and administrative staff salaries. After charging direct labour cost to each job the balance amount of payroll cost was attributed to general factory overhead.
- (iii) Factory overhead was applied to the jobs at Rs. 25 per direct labour hour.
- (iv) Actual factory overheads amounted to Rs. 700,000 including depreciation on machinery amounting to Rs. 400,000. All payments were made by head office.
- (v) Over or under-applied factory overheads are closed to cost of goods sold account.
- (vi) Jobs A and B were completed during the month. Job A was sold for Rs. 2.0 million to one of the auto manufacturer on credit. The customer however, agreed to settle the transaction at 2% cash discount.
- (vii) Selling and administrative expenses, other than salaries paid during the month were Rs. 500,000.

**Required:**

Prepare journal entries to record all the above transactions in SL's factory ledger and general ledger for the month of February 2011. (16 marks)

(THE END)



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A.1	(a)	<b>Computation of budgeted gross profit</b>	<b>Rupees</b>
		Sales (180,000 units × 12 × Rs. 110)	237,600,000
		<b>Less: Cost of sales</b>	
		Material "A" (2.16 million × 75% × 1/80% × Rs. 45)	91,125,000
		Material "B" (2.16 million × 25% × 1/80% × Rs.30)	20,250,000
		Labour [20 min. /60 × 2.16 million × (Rs. 18,000/200)]	64,800,000
		Variable overhead (2.16 million × 1/80% × Rs. 15)	40,500,000
		Fixed Overhead	10,000,000
			(226,675,000)
		<b>Budgeted Gross Profit</b>	10,925,000
		 (b) <b>Computation of revised budgeted gross profit</b>	 <b>Rupees</b>
		Sales (180,000 units × 12 × Rs. 110)	237,600,000
		<b>Less: Cost of sales</b>	
		Material "A" [2.16 million / (0.8 × 1.125) × 0.75 × Rs. 48]	86,400,000
		Material "B" [2.16 million / (0.8 × 1.125) × 0.25 × Rs. 30]	18,000,000
		Labour Cost (W-1)	54,108,000
		Variable overhead (Rs. 15 × 80%) × [(2.16 million/90%)]	28,800,000
		Fixed overhead (Additional depreciation: Rs. 7.5 million /5)	1,500,000
		Fixed Overhead (Rs. 10 million) × (1-0.15)	8,500,000
			(197,308,000)
		<b>Revised Budgeted Gross Profit</b>	40,292,000
		 <b>W-1 Computation of revised labour cost</b>	
		Time required for one unit of finished product	20 Minutes
		Expected saving of time (20 Minutes × 30%)	6 Minutes
		Revised time for one unit of finished product	14 minutes
		Workers share of the time saved	Rs. 8,748,000
		[(6 min./60 × 0.45 × 2.16 million × (Rs. 18000 / 200)]	
		labour cost (14 min./ 60 × 2.16 million) × (Rs. 18,000/200)	Rs. 45,360,000
			Rs.54,108,000
		 (a) <b>Budgeted overhead rate for department-A</b>	 <b>Rs. in million</b>
		Budgeted Overhead rate per machine hour (OHD/MH Rs.5m/400,000)	Rs. 12.5
		 <b>Budgeted overhead rate for department-B</b>	
		Budgeted labour cost (Rs. 120 × 500,000)	60
		Budgeted overhead (Rs. 60 m × 15%)	9
		Budgeted overhead rate per labour hour (Rs. 9 m/0.5 m)	18
		 <b>Budgeted overhead rate for department-C</b>	
		Budgeted overhead as a % of Prime Cost (Rs.7.5 m /150 m)	5%



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(b) Computation of actual cost of producing one unit of product:

	Departments		
	-----Rupees in million-----		
	A	B	C
Material cost	80.00	150.00	120.00
Labour cost			
(0.22 m × Rs. 120)	26.40		
(0.53 m × Rs. 120)		63.60	
(0.24 m × Rs. 120)			28.80
Actual overhead cost	5.35	8.90	7.45
Total Cost	111.75	222.50	156.25
Unit cost (Cost/3.57 m. units) (Rs.)	31.30	62.32	43.77
<b>Total Actual Cost per unit (Rs.)</b>		<b>137.39</b>	

(c) Applied Overhead Cost			
(0.34 m × 12.5)	4.25		
(0.53 m × Rs. 18)		9.54	
(Rs. 148.8 m × 5%)			7.44
Actual Overhead Cost	5.35	8.90	7.45
Under applied / (over applied)	1.10	(0.64)	0.01

**A.3 Existing Conversion Cost**

No. of labour hours required (40,000 × 1.5)	60,000
Labour hours available at standard rate (250 × 200)	50,000
Overtime hours	<u>10,000</u>

**Labour cost**

Normal hours ( 50,000 × Rs. 42)	2,100,000
Overtime hours ( 10,000 × Rs. 73.50)	735,000
Total labour cost	<u>2,835,000</u>
Variable overhead (60,000 × Rs. 75)	4,500,000
Total conversion cost	<u>7,335,000</u>

**Option - 1**

No. of hours required per unit (1.5 × 0.65/ 0.78)	1.25
Total no. of hours required (40,000 × 1.25)	50,000
Piece wages (40,000 × 72)	2,880,000
Variable overhead ( 50,000 × 75)	3,750,000
Total conversion cost	<u>6,630,000</u>

**Option - 2**

Labour hours available (250 × 200)	50,000
Overtime hours (10,000 × 40%)	4,000
Total labour hours	<u>54,000</u>
Standard hours allowed for the bonus plan (40,000 × 1.4)	<u>56,000</u>

Guaranteed wages (56,000 × 48)	2,688,000
Variable overhead (54,000 × 75)	4,050,000
Total conversion cost	<u>6,738,000</u>

**Recommendation:** By implementing option 1 the conversion cost would be reduced to Rs 165.75 per unit from the existing Rs. 183.38 per unit. The workers would be paid Rs. 2.880 million which is better than option 2. The workers would certainly try to earn this amount in the least possible time.

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Therefore, option 1 would be the most economical choice for both the workers and the management.

A.4	Calculation of unit price to be quoted to Pearl Limited:		
	Material $(25,000 \times 200) + (53,125 \times 225) + 80,000$	W-1	17,033,125
	Labour $(20,000 \times 45 \times 40\%) + (210,625 \times 45)$	W-2	9,838,125
	Variable overhead $(230,625 \times \text{Rs. } 25)$		5,765,625
	Incremental fixed cost $(22\text{m} / 10 \times 1.5)$		3,300,000
			35,936,875
	Profit margin (25% of cost)		8,984,219
	Sale price		44,921,094
	Sale price per unit (Rs. 44,921,094 / 150,000)		299

**W-1: Material**

Input units of material C  $(150,000 / 96\%) \times 0.5$  78,125

**W-2: Labour**

Labour hours – completed units  $150,000 \times 1.50$  225,000  
 – lost units  $\{[(150,000 / 0.96) - 150,000] \times 1.5 \times 60\%\}$  5,625  
230,625

A.5 (a) Revised(reduced) Selling price (Rs.464,400 / 540,000 × 1000) - 15 Rs. 845

	<b>Rs. in '000</b>
Shortfall in profit of last quarter	3,120
Profit for the 1st quarter	62,540
Target profit for the third quarter	65,660
Add: Fixed cost	
Administration cost	23,500
Fixed factory overhead (W-1)	25,500
Fixed selling and distribution expense (W-1)	12,000
	61,000
Targeted contribution margin	126,660
Contribution margin per unit (845-637) (W-2)	Rs. 208
No. of units to be sold	608,942

**W - 1: Computation of fixed factory overhead using high low method**

	Factory overheads	Selling and distribution expenses
At 580,000 volume	84,660,000	26,500,000
At 540,000 volume <b>A</b>	80,580,000	25,500,000
Difference <b>B</b>	4,080,000	1,000,000
Variable cost per unit <b>C</b>	102	25
Fixed cost [A - (540,000 × C)]	25,500,000	12,000,000

**W - 2: Computation of variable cost per unit**

	<b>Rupees</b>
Material $(183,600 / 540,000) \times 1000$	340
Labour $(91,800 / 540,000) \times 1000$	170
Factory overheads	102
Selling and distribution expenses	25
	637

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(b) Minimum price that should be charged if EL wants to sell 650,000 units

	Rs. '000
Required contribution as above	126,660
Additional fixed cost	2,500
	129,160
No. of units to be sold	650,000
Required contribution margin per unit	198.71
Variable cost per unit	637.00
Minimum price	835.71

A.6 (a) Briefly describe the following terms:

- (i) **Marginal cost:**  
It is the cost of producing one additional unit at a given volume of output.
- (ii) **Stock out cost:**  
These costs result from not having enough inventories in stock to meet customers' needs. These costs include lost sales, customers' ill will and the costs of expediting orders for goods not in stock.
- (iii) **Sunk cost:**  
A sunk cost is a historical or past cost that the company has already incurred. These costs cannot be changed / recovered in any case and are ignored while making a decision.
- (iv) **Cost unit:**  
A cost unit is a unit of product or unit of service for which costs are ascertained by means of allocation, apportionment and absorption. It is a unit of quantity of product, service or time or a combination of these in relation to which costs are expressed or ascertained.

(b)

**General Journal entries**

Date	Particulars	Factory Ledger		Particulars	General Ledger	
		Debit	Credit		Debit	Credit
❖	Material X	2,500,000		Factory Ledger	7,750,000	
	Material Y	5,250,000		Trade Creditors		7,750,000
	General Ledger (Purchase of material)		7,750,000			
❖	Payroll	2,000,000		Factory Ledger	2,000,000	
	General Ledger		2,000,000	Selling and administrative expenses	1,000,000	
	(Payroll accrual)			Accrued Payroll		2,760,000
				Payroll taxes		240,000
❖	No Entry			Accrued payroll	2,760,000	
				Payroll Taxes	240,000	
				Bank		3,000,000
				(Payment of payroll & taxes)		



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❖	Work in process A	1,000,000				
	Work in process B	2,625,000				
	Work in process C	1,125,000			No Entry	
	Material X		1,250,000			
	Material Y		3,500,000			
	(Issuance of raw material to WIP)					
❖	Work in process A	450,000				
	Work in process B	540,000				
	Work in process C	975,000			No Entry	
	Factory overheads	35,000				
	Payroll		2,000,000			
	(Direct labour cost allocated to WIP)					
❖	Work in process A	150,000				
	Work in process B	225,000				
	Work in process C	375,000			No Entry	
	Factory overheads - applied		750,000			
	(Factory overheads applied to WIP)					
❖	Factory overheads	700,000			Factory Ledger	700,000
	General Ledger		700,000		Bank	300,000
					Accumulated Depreciation	400,000
					(Actual factory overheads transferred)	
❖	Factory overheads - applied	15,000			Factory Ledger	15,000
	General Ledger		15,000		Cost of goods sold	15,000
	(Over applied overheads transferred to cost of goods sold)					
❖	Finished goods A	1,600,000				
	Finished goods B	3,390,000			No Entry	
	Work in process A		1,600,000			
	Work in process B		3,390,000			
	(Jobs A and B completed and transferred to finished goods)					
❖	General Ledger	1,600,000			Cost of goods sold	1,600,000
	Finished goods A		1,600,000		Factory Ledger	1,600,000
	(Job A delivered and transferred to cost of goods sold)					
❖	No Entry				Trade Debtors	2,000,000
					Sales	2,000,000
					(Job A sold to	

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				customer)		
❖	No Entry			Bank	1,960,000	
				Cash discount	40,000	
				Trade debtors		2,000,000
				(Amount realized from customer)		
❖	No Entry			Selling and administrative expenses	500,000	
				Bank		500,000
				(Payment of Selling and admin. Expenses)		

(THE END)



The Institute of Chartered Accountants of Pakistan

## Cost Accounting

Intermediate Examination  
Autumn 2011  
Module D

9 September 2011  
100 marks – 3 hours  
Additional reading time – 15 minutes

*(All questions are compulsory)*

- Q.1 Sparrow (Pvt) Limited (SPL) is engaged in the manufacture of two products A and B. These products are manufactured on two machines M1 and M2 and are passed through two service departments, Inspection and Packing, before being delivered to the warehouse for final distribution. SPL's overhead expenses for the month of August 2011 were as follows:

	Rupees
Electricity	2,238,000
Rent	1,492,000
Operational expenses of machine M1	5,500,000
Operational expenses of machine M2	3,200,000

Following information relates to production of the two products during the month:

	A	B
Units produced	5,600	7,500
Labour time per unit – Inspection department	15 minutes	12 minutes
Labour time per unit – Packing department	12 minutes	10 minutes

The area occupied by the two machines M1 and M2 and the two service departments is as follows:

	Square feet
Machine M1	5,500
Machine M2	4,800
Inspection department	12,000
Packing department	15,000

Machine M1 has produced 50% units of product A and 65% units of product B whereas machine M2 has produced 50% units of product A and 35% units of product B.

**Required:**

Allocate overhead expenses to both the products A and B.

*(18 marks)*

- Q.2 (a) Bulbul Limited (BL) produces a specialized product for industrial customers. Following are the details of BL's monthly production and associated cost for the past six months:

Months	Units	Cost (Rs. '000)
March	75	900
April	60	700
May	65	850
June	80	950
July	105	1,200
August	95	1,040

**Required:**

Using the least square method, calculate the estimated cost to produce 110 units.

*(09 marks)*



- (b) Mr. Lark works as a machinist on a machine running 54 hours a week. Following information pertains to his last week's work on the machine:

Total hours worked	51 hours
Overtime ( included in total hours worked)	4 hours
Idle time due to machine break down	3 hours
Basic hourly wage rate	Rs. 25

The overtime is paid at basic rate plus 45%.

**Required:**

Calculate the total wages paid to Mr. Lark allocating it between direct and indirect labour. Also give reasons for such allocation. (05 marks)

- Q.3 (a) Pelican Limited produces and markets a single product Zeta. The company uses a standard costing system. Following is the standard material mix for the production of 400 units of Zeta.

	Weight (Kg.)	Standard rate per Kg. (Rs.)
Material A	30	240
Material B	25	320

Actual costs on the production of 192 units of Zeta for the month of August 2011 were as follows:

	Weight (Kg.)	Actual rate per Kg. (Rs.)
Material A	16	230
Material B	13	308

**Required:**

Calculate the following material variances from the above data:

- (i) Cost variance                      (ii) Price variance                      (iii) Mix variance  
(iv) Yield variance                      (v) Usage variance (15 marks)

- (b) Following data is available from the production records of Flamingo Limited (FL) for the quarter ended 30 June 2011.

	Rupees
Direct material	120,000
Direct labour @ Rs. 4 per hour	75,000
Variable overhead	70,000
Fixed overhead	45,000

The management's projection for the quarter ended 30 September 2011 is as follows:

- (i) Increase in production by 10%.  
(ii) Reduction in labour hour rate by 25%.  
(iii) Decrease in production efficiency by 4%.  
(iv) No change in the purchase price and consumption per unit of direct material.

Variable overheads are allocated to production on the basis of direct labour hours.

**Required:**

Prepare a production cost budget for the quarter ended 30 September 2011. (04 marks)

- Q.4 Hornbill Limited (HL) produces certain chemicals for textile industry. The company has three production departments. All materials are introduced at the beginning of the process in Department-A and subsequently transferred to Department-B. Any loss in Department-B is considered as a normal loss. Following information has been extracted from the records of HL for Department-B for the month of August 2011:

	Department B
Opening work in process (Litres)	Nil
Closing work in process (Litres)	10,500
Units transferred from Department-A (Litres)	55,000
Units transferred to Department-C (Litres)	39,500
Labour (Rupees)	27,520
Factory overhead (Rupees)	15,480

Materials from Department-A were transferred at the cost of Rs. 1.80 per litre. The degree of completion of work in process as to cost originating in Department-B were as follows:

WIP	Completion %
50% units	40%
20% units	30%
30% units	24.5%

**Required:**

Prepare cost of production report for Department-B for the month of August 2011. (15 marks)

- Q.5 Seagull Limited (SL) is engaged in the manufacture of Basketballs, Footballs and Rugby balls for the professional leagues and collegiate play. These balls are produced from different grades of synthetic leather. Relevant information available from SL's business plan for the manufacture of each unit is as under:

	Football	Basketball	Rugby Ball
Cost of leather	Rs. 38	Rs. 238	Rs. 255
Time required for each unit of product.	2 hours	1 hour	1.5 hour
Variable overheads (based on labour cost)	65%	50%	60%

The labourers are paid at a uniform rate of Rs. 50 per hour. SL allocates fixed overheads to each of the above product at the rate of Rs. 4 per direct labour hour.

Following further information is also available:

		Football	Basketball	Rugby Ball
Annual budgeted sales volume	(Units)	5000	3500	2000
Selling price per unit of product	(Rs.)	295	397	500
Cost of leather per sq. ft	(Rs.)	95	340	510

The above sales volumes are based on the market demand for these products. However, due to financial crises, SL is expected to procure only 3,840 sq. ft. of leather from the tanneries.

The sales department has already accepted an order of 800 footballs, 1,300 basketballs and 400 rugby balls from a renowned professional league in the country. These quantities are already included in the above budgeted sales volume. The non compliance of this order will result in a penalty of Rs. 400,000.

**Required:**

Based on the budgeted volumes, determine the optimum production plan and also calculate the net profit for the year. (16 marks)

- Q.6 (a) Penguin Limited (PL) produces and markets a single product. The company's management has raised concerns about the declining sales due to frequent stock-outs. In order to resolve the problem, the finance manager has gathered following information from PL's records:

Carrying costs of inventory (excluding financing costs)	8% p.a.
Variable costs of inventory	80% of sales
Fixed costs	Rs. 40,000 p.a.
Applicable tax rate	30%

Based on stock-out reports, the finance manager has worked out three policies for the improvement of sales and the projected data is as follows:

Inventory Policy	Inventory turnover (based on cost of goods sold)	Sales (Rs. in 000')
Existing	8	300,000
PI	7	422,500
PII	6	527,500
PIII	5	620,000

**Required:**

Which of the above policy would maximize the incremental rate of return on investment in inventories? (13 marks)

- (b) Robin Limited (RL) imports a high value component for its manufacturing process. Following data, relating to the component, has been extracted from RL's records for the last twelve months:

Maximum usage in a month	300 units
Minimum usage in a month	200 units
Average usage in a month	225 units
Maximum lead time	6 months
Minimum lead time	2 months
Re-order quantity	750 units

**Required:**

Calculate the average stock level for the component.

(05 marks)

(THE END)



<p><b>COST ACCOUNTING</b> Suggested Answers Intermediate Examinations – Autumn 2011</p>
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A.1 Allocation of costs to cost centres	Basis	Machine M1	Machine M2	Inspection	Packing	Total
Area Occupied		5,500	4,800	12,000	15,000	37,300
Allocation of Electricity	Area	330,000	288,000	720,000	900,000	2,238,000
Allocation of rent	Area	220,000	192,000	480,000	600,000	1,492,000
Operational cost		5,500,000	3,200,000	-	-	8,700,000
		6,050,000	3,680,000	1,200,000	1,500,000	12,430,000

**ALLOCATION OF COST TO PRODUCTS**

Basis of Cost Allocation	A	B	TOTAL
Units produced	5,600	7,500	
Inspection time (hrs.) (5,600 x 15 min /60) & (7,500 x 12 min /60)	1,400	1,500	2,900
Packing time (hrs.) (5,600 x 12 min /60) & (7,500 x 10 min /60)	1,120	1,250	2,370
Units produced on Machine M1 (50% A and 65% B)	2,800	4,875	7,675
Units produced on Machine M2 (50% A and 35% B)	2,800	2,625	5,425
<b>Cost Allocated</b>			
Machine M1 cost	2,207,166	3,842,834	6,050,000
Machine M2 cost	1,899,355	1,780,645	3,680,000
Inspection department cost	579,310	620,690	1,200,000
Packing department cost	708,861	791,139	1,500,000
	5,394,692	7,035,308	12,430,000

A.2	(a)		Units (x)	Cost Rs.000' (y)	(xy)	(x <sup>2</sup> )
		March 2011	75	900	67,500	5,625
		April 2011	60	700	42,000	3,600
		May 2011	65	850	55,250	4,225
		June 2011	80	950	76,000	6,400
		July 2011	105	1,200	126,000	11,025
		August 2011	95	1,040	98,800	9,025
			480	5,640	465,550	39,900

$$b \text{ (Variable cost per unit)} = \frac{n(\sum xy) - (\sum x)(\sum y)}{n(\sum x^2) - (\sum x)^2} = \frac{6 \times 465,550 - 480 \times 5,640}{6(39,900) - (480)^2} = 9.57$$

$$a \text{ (Fixed costs per month)} = \frac{(\sum y) - b(\sum x)}{n} = \frac{(5,640 - 9.57(480))}{6} = 174$$

**Estimated cost to produce 110 units:**

$$Y = a + b(x)$$

$$= 174 + 9.57 \times 110 = \text{Rs. } 1,227$$

(b) Allocation of wages between direct and indirect labour

	Direct	Indirect Rupees	Total
Normal wages (47 x Rs. 25)	1,175	-	1,175
Overtime wages (4 x Rs. 25)(4 x 25 x 0.45)	100	45	145
Idle time wages (3 x Rs. 25)	-	75	75
	1,275	120	1,395

**COST ACCOUNTING**

Suggested Answers

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**Reasons for the allocation:**

Normal wages paid for production will be charged to production. The portion of the overtime wages which is paid in excess of the normal wages should be charged to indirect labour as it does not give extra production. Idle time wages are unproductive, therefore will be charged to indirect labour.

A.3 (a) (i) **Standard quantity for actual production at standard price:**

<i>Materials</i>	<i>Quantity (kg)</i>	<i>Price Per Kg(Rs.)</i>	<i>Amount</i>
A (30/400 × 192)	14.4	240	3,456
B (25/400 × 192)	12	320	3,840
	26.4		7,296

(ii) **Actual quantity at actual price:**

<i>Materials</i>	<i>Quantity (kg)</i>	<i>Price Per Kg(Rs.)</i>	<i>Amount</i>
A	16	230	3,680
B	13	308	4,004
	29		7,684

(iii) **Actual quantity used at standard price:**

<i>Materials</i>	<i>Quantity (kg)</i>	<i>Price Per Kg(Rs.)</i>	<i>Amount</i>
A	16	240	3,840
B	13	320	4,160
	29		8,000

(iv) **Standard mix of actual total input at standard price:**

<i>Materials</i>	<i>Quantity (kg)</i>	<i>Price Per Kg(Rs.)</i>	<i>Amount</i>
A (30/55 × 29)	15.82	240	3,796.80
B (25/55 × 29)	13.18	320	4,217.75
	29		8,014.55

**Direct Material Cost Variance**

$$SC - AC = (i) - (ii) = 7,296 - 7,684 = \text{Rs. } 388 \text{ adverse}$$

**Direct Material Price Variance**

$$AQ (SP-AP) = (iii) - (ii) = 8,000 - 7,684 = \text{Rs. } 316 \text{ favourable}$$

**Direct Material Usage Variance**

$$SP (AQ-SQ) = (iii) - (i) = 8,000 - 7,296 = \text{Rs. } 704 \text{ adverse}$$

**Direct Material Mix Variance**

$$SP (SQ-AQ) = (iv) - (iii) = 8,014.55 - 8,000 = \text{Rs. } 14.55 \text{ favourable}$$

**Direct Material Yield Variance**

$$SR (SY-AY) = (iv) - (i) = 8,014.55 - 7,296 = \text{Rs. } 718.55 \text{ adverse}$$

**COST ACCOUNTING**  
Suggested Answers  
Intermediate Examinations – Autumn 2011

(b) **Production Cost Budget**

	Actual (30-06-2011)	Budget (30-09-2011)
	Rupees	
Direct material cost	120,000	132,000
Direct labour cost (W-1)	75,000	64,350
<b>Prime Cost</b>	<b>195,000</b>	<b>196,350</b>
<b>Production Overhead:</b>		
Variable	70,000	80,080
Fixed	45,000	45,000
<b>Total cost</b>	<b>310,000</b>	<b>321,430</b>

**W-1:**

The labour hours will increase by 10%. Also there will be increase in labour hours as production efficiency has decreased by 4%. Therefore, increased total labour hours will be:

$$(75,000 \div 4) = 18,750 \times \frac{110}{100} \times \frac{104}{100} = 21,450$$

Rate is decreased to Rs. 3. Therefore, direct labour cost will be 21,450 x 3 = Rs. 64,350.

A.4

**Hornbill Limited – Department-B**  
**Cost of Production Report**  
**For the Month of August, 2011**

**Quantity schedule: (in litres)**

Work in process - opening	-	
Units received from department-A		55,000
Units transferred to department-C	39,500	
Work in process - closing	10,500	
Units lost in process – Normal loss (balancing figure)	5,000	
		55,000

**Equivalent production statement (in litres)**

	Labour	FOH
Units transferred to department-C	39,500	39,500
Work in process – closing (10,500 × 0.3335) (W-1)	3,500	3,500
<b>Equivalent Units</b>	<b>43,000</b>	<b>43,000</b>

**Cost charged to department:**

	Total Cost	Unit Cost
	Rupees	
<b>Cost from preceding department:</b>		
Transferred in during the month (55,000 × 1.80)	99,000	1.80
<b>Cost added by the department:</b>		
Labour (W-2)	27,520	0.64
Factory overhead (W-2)	15,480	0.36
<b>Total cost added</b>	<b>43,000</b>	<b>1.00</b>
Adjustment for lost units (W-3)		0.18
<b>Total cost to be accounted for</b>	<b>142,000</b>	<b>2.98</b>



**COST ACCOUNTING**

Suggested Answers

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**Cost Accounted for as Follows:**

Transferred to department-C	(39,500 × Rs 2.98)	117,710
<i>Work in process - ending inventory:</i>		
Cost from department-1	[10,500 × (Rs. 1.8 + Rs. 0.18)]	20,790
Labour	(3,500 × Rs. 0.64)	2,240
Factory overhead	(3,500 × Rs. 0.36)	1,260
Total cost accounted for		142,000

**W-1: Units in Process**

50% were 40% completed	Equivalent 0.20
20% were 30% completed	0.06
30% were 24.5% completed	0.0735
<b>Weighted average</b>	<b>0.3335</b>

**W-2 : Unit cost based on equivalent units**

		<b>Labour</b>	<b>FOH</b>
Equivalent units	(Litres)	43,000	43,000
Cost	(Rs.)	27,520	15,480
Cost per Unit	(Rs.)	0.64	0.36

**W-3: Adjustment for lost units (Normal loss):**

**Formula for Calculation:**

Unit cost of lost units = (lost units × cost from department 1) / (units from department 1 - lost units)  
 = (5,000 × 1.80) / (55,000 units - 5,000 units) = Rs 9,000 / 50,000 = Rs 0.18

**A.5 (i) Optimal Production Plan**

	Football	Basketball	Rugby ball	Total
Leather required per unit (Sq. ft.)				
38 ÷ 95	0.4			
238 ÷ 340		0.7		
255 ÷ 510			0.5	
Budgeted sales volume	5,000	3,500	2,000	
Total Leather required (Sq. ft.)	2,000	2,450	1,000	5,450
Maximum Leather available (Sq. ft.)				3,840

	Football	Basketball	Rugby ball
Selling price	295	397	500
Less: Variable Costs			
Leather	38	238	255
Direct labour @ Rs. 50/hr.	100	50	75
Variable Overheads	65	25	45
Total Variable Cost	203	313	375
Contribution per unit	92	84	125
Leather requirement (Sq. ft.)	0.4	0.7	0.5
Contribution per Sq. ft.	230	120	250
Ranking	2	3	1

Maximum Leather available	(Sq. ft.) 3,840
Less: Leather allocated to confirmed order:	
Football (800 x 0.4)	(320)
Basketball (1,300 x 0.7)	(910)
Rugby ball (400 x 0.5)	(200)
Unused balance of leather	2,410

**COST ACCOUNTING**  
Suggested Answers  
Intermediate Examinations – Autumn 2011

Now, the scarce material will be allocated as per ranking.

Product	Volume	Leather requirements	Material used	Balance unused
				2,410
Rugby ball	1,600	0.5	800	1,610
Football (balance)	4,025	0.4	1,610	-
Basketball	Nil	0.7	-	-

(ii) Profit arising from above production plan

Product	Units	Contribution per unit	Contribution margin
Rugby ball	2,000	125	250,000
Football	4,825	92	443,900
Basketball	1,300	84	109,200
<b>Total Contribution</b>			<b>803,100</b>
<b>Less: Fixed costs (Note 1)</b>			<b>(66,000)</b>
<b>Profit</b>			<b>737,100</b>

Note – 1 - Fixed overhead

Product	Units	Direct labour Hour	Fixed costs per D.L Hour	Fixed costs
Rugby ball	2,000	(2,000×1.5)=3,000	4	12,000
Football	5,000	(5,000×2)=10,000	4	40,000
Basketball	3,500	(3,500×1)=3,500	4	14,000
<b>Total Fixed Costs</b>				<b>66,000</b>

A.6 (a) **Evaluation of inventory policies:**

Particulars	Existing	Rupees in '000		
		PI	PII	PIII
Sales	300,000	422,500	527,500	620,000
Cost of goods sold	(240,040)	(338,040)	(422,040)	(496,040)
Contribution	59,960	84,460	105,460	123,960
Less: inventory carrying cost @ 8%	(2,400)	(3,863)	(5,627)	(7,937)
Profit before tax	57,560	80,597	99,833	116,023
Tax @ 30%	(17,268)	(24,179)	(29,950)	(34,807)
Profit after tax	40,292	56,418	69,883	81,216
Incremental profit	-	16,126	29,591	40,925
Incremental investment	-	18,286	40,335	69,203
Incremental return	-	88%	73%	59%

Recommendation: The incremental rate of return is maximised if inventory Policy PI is adopted by the company.

**W-1: Calculation of cost of goods sold:**

Existing	300,000	80%	40	240,040
PI	422,500	80%	40	338,040
PII	527,500	80%	40	422,040
PIII	620,000	80%	40	496,040

**COST ACCOUNTING**

Suggested Answers

Intermediate Examinations – Autumn 2011

**W-2: Level of investment in inventory & carrying cost:**

							Carrying cost
Existing	240,040	/	8	30,005	@	8%	2,400
PI	338,040	/	7	48,291	@	8%	3,863
PII	422,040	/	6	70,340	@	8%	5,627
PIII	496,040	/	5	99,208	@	8%	7,937

(b) **Average stock level:**

Average stock level = minimum level +  $\frac{1}{2}$  (reorder quantity)

As minimum level is not given it will be computed as follows:

Re-order level = maximum usage  $\times$  maximum lead time

Re-order level =  $300 \times 6 = 1,800$  units.

Minimum level = Re-order level - (average usage  $\times$  average lead time)

Minimum level =  $1,800 - (225 \times (6+2/2)) = 900$  units.

Therefore, Average stock level =  $900 + (\frac{1}{2} 750) = 1,275$  units.

(THE END)



**THE INSTITUTE OF CHARTERED ACCOUNTANTS OF PAKISTAN**

**EXAMINERS' COMMENTS**

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<b>SUBJECT</b>	<b>SESSION</b>
Cost Accounting	Intermediate Examination - Autumn 2011

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**General:**

This was comparatively an easy paper and was attempted in full by majority of the students. The candidates who were unsuccessful in the paper need to make serious efforts to achieve their goal.

Question-wise comments are as under:

- Q.1 This question required allocation of overhead expenses relating to two machines and two service departments to two products A and B. The common mistakes were as follows:
- Electricity expense was directly allocated to Product A and B instead of first allocating it to departments and then to products;
  - Inspection department and Packing department costs were allocated to products on the basis of Labour time per unit instead of total Labour time.
- Q.2 (a) This was a straightforward question requiring calculation of estimated cost using least squares method. Many students tried to solve the question using high-low and other methods and could not secure any marks.
- (b) Performance of students in this question was average. A sizable number of students calculated the total wages only, ignoring its bifurcation between direct and indirect labour. Common mistake in this question was that entire amount of overtime was either treated as direct or indirect cost. The overtime based on basic rate should have been treated as direct cost whereas the premium thereon should have been treated as indirect cost. Moreover, majority of the candidates didn't give reasons for allocation.
- Q.3 (a) This was a simple question requiring computation of variances and majority of the candidates were able to calculate them correctly.
- (b) Another simple question but most of the candidates could not properly calculate the direct labour.
- Q.4 This question was based on process costing. The overall performance was satisfactory except that many candidates did not understand the treatment of normal loss.

*Examiners' Comments on Cost Accounting – Autumn 2011*

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- Q.5 This question required calculation of net profit after determination of the optimum production plan based on budgeted volumes and given constraints. Most common mistake was that leather cost per unit was considered as the limiting factor instead of square feet of leather required per unit. Many candidates incorrectly ranked the products on the basis of Contribution Margin.
- Q.6 This question appeared to be difficult for the candidates as the overall performance was very poor. Some of the common mistakes were as follows:
- Average stock was calculated as average of minimum and maximum stock instead of adding half of the reorder quantity to the minimum stock.
  - Fixed costs were ignored while calculating cost of goods sold.
  - Inventory carrying cost was calculated by applying the given percentage to cost of goods sold instead of average inventory.

*THE END*



The Institute of Chartered Accountants of Pakistan

## Cost Accounting

Intermediate Examination  
Spring 2012  
Module D

9 March 2012  
100 marks - 3 hours  
Additional reading time - 15 minutes

- Q.1 Ore Limited (OL) is a manufacturer of sports bicycles. The company buys tyres from a local vendor. Following data, relating to a pair of tyres, has been extracted from OL's records:

	Rupees
Cost	1,000
Storage cost based on average inventory	80
Insurance cost based on average inventory	60
Store keeper's salary (included in absorbed overheads)	8
Cost incurred on final quality check at the time of delivery	10

Other relevant details are as under:

- (i) The cost of inventory comprises of purchase price and absorbed overhead expenses of Rs. 100 per pair.
- (ii) The annual demand for tyres is 200,000 pairs.
- (iii) The ordering cost per order is Rs. 8,000.
- (iv) The delivery cost per order is Rs. 3,000.
- (v) OL's rate of return on investment in inventory is 15%.
- (vi) Recently the vendor has offered a quantity discount of 3% on orders of a minimum of 5,000 pairs.

**Required:**

Evaluate whether OL should avail the quantity discount from the vendor. (10 marks)

- Q.2 Nitrate Limited (NL), producing industrial chemicals, has three production and two service departments. The annual overheads are as follows:

	Rupees in '000
<b>Production departments:</b>	
A	56,000
B	50,000
C	38,000
<b>Service departments:</b>	
X	16,500
Y	10,600

The service departments' costs are apportioned as follows:

	Production departments			Service departments	
	A	B	C	X	Y
Service department X	20%	40%	30%	-	10%
Service department Y	40%	20%	20%	20%	-

**Required:**

Apportion costs of service departments using simultaneous equation method. (10 marks)



- Q.3 Magnesium Limited (ML) produces and markets a single product. The management is concerned about the increasing rate of labour turnover in their factory and wants to assess the losses suffered by ML due to high labour turnover.

Following information is available from ML's records for the year ended 31 December 2011:

Sales price per unit	Rs. 200
Direct material per unit	0.5 kg at Rs. 96 per kg
Direct labour hours paid	480,000 hours
Labour rate per hour	Rs. 55
Actual hours per unit of product	1.5 hours
Variable overhead rate per labour hour	Rs. 20
Fixed overheads	Rs. 6,000,000

The direct labour hours include 9,000 hours spent on training and replacement, only 50% of which were productive. Moreover, 12,000 hours of potential work could not be availed because of delayed replacement. The cost incurred on appointments amounted to Rs. 200,000. ML has no beginning or ending inventory.

**Required:**

Prepare a comparative statement showing net profit for the year and profit foregone as a result of labour turnover; assuming the potential production loss could have been sold in the market at prevailing prices. (15 marks)

- Q.4 Chrome Limited (CL) manufactures two products A and B in small and large packs. Following information has been extracted from CL's business plan for the period ending 31 December 2012:

	A	B
	Large pack	Large pack
Contribution margin per unit (Rs.)	120	150
Ratio of quantities (small pack : large pack)	3:5	2:3
Annual production and sales (units)	250,000	225,000

Following information is also available:

- (i) Product-A:
- The variable cost of the large pack of product-A is 75% of its selling price.
  - The variable cost of the small pack of product-A is 67.5% of the variable cost of large pack.
  - The ratio of the selling price of both the packs of product-A are same as the ratio of their quantities.
  - The annual sales of the small pack of product-A is estimated at 150,000 units.
- (ii) Product-B:
- The ratio of contribution margin to variable cost for the large pack of product-B is 2:3.
  - The selling price of the small pack of product-B is 64% of the price of its large pack.
- (iii) Fixed overheads are estimated at Rs. 7,600,000 per month.

**Required:**

Assuming CL is able to sell the budgeted quantities of both packs of product-A and large pack of product-B:

- (a) How many units of the small pack of product-B should be sold to achieve break-even? (10 marks)
- (b) How many units of the small pack of product-B should be sold to earn a net income of Rs. 10,530,000? Applicable tax rate for the company is 25%. (05 marks)
- (c) Based on the results of (b) above, prepare a product wise and consolidated income statement for the period ending 31 December 2012. (05 marks)

- Q.5 Bauxite Limited (BL) is engaged in the manufacture and sale of three products viz. Pentagon, Hexagon and Octagon. Following information is available from BL's records for the month of February 2012:

	Pentagon	Hexagon	Octagon
Sales price per unit (Rs.)	2,300	1,550	2,000
Material cost per Kg. (Rs.)	250	250	250
Labour time per unit (Minutes)	20	30	45
Machine time per unit (Hours)	4	2.5	3
Net weight per unit of finished product (Kg.)	6	4	5
Yield (%)	90	95	92
Estimated demand (Units)	10,000	20,000	9,000

Each worker is paid monthly wages of Rs. 15,000 and works a total of 200 hours per month. BL's total overheads are estimated at 20% of the material cost.

Fixed overheads are estimated at Rs. 5 million per month and are allocated to each product on the basis of machine hours. 100,000 machine hours are estimated to be available in February 2012.

**Required:**

Based on optimum product mix, compute BL's net profit for the month of February 2012.

*(15 marks)*

- Q.6 Zinc Limited (ZL) is engaged in trading business. Following data has been extracted from ZL's business plan for the year ended 30 September 2012:

Sales	Rs. '000
<b>Actual:</b>	
January 2012	85,000
February 2012	95,000
<b>Forecast:</b>	
March 2012	55,000
April 2012	60,000
May 2012	65,000
June 2012	75,000

Following information is also available:

- (i) Cash sale is 20% of the total sales. ZL earns a gross profit of 25% of sales and uniformly maintains stocks at 80% of the projected sale of the following month.
- (ii) 60% of the debtors are collected in the first month subsequent to sale whereas the remaining debtors are collected in the second month following sales.
- (iii) 80% of the customers deduct income tax @ 3.5% at the time of payment.
- (iv) In January 2012, ZL paid Rs. 2 million as 25% advance against purchase of packing machinery. The machinery was delivered and installed in February 2012 and was to be operated on test run for two months. 50% of the purchase price was agreed to be paid in the month following installation and the remaining amount at the end of test run.
- (v) Creditors are paid one month after purchases.
- (vi) Administrative and selling expenses are estimated at 16% and 24% of the sales respectively and are paid in the month in which they are incurred. ZL had cash and bank balances of Rs. 100 million as at 29 February 2012.

**Required:**

Prepare a month-wise cash budget for the quarter ending 31 May 2012.

*(10 marks)*



- Q.7 (a) Platinum Limited (PL) manufactures two joint products Alpha and Beta and a by-product Zeta from a single production process. Following information is available from PL's records for the month of February 2012:

Direct material	25,000 kg. @ Rs. 25 per kg.
Direct labour @ Rs. 15 per hour	Rs. 432,000
Normal process loss	20% of the material consumed

Overheads are allocated to the products at the rate of Rs. 10 per direct labour hour. The normal loss is sold as scrap at the rate of Rs. 8 per kg.

Following data relates to the output from the process:

Product	Output ratio	Selling price per kg. (Rs.)
Alpha	75%	95.0
Beta	15%	175.0
Zeta	10%	52.5

Alpha is further processed at a cost of Rs. 30 per unit, before being sold in the market. Joint costs are allocated on the basis of net realisable value.

**Required:**

Compute the total manufacturing costs for February 2012. Also calculate the profit per kg. for Alpha and Beta. (10 marks)

- (b) Silver Limited (SL) produces and markets a single product. Following budgeted information is available from SL's records for the month of March 2012:

<b>Volumes:</b>	
Sales	100,000 units
Production	120,000 units
<b>Standard costs:</b>	
Direct materials per unit	0.8 kg at Rs. 60 per kg
Labour per unit	27 minutes at Rs. 80 per hour
Variable production overheads	Rs. 40 per labour hour
Variable selling expenses	Rs. 15 per unit
Fixed selling expenses	Rs. 800,000

Fixed production overheads, at a normal output level of 105,000 units per month, are estimated at Rs. 2,100,000. The estimated selling price is Rs. 180 per unit.

**Required:**

Assuming there are no opening stocks, prepare SL's budgeted profit and loss statement for the month of March 2012 using absorption costing. (05 marks)

- Q.8 Explain briefly what is meant by the term inventory control. Describe, giving reasons, the method of stock valuation which should be used in times of fluctuating prices. (05 marks)

(THE END)



**COST ACCOUNTING**  
Suggested Answers  
Intermediate Examination - Spring 2012

**A.1 PRESENT SCENARIO**

<b>Carrying cost per unit:</b>	<b>Rupees</b>
Storage costs	80
Insurance cost	60
Store keepers salary	-
Cost relating to final quality check	-
Opportunity cost of capital (per pair) [ Rs. 1,000 – 100 x 0.15]	135
	275
<b>COSTS ASSOCIATED WITH EACH ORDER</b>	
Ordering cost per order	8,000
Delivery cost per order	3,000
	11,000

$$EOQ = \sqrt{\frac{2(F)(S)}{(C)}}$$

$$EOQ = \sqrt{\frac{2 \times 11,000 \times 200,000}{275}} = \sqrt{\frac{4,400,000,000}{275}}$$

$$= \sqrt{16,000,000}$$

$$EOQ = 4,000$$

Number of orders = 50

**Total relevant costs under present scenario**

▪ Purchase price	180,000,000
▪ Total ordering cost (50 × 11,000)	550,000
▪ Total carrying cost (4,000/2 × 275)	550,000
	181,100,000

**IF DISCOUNT IS AVAILED**

**Carrying cost per unit**

Storage costs	80.00
Insurance cost	60.00
Opportunity cost of capital [ Rs. 900 x (1- 0.03) x 0.15]	130.95
	270.95
Number of orders would be (200,000 / 5,000)	40

**Total relevant costs:**

▪ Purchase price [Rs. 900 x (1-.03) x 200,000]	174,600,000
▪ Total ordering cost [ Rs. 11,000 x 40]	440,000
▪ Total carrying cost [ Rs. 270.95 x 5,000 /2]	677,375
	175,717,375

**Conclusion:**

Yes. Quantity discount should be availed.

- A.2 Let X represent total overheads of department X  
And Y total overheads of department Y  
Since X received 20% of Y's services  
Thus X = 16,500 + 0.2 Y  
Likewise Y = 10,600 + 0.1X

**COST ACCOUNTING**  
Suggested Answers  
Intermediate Examination - Spring 2012

Using substitution method of simultaneous equation

$$X = 16,500 + 0.2(10,600 + 0.1X)$$

$$X = 16,500 + 2,120 + 0.02X$$

$$X - 0.02X = 18,620$$

$$0.98X = 18620$$

$$X = 19,000$$

$$Y = 10,600 + (0.1 \times 19,000)$$

$$Y = 12,500$$

Overheads charged to production:

	A	B	C
Allocated overheads	56,000	50,000	38,000
Share of X's service (Rs. 19,000 × % served)	3,800	7,600	5,700
Share of Y's service (Rs. 12,500 × % served)	5,000	2,500	2,500
	64,800	60,100	46,200

**A.3 Comparative statement showing actual profit and potential profit in absence of labour turnover:**

	Actual	Potential
	Rupees	
Sales	63,400,000	65,600,000
Less: Costs		
Direct material	(15,216,000)	(15,744,000)
Direct labour	(26,400,000)	(27,060,000)
Variable overhead	(9,600,000)	(9,840,000)
Fixed overheads	(6,000,000)	(6,000,000)
Cost incurred on Appointments	(200,000)	-
	(57,416,000)	(58,644,000)
Net Profit	5,984,000	6,956,000

Loss of profit due to labour turnover is Rs. 972,000

**Working Notes:**

<b>W-1 Hours lost due to labour turnover:</b>	
Hours lost due to delayed replacement	12,000
Unproductive time due to training and replacement (9,000 × 50%)	4,500
<b>Total hours lost</b>	<b>16,500</b>
<b>W-2 Productive labour hours:</b>	
Direct labour hours paid	480,000
Less: unproductive time of new workers (9,000 × 50%)	(4,500)
<b>Total productive hours</b>	<b>475,500</b>
No. of units sold/produced (475,500/1.5)	317,000
Actual sales: [Total productive hours / hours per unit of product × Rs 200]	63,400,000
Add: sales foregone due to 16,500 unproductive hours [16,500 / 1.5 × 200]	2,200,000
<b>Potential sales</b>	<b>65,600,000</b>
No. of units that could have been sold (65,600,000 / 200) <b>OR</b> (317,000+11,000)	328,000
<b>Direct material:</b>	
Actual [(475,500 / 1.5) × 0.5 × 96]	15,216,000
Add: Material cost foregone [ 16,500 / 1.5 × 0.5 × 96]	528,000
	15,744,000
<b>Direct labour:</b>	
Actual [480,000 × 55]	26,400,000
Add: Labour cost foregone [ 12,000 × 55]	660,000
	27,060,000
<b>Variable overheads:</b>	
Actual [480,000 × 20]	9,600,000
Add: Variable cost foregone [ 12,000 × 20]	240,000
	9,840,000

**COST ACCOUNTING**  
Suggested Answers  
Intermediate Examination - Spring 2012

**A.4 (a) CALCULATION OF BREAK-EVEN POINT OF SALES IN UNITS:**

**Small pack of product-B**

*Required Contribution Margin*

	<b>Rupees</b>
Annual fixed cost (Rs. 7.6 million x 12)	91,200,000
Less: Estimated contribution margin	
Product-A Large pack [250,000 units x Rs. 120]	(30,000,000)
Product-A Small pack [150,000 units x Rs. 45]	(6,750,000)
Product-B Large pack [225,000 units x Rs. 150]	(33,750,000)
	(70,500,000)
Required contribution from small pack of Product-B	20,700,000
	<b>Units</b>
Break-even sales in units [Rs. 20,700,000 / Rs. 90]	230,000

**Working Notes**

*Product-A*

	<b>Rs. per unit</b>
<b>Large Pack</b>	
Sales price [120 / (1-0.75)]	480
Less: Variable cost [Rs. 480 × 75%]	(360)
Contribution Margin	120
<b>Small Pack</b>	
Sales price [Rs. 480 × 3/5]	288
Less: Variable cost [Rs. 360 × 67.5%]	(243)
Contribution margin	45
<b>Product-B</b>	
<b>Large Pack</b>	
Sales price [Rs. 150/0.4] <b>OR</b> [225 + 150]	375
Less: Variable cost [ Rs. 375 – Rs. 150] <b>OR</b> [150 x 3/2]	(225)
Contribution Margin	150
<b>Small Pack</b>	
Sales price [Rs. 375 x 0.64]	240
Less: Variable cost [ Rs. 225 x 2/3]	(150)
Contribution margin	90

**(b) Sales in units of small pack of product-B to produce net income of Rs. 10,530,000.**

	<b>Rupees</b>
Desired net income	10,530,000
Applicable tax rate	25%
Income before tax [ Rs. 10,530,000 / (1- 0.25)]	14,040,000
Add: fixed cost [ 7,600,000 x 12]	91,200,000
Required total contribution margin from all packs of <b>A</b> and <b>B</b>	105,240,000
Less: Contribution margin of both packs of Product- <b>A</b> and large pack of <b>B</b>	(70,500,000)
Contribution margin from Product- <b>B</b>	34,740,000
Contribution margin per unit of the small pack of product- <b>B</b>	90
Required number of units of small pack of product- <b>B</b> to earn desired income	386,000



**COST ACCOUNTING**  
Suggested Answers  
Intermediate Examination - Spring 2012

(c) **Product-wise Income Statement**  
For the period ended December 31, 2012

Product	Per unit		Sales volume	Rupees		
	Price	Variable cost		Sales	Variable cost	Contribution margin
A-Large	480	360	250,000	120,000,000	90,000,000	30,000,000
A-Small	288	243	150,000	43,200,000	36,450,000	6,750,000
B-Large	375	225	225,000	84,375,000	50,625,000	33,750,000
B- Small	240	150	386,000	92,640,000	57,900,000	34,740,000
				340,215,000	234,975,000	105,240,000

Consolidated Income Statement		Rupees
Sales		340,215,000
Less: Variable Cost		(234,975,000)
Contribution Margin		105,240,000
Less: Fixed Cost		(91,200,000)
Budgeted profit before tax		14,040,000
Less: Tax @ 25%		(3,510,000)
Budgeted profit after tax		10,530,000

A.5 Computation of net profit on the basis of optimum product mix:

	Pentagon	Hexagon	Octagon
Selling price	2,300	1,550	2,000
Less: Variable Costs			
Direct Material			
(250 × 6 / 0.9)	1,666.67		
(250 × 4 / 0.95)		1,052.63	
(250 × 5 / 0.92)			1,358.70
Direct Labour			
[15,000 / 200 × (20/60)]	25		
[15,000 / 200 × (30/60)]		37.5	
[15,000 / 200 × (45/60)]			56.25
Variable Overheads			
[1666.66 × 20% - (Rs. 50 × 4 hrs)]	133.33		
[1052.63 × 20% - (Rs. 50 × 2.5 hrs)]		85.53	
[1358.70 × 20% - (Rs. 50 × 3 hrs)]			121.74
Total Variable Cost	1,825.00	1,175.66	1,536.69
Contribution per unit	475.00	374.34	463.31
Machine Hours required per unit	4.0	2.5	3.0
Contribution per Machine Hour	118.75	149.74	154.44
Ranking	3	2	1

Now, the scarce Hours will be allocated as per ranking.

Product	Volume	Hours required	Hours used	Balance unused
				100,000
Octagon	9,000	3.0	27,000	73,000
Hexagon	20,000	2.5	50,000	23,000
Pentagon (Bal.)	5,750	4.0	23,000	-

**COST ACCOUNTING**  
Suggested Answers  
Intermediate Examination - Spring 2012

(i) Profit arising from above production plan

Product	Units	Contribution per unit	Contribution margin
Octagon	9,000	463.31	4,169,790
Hexagon	20,000	374.34	7,486,800
Pentagon	5,750	475.00	2,731,250
Total Contribution			14,387,840
Less: Fixed costs			(5,000,000)
Net Profit			9,387,840

A.6

**Month-wise Cash Budget**

	Rs. in '000		
	Mar	Apr	May
Opening balance	100,000	109,204	104,828
Collections	83,800	68,800	59,400
Payments:			
Purchases	(47,250)	(44,250)	(48,000)
Selling expenses	(13,200)	(14,400)	(15,600)
Administrative expenses	(8,800)	(9,600)	(10,400)
Packing machinery	(3,000)	(3,000)	-
Tax withheld by 80% of customers @ 3.5%	(2,346)	(1,926)	(1,663)
	(74,596)	(73,176)	(75,663)
Closing balance	109,204	104,828	88,565

**Working notes:**

W-1: Collections - Jan Sales	Mar	Apr	May
Feb Sales			85,000
			95,000
Sales Gross	55,000	60,000	65,000
Collections:			
Cash sales	11,000	12,000	13,000
1st month after sale	45,600	26,400	28,800
2nd month after sale	27,200	30,400	17,600
	83,800	68,800	59,400

**W-2 Purchases:**

Sales Gross (June) 75,000

	Feb	Mar	Apr	May
Sales Gross	95,000	55,000	60,000	65,000
Cost of sales [75% of sales] A	71,250	41,250	45,000	48,750
Less: Opening stock [80% of cost of sale] B	(57,000)	(33,000)	(36,000)	(39,000)
Add: Closing stock [80% of next cost of sales] C	33,000	36,000	39,000	45,000
Purchases (A+C-B)	47,250	44,250	48,000	54,750
Payment to creditors		47,250	44,250	48,000

A.7 (a) (i) Total cost of output:

	Kg.	Rupees
Direct material [25,000 x Rs. 25]	25,000	625,000
Direct Labour		432,000
Overheads [ 432,000 / Rs. 15 x Rs. 10]		288,000
		1,345,000
Less: Sale of scrap [ 25,000 x 20% x Rs. 8]	(5,000)	(40,000)
Total cost of products	20,000	1,305,000

**COST ACCOUNTING**  
Suggested Answers  
Intermediate Examination - Spring 2012

(ii) Profit per kg of Alpha and Beta:

	Rupees
Joint costs of products	1,305,000
Less: Sale of Zeta [20,000 x 10% x Rs. 52.5]	(105,000)
	1,200,000

Product	Kg.	Output %	NRV at split-off	Total NRV	Joint cost allocation	Total profit	Profit per Kg.
Alpha	15,000	75%	95-30=65	975,000	780,000	195,000	13
Beta	3,000	15%	175	525,000	420,000	105,000	35
	18,000			1,500,000	1,200,000		

(b) **Absorption costing:**

	Rupees
Sales [100,000 x Rs. 180 ]	18,000,000
Less: Cost of sales:	
Opening stock	-
Add: Direct materials [ 0.8 x 120,000 x 60]	5,760,000
Direct labour [27/60 x 120,000 x 80]	4,320,000
Variable overheads [ 27/60 x 120,000 x 40]	2,160,000
Fixed overheads [ 2,100,000 / 105,000 x 120,000]	2,400,000
	14,640,000
Less: Closing stock [14,640,000 / 120,000 x 20,000]	(2,440,000)
Cost of sales	(12,200,000)
Less: Over-absorbed overheads [ 2,100,000 / 105,000 x 15,000]	(300,000)
Gross profit	6,100,000
Less: Selling expenses:	
Variable [ 100,000 x 15]	(1,500,000)
Fixed	(800,000)
	(2,300,000)
Net profit	3,800,000

**A.8 Inventory control:**

Inventory control can be defined as the system used in an organization to control its investment in inventory/stocks. i.e. the overall objective of inventory control is to minimize, in total, the costs associated with stock.

This includes; the recording and monitoring of stock levels, forecasting future demands and deciding when and how many to order.

**The method of stock valuation which should be used in times of fluctuating prices:**

Weighted Average stock valuation method should be used in times of fluctuating prices because this method is rational, systematic and not subject to manipulation. It is representative of the prices that prevailed during the entire period rather than the price at any particular point in time. It is because of this smoothening effect that this method should be used for stock valuation in times of fluctuating prices.

(THE END)



**THE INSTITUTE OF CHARTERED ACCOUNTANTS OF PAKISTAN****EXAMINERS' COMMENTS**

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<b>SUBJECT</b>	<b>SESSION</b>
Cost Accounting	Intermediate Examination - Spring 2012

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**General:**

It was an easy paper and many students performed well. The students who were unable to pass this time need to put in some really serious efforts to achieve this goal. It was generally felt that the students lack conceptual understanding and tend to memorize the formulas or the standard procedure. As a result, they are only able to solve the routine situation. Beyond that, the performance was quite poor.

Q.1 This question required evaluation of a quantity discount offer from a vendor. Although the question was quite easy yet the performance was marred by the following mistakes:

- Most of the students lacked conceptual understanding as they failed to consider delivery cost of Rs. 3,000 per order as part of ordering cost. Since the delivery cost was associated with each order therefore it should have been considered a part of ordering cost for this evaluation.
- Most of the students ignored the opportunity cost of capital which should have been considered a part of carrying cost.

Q.2 This was a straightforward question requiring apportionment of service department costs to production departments using simultaneous equations. The question was quite easy and a large number of students secured full marks. However, since this topic is not tested frequently, many students who had resorted to selective studies could not secure any marks.

Q.3 This was a good question on labour turnover which is a less-tested topic. The response was below average as most students lacked conceptual understanding. While computing hours lost due to labour turnover most students ignored the unproductive hours on account of training. Moreover, for computing labour hours per unit, the entire labour hours paid (480,000) were used and the fact that 4500 training hours were unproductive, was ignored.

Q.4 This proved a difficult question and very few students could perform well. It seemed that students started to solve this question without proper planning. A little bit of thinking would have made their work easy. Some of the common mistakes were as follow:

- Many students tried to calculate weighted average contribution margin instead of calculating the contribution margin of each item separately.
- Variable cost per unit of small pack of Product – B was calculated as  $2/5^{\text{th}}$  of the variable cost of the large pack, instead of  $2/3^{\text{rd}}$ . Moreover, many students used the ratio of sales prices of the small and large packs i.e. 64%, to find out the cost of small pack.
- In part (b), net income after tax of Rs. 10.5 million meant that income before tax should be 14 million i.e.  $10.5 \times \frac{100}{75}$ . However, many students calculated it as 13.125 million i.e. 10.5 million plus 25% thereof.

Q.5 This was a simple question requiring calculation of best production mix in a situation where machine hours were limited. Most students secured good marks. The common errors were as follows:

- The yield percentages were not taken into consideration.
- While computing the variable overheads, the fact that 20% of material cost were inclusive of fixed overheads also, was either ignored or could not be properly dealt with.

Q.6 This was a routine question on cash budgeting. The performance was just average as the students seemed quite casual and made all sorts of errors. The most common errors were in respect of calculation of tax payments. Surprisingly, many students were unable to compute the purchases although it is a concept which is easily managed even by a Module B student.

Q.7 (a) This was a good question on computation of manufacturing costs for two joint products and a by-product. The performance was below average as many students committed simple errors as follows:

- Sale of normal loss was treated as scrap sale (other income) instead of deducting it from production costs.
- The by-product Zeta was treated as a joint product i.e. joint costs were allocated to Zeta also.
- Allocated joint cost on the basis of quantity produced instead of NRV at split off point.
- Further processing cost of Rs. 30 per unit of Alpha was ignored, in arriving at the NRV at split off point.

*Examiners' Comments on Cost Accounting – Spring 2012*

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- (b) This part of the question required preparation of budgeted profit and loss account under absorption costing, which required computation of standard fixed overhead rate on the basis of normal capacity. Many students lacked understanding of this concept. Many students ignored the over/under absorbed overheads, altogether.
- Q.8 Very few students answered this simple question satisfactorily. Instead of explaining inventory control, they focused on methods of inventory valuation. Most students correctly identified the weighted average cost method as the one which should be used in a period of fluctuating prices. However, many students mentioned other methods also.

*THE END*





The Institute of Chartered Accountants of Pakistan

## Cost Accounting

Intermediate Examination  
Autumn 2012  
Module D

7 September 2012  
100 marks - 3 hours  
Additional reading time - 15 minutes

Q.1 (a) Following data is available from the records of Cortex Limited (CL) for the year ended 30 June 2012:

	Rupees
Profit as per cost accounts	150,000
Under-recovery of production overheads	11,500
Under-recovery of administrative overheads	18,000
Over-recovery of selling and distribution overheads	21,000
Overvaluation of opening stock in cost accounts	9,000
Overvaluation of closing stock in cost accounts	4,500
Loss on sale of fixed assets	1,000
Interest expenses	2,500
Preliminary expenses written off	12,000
Income tax	8,000
Notional rent on own building	5,000
Transfer to reserve fund	10,000
Dividend received	3,000
Interest earned on deposits	1,500
Share transfer fees	2,000
Discount on early payments to suppliers	4,000

**Required:**

Compute CL's financial profit after tax for the year ended 30 June 2012. (10 marks)

(b) Bile Limited (BL) produces and markets a single product Plasma. The projected levels of demand of Plasma at various prices are as under:

Demand (Units)	Selling price per unit (Rs.)	Cost per unit (Rs.)
1,000	55	29
1,100	53	28
1,200	52	27
1,300	49	26

**Required:**

Using tabular approach, calculate the marginal revenues and marginal costs for Plasma at different levels of demand. Also determine the price at which BL could earn maximum profits. (05 marks)

Q.2 Jadeed Limited (JL) operates a multiple piece rate plan at its factory as follows:

- (i) Basic piece rate of Rs. 3 per piece is paid up to 80% efficiency;
- (ii) 120% basic piece rate where efficiency is more than 80% but less than or equal to 100%;
- (iii) 130% basic piece rate for above 100% efficiency.

The workers are eligible for a "Guaranteed Day Rate" which is equal to 70% efficiency.

**Required:**

Compute the labour cost per piece at 10% intervals between 60% and 130% efficiency, assuming that at 100% efficiency 80 pieces are produced per day. (10 marks)

- Q.3 (a) Stem Limited (SL) is engaged in the manufacture and sale of two products Petal and Leaf. Following information is available from SL's records for the year ended 30 June 2012:

	Petal	Leaf
Direct material	250 kg. @ Rs. 80 per kg.	125 kg. @ Rs. 128 per kg.
Direct labour @ Rs. 25 per hour	720 hours	960 hours
Sales	Rs. 65,000	Rs. 80,000
Profit margin	25% on cost	30% on sales price

Factory overheads are allocated to the products as a percentage of direct labour whereas administrative overheads are allocated as a percentage of direct material cost.

**Required:**

Compute the amount of factory and administrative overheads using simultaneous equations. (10 marks)

- (b) What is Idle Time? Discuss the treatment of idle time in cost accounting. (05 marks)

- Q.4 Mehanti Limited (ML) produces and markets a single product Wee. Two chemicals Bee and Gee are used in the ratio of 60:40 for producing 1 litre of Wee. ML follows perpetual inventory system and uses weighted average method for inventory valuation. The purchase and issue of Bee and Gee for May 2012, are as follows:

Date	Bee			Gee		
	Receipt		Issue Litre	Receipt		Issue Litre
	Litre	Rate		Litre	Rate	
02-05-2012	-	-	-	450	110	-
05-05-2012	-	-	560	-	-	650
09-05-2012	-	-	300	-	-	300
12-05-2012	420	52	-	700	115	-
18-05-2012	-	-	250	-	-	150
24-05-2012	500	55	-	250	124	-
31-05-2012	-	-	500	-	-	450

Following further information is also available:

- (i) Opening inventory of Bee and Gee was 1,000 litres at the rate of Rs. 50 per litre and 500 litres at the rate of Rs. 115 per litre respectively.
- (ii) The physical inventories of Bee and Gee were 535 litres and 140 litres respectively. The stock check was conducted on 01 June and 31 May 2012 for Bee and Gee respectively.
- (iii) Due to contamination, 95 litres of Bee and 105 litres of Gee were excluded from the stock check. Their net realisable values were Rs 20 and Rs. 50 per litre respectively.
- (iv) 250 litres of Bee which was received on 01 June 2012 and 95 litres of Gee which was issued on 31 May 2012 after the physical count were included in the physical inventory.
- (v) 150 litres of chemical Bee was held by ML on behalf of a customer, whereas 100 litres of chemical Gee was held by one of the suppliers on ML's behalf.
- (vi) 100 litres of Bee and 200 litres of Gee were returned from the production process on 31 May and 01 June 2012 respectively.
- (vii) 240 litres of chemical Bee purchased on 12<sup>th</sup> May and 150 litres of chemical Gee purchased on 24<sup>th</sup> May 2012 were inadvertently recorded as 420 litres and 250 litres respectively.

**Required:**

- (a) Reconcile the physical inventory balances with the balances as per book.
- (b) Determine the cost of closing inventory of chemical Bee and Gee. Also compute the cost of contaminated materials as on 31 May 2012. (15 marks)



Q.5 Artery Limited (AL) produces and markets three products viz. Alpha, Beta and Gamma. Following information is available from AL's records for the manufacture of **each unit** of these products:

		Alpha	Beta	Gamma
Selling price	(Rs.)	66	88	106
Material-A (Rs.4 per kg)	(Rs.)	8	0	12
Material-B (Rs.6 per kg)	(Rs.)	12	18	24
Direct labour (Rs. 10 per hour)	(Rs.)	25	30	25
Variable overhead based on:				
- Labour hours	(Rs.)	1.5	1.8	1.5
- Machine hours	(Rs.)	1.6	1.4	1.2
Total	(Rs.)	3.1	3.2	2.7
Other data:				
Machine hours		8	7	6
Maximum demand per month (units)		900	3,000	5,000

Additional information:

- (i) AL is also engaged in the trading of a fourth product Zeta, which is very popular in the market and generates a positive contribution. AL currently purchases 600 units per month of Zeta from a supplier at a cost of Rs. 40 per unit. In-house manufacture of Zeta would require: 2.5 kg of material-B, 1 hour of direct labour and 2 machine hours.
- (ii) Materials A and B are purchased from a single supplier who has restricted the supply of these materials to 22,000 kg and 34,000 kg per month respectively. This restriction is likely to continue for the next 8 months.
- (iii) AL has recently accepted a Government order for the supply of 200 units of Alpha, 300 units of Beta and 400 units of Gamma each month for the next 8 months. These quantities are in addition to the maximum demand stated above.
- (iv) There is no beginning or ending inventory.

**Required:**

Determine whether AL should manufacture Zeta internally or continue to buy it from the supplier during the next 8 months. (10 marks)

Q.6 Fowl Limited (FL) manufactures two joint products X and Y from a single production process. Raw material Benz is added at the beginning of the process. Inspection is performed when the units are 50% complete. Expected loss from rejection is estimated at 10% of the tested units. Following details are available for the month of May 2012:

	Units	Material (Rs.)	Conversion cost (Rs.)
Opening work in process	15,000	90,000	25,000
Transferred to finished goods:			
- Product- X	50,000	547,125	228,875
- Product- Y	25,000		
Loss due to rejection	12,500	-	-
Closing work in process	10,000	-	-

**Additional information:**

- (i) Opening and closing work in process are 75% complete.
- (ii) The normal loss is sold as scrap at the rate of Rs. 1.50 per unit.
- (iii) Production costs are allocated to joint products on the basis of weight of output.
- (iv) The company uses weighted average method for inventory valuation.

**Required:**

Cost of production report for the month of May 2012.

(15 marks)



- Q.7 Zodiac Limited (ZL) produces a single product and has a maximum production capacity of 300,000 units per annum. Following information pertains to ZL's estimated cost of production:
- (i) Direct material Rs. 12 per unit.
  - (ii) Direct labour Rs. 8 per unit. However, based on guaranteed wages, the minimum total cost of labour is Rs. 150,000 per month.
  - (iii) Variable overheads Rs. 6 per unit.
  - (iv) Semi-variable overheads Rs. 450,000 per annum up to 55% capacity. An additional amount of Rs. 180,000 per annum is estimated for every 20% increase in capacity or a part thereof.
  - (v) Fixed overheads Rs. 750,000 per annum.

During the first five-months of the year 2012, ZL utilized 70% of its production capacity. However, it is expected to utilize 92% capacity during the remaining seven-months. The actual selling price during the first five-months was Rs. 34 per unit.

**Required:**

Compute selling price per unit which should be charged by ZL for the remaining seven-months to earn a total profit of Rs. 936,000 for the year 2012. *(10 marks)*

- Q.8 Tychy Limited (TL) is engaged in the manufacture of Specialized motors. The company has been asked to provide a quotation for building a motor for a large textile industrial unit in Punjab. Following information has been obtained by TL's technical manager in a one-hour meeting with the potential customer. The manager is paid an annual salary equivalent to Rs. 2,500 per eight-hour day.
- (i) The motor would require 120 ft of wire-C which is regularly used by TL in production. TL has 300 ft of wire-C in inventory at the cost of Rs. 65 per ft. The resale value of wire-C is Rs. 63 and its current replacement cost is Rs. 68 per ft.
  - (ii) 50 kg of another material viz. Wire-D and 30 other small components would also be required by TL for the motor. Wire-D would be purchased from a supplier at Rs. 10 per kg. The supplier sells a minimum quantity of 60 kg per order. However, the remaining quantity of wire-D will be of no use to TL after the completion of the contract. The other small components will be purchased from the market at Rs. 80 per component.
  - (iii) The manufacturing process would require 250 hours of skilled labour and 30 machine hours. The skilled workers are paid a guaranteed wage of Rs. 20 per hour and the current spare capacity available with TL for such class of workers is 100 direct labour hours. However, additional labour hours may be obtained by either:
    - Paying overtime at Rs. 23 per hour; or
    - Hiring temporary workers at Rs. 21 per hour. These workers would require 5 hours of supervision by AL's existing supervisor who would be paid overtime of Rs. 20 per hour.
- The machine on which the motor would be manufactured was leased by TL last year at a monthly rent of Rs. 5,000 and it has a spare capacity of 110 hours per month. The variable running cost of the machine is Rs. 15 per hour.
- (iv) Fixed overheads are absorbed at the rate of Rs. 25 per direct labour hour.

**Required:**

Compute the relevant cost of producing textile motor. Give brief reasons for the inclusion or exclusion of any cost from your computation. *(10 marks)*

**(THE END)**

**COST ACCOUNTING**  
Suggested Answers  
Intermediate Examination - Autumn 2012

Ans. 1 (a)

**Cortex Limited (CL)**  
**Reconciliation statement:**

	Rupees
Profit as per cost accounts	150,000
Add:	
Over-recovery of selling and distribution overheads	21,000
Overvaluation of opening stock in cost accounts	9,000
<b>Income excluded from cost accounts:</b>	
Dividend received	3,000
Interest earned on deposits	1,500
Share transfer fees	2,000
Discount on early payments to suppliers	4,000
Notional rent on own building	5,000
	195,500
Less:	
Under-recovery of production overheads	(11,500)
Under-recovery of administrative overheads	(18,000)
Overvaluation of closing stock in cost accounts	(4,500)
<b>Expenses excluded from cost accounts:</b>	
Loss on sale of assets	(1,000)
Interest expenses	(2,500)
Preliminary expenses written off	(12,000)
Income tax	(8,000)
Transfer to reserve fund	-
Profit as per financial accounts	138,000

(b)

Demand	Selling price per unit	Total Revenue	Marginal Revenue	Cost per unit	Total Cost	Marginal Cost
Units	-----Rupees-----					
1,000	55	55,000	55,000	29	29,000	29,000
1,100	53	58,300	3,300	28	30,800	1,800
1,200	52	62,400	4,100	27	32,400	1,600
1,300	49	63,700	1,300	26	33,800	1,400

Marginal revenue is greater than Marginal cost at 1,200 units but declines at the level of 1300 units, therefore profits will be maximised at the selling price of Rs. 52 per unit.

Ans.2

Efficiency %	Output per day (units)	Piece Wage @ Rs. 3/piece	Guaranteed Time wages/day	20% Additional piece wage	30% Additional piece wage	Total Labour cost	Labour cost per piece
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
60	48	144	168	-	-	168.00	3.50
70	56	168	168	-	-	168.00	3.00
80	64	192	-	-	-	192.00	3.00
90	72	216	-	43.20	-	259.20	3.60
100	80	240	-	48.00	-	288.00	3.60
110	88	264	-	-	79.20	343.20	3.90
120	96	288	-	-	86.40	374.40	3.90
130	104	312	-	-	93.60	405.60	3.90



**COST ACCOUNTING**  
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**Notes:**

- (i) As guaranteed time wage is equal to 70% efficiency, the time wages of Rs. 168 per day is payable for efficiency up to 70%.
- (ii) Normal piece wages are payable at 80% efficiency level.
- (iii) For efficiency levels from 90% to 100%, 20% of the piece wages have been added.
- (iv) For efficiency levels above 100%, 30% of the piece wages have been added.

Ans.3 (a) Assuming the percentage of factory overheads on direct labour is 'x' and the percentage of administrative overheads on material cost 'y', then the total cost of the two products Petal and Leaf will be as follows:

	Petal (Rs.)	Leaf (Rs.)
Direct Materials	20,000	16,000
Direct labour	18,000	24,000
Prime Cost	38,000	40,000
Factory overhead (Direct labour × x)	18,000 x	24,000 x
Administrative overheads (Material cost × y)	20,000 y	16,000 y
<b>Total Cost</b>	<b>38,000 + 18000x + 20000y</b>	<b>40,000 + 24000x + 16000y</b>

Total cost on the basis of sales is:

	Petal (Rs.)	Leaf (Rs.)
Sales	65,000	80,000
Less : Profit		
Petal – 25% on cost or 20% on sales	(13,000)	
Leaf – 30% on sales		(24,000)
<b>Total Cost</b>	<b>52,000</b>	<b>56,000</b>

Thus,

Total Cost of Petal is  $38,000 + 18000x + 20000y = 52,000$   
 or  $18000x + 20000y = 14,000$  .....(i)

Total Cost of Leaf is  $40,000 + 24000x + 16000y = 56,000$   
 or  $24000x + 16000y = 16,000$  .....(ii)

Equation (ii) multiplied by 0.75 and after deducting from equation (i), we get

$$\begin{array}{r}
 18000x + 20000y = 14,000 \\
 18000x + 12000y = 12,000 \\
 \hline
 8000y = 2,000 \\
 \text{or } y = 0.25 \text{ or } 25\%
 \end{array}$$

Putting value of y in equation (i), we get

$$\begin{array}{l}
 18000x + 20000 \times 0.25 = 14,000 \\
 \text{or } 18000x = 14,000 - 5,000 \\
 \text{or } 18000x = 9,000 \\
 \text{or } x = 0.5 \text{ or } 50\%
 \end{array}$$

As the percentage of :

Factory overheads on direct labour = 50 % and

The percentage of administrative overheads on manufacturing cost = 25%



**COST ACCOUNTING**  
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Therefore the amount of factory and administrative overheads would be:

	Petal	Leaf
	Rupees	
Factory overheads (Rs. 18,000 x 50%) & (Rs. 24,000 x 50%)	9,000	12,000
Administrative overheads (Rs. 20,000 x 25%) & (Rs. 16,000 x 25%)	5,000	4,000

**(b) Idle Time:**

It is a time during which no production is carried out because the worker remains idle even though they are paid. Idle time can be normal idle time or abnormal idle time. Normal idle time is inherent in any work situation and cannot be eliminated whereas abnormal idle time arises due to abnormal factors like lack of coordination, power failure, machine breakdowns, non-availability of raw materials, strikes and lockouts, etc.

**Treatment of idle time**

Normal idle time is treated as a part of the cost of production. In the case of direct workers, an allowance for normal idle time is built into the labour cost rate. In the case of Indirect workers, normal idle time is spread over all the products or jobs through the process of absorption of factory overheads.

Abnormal idle time cost is not included as a part of production cost and is shown as a separate item in the costing profit and loss account.

Ans. 4

<b>Chemical Bee:</b>	<b>Litres</b>
Stock as per records [ 1,000 + 420 + 500 – 560 – 300 – 250 – 500]	310
Add:	
- 150 litres held on behalf of customer	150
- Inventory received after cut-off date taken in count	250
- Return from production process not recorded	100
Less:	
- Adjustment for contaminated stock	(95)
- Adjustment for incorrect recording	(180)
Physical balance	535

<b>Chemical Gee:</b>	
Stock as per records [ 500 + 450 + 700 + 250 – 650 – 300 – 150 – 450]	350
Add:	
- Inventory issued after stock count	95
- No adjustment for stock returned after month end	0
Less:	
- 100 litres were held by supplier on ML's behalf.	(100)
- Adjustment for contaminated stock	(105)
- Adjustment for incorrect recording	(100)
Physical balance	140

<b>Cost of chemical Bee:</b>	
Stock as per records	310
- Return from production process not recorded	100
- Adjustment for contaminated / damaged stock	(95)
- Adjustment for incorrect recording	(180)
Actual quantity present in stock	135

**COST ACCOUNTING**  
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<b>Rate</b>	<b>(W-1)</b>	54.23
Cost of closing stock as at 31 May 2012		Rs. 7,321

**W-1: Working for rate of closing stock of chemical Bee:**

	Litres	Rate	Amount
Balance as of 09-05-2012 [1000 – 560 – 300]	140	50.00	7,000
Add: Actual purchases on 12-05-2012	240	52.00	12,480
	380	51.26	19,480
Less: Issuance on 18-05-2012	(250)	51.26	(12,816)
	130	51.26	6,664
Add: Actual purchases on 24-05-2012	500	55.00	27,500
	630	54.23	34,164

**Cost of chemical Gee:**

Stock as per records		350
- Adjustment for contaminated / damaged stock		(105)
- Adjustment for incorrect recording		(100)
- Actual quantity present in stock		145
<b>Rate</b>	<b>(W-2)</b>	116.93
		16,955

**W-2: Working for rate of closing stock of chemical Gee:**

	Litres	Rate	Amount
Balance as of 1-5-2012	500	115	57,500
Add: purchases on 2-5-2012	450	110	49,500
	950	112.63	107,000
Less: Issued on 5-5-12 and 9-5-12 (650+300)	950	112.63	107,000
	0	0	0
Add: purchases on 12-5-2012	700	115.00	80,500
Less: Issuance on 18-05-2012	(150)	115.00	(17,250)
	550	115.00	63,250
Add: Actual purchases on 24-05-2012	150	124.00	18,600
	700	116.93	81,850

Contaminated chemical Bee	95	20	1,900
Contaminated chemical Gee	105	50	5,250

Ans.5 The internal manufacturing cost of Zeta would be as follows:

	Rs. per unit
Direct material-B (2.5 kg @ Rs. 6/kg)	15.0
Direct labour (1 hours @ Rs. 10/hour)	10.0
Variable overhead <span style="float: right;"><b>W-1</b></span>	
Direct labour (1 hour @ Rs. 0.60/hour)	0.6
Machine hours (2 hours @ Rs. 0.20/hour)	0.4
<b>Total</b>	<b>26.0</b>

The buying price of the component is Rs. 40 per unit so if resources are readily available the company should manufacture the component. However, due to the scarcity of resources during the next 8 months the contribution earned from the component needs to be compared with the contribution that can be earned from the other products.



**COST ACCOUNTING**  
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**W-1:**

Using Alpha (though any product could be used) the variable overhead rate per hour can be calculated:

Labour related variable overheads per unit = Rs 1.5

Direct labour hours per unit = Rs 25 / Rs 10 = 2.5 hours

Labour related variable overhead per hours = Rs. 1.5 / 2.5 hour = Rs 0.60 per hour

Machine related variable overhead per hour = Rs. 1.6 / 8 hour = Rs 0.2 per hour

Both material-A and material-B are limited in supply during the next 8 months, but calculations are required to determine whether this scarcity affects the production plans of AL. The resources required for the maximum demand must be compared with the resources available to determine whether either of the materials is a binding constraint.

Total quantity of each product to be manufactured:

	Government order	Market demand	Total
	-----Units-----		
Alpha	200	900	1,100
Beta	300	3,000	3,300
Gamma	400	5,000	5,400
Zeta	0	600	600

All figures in kg:

Resource	Available	Requirement	Alpha	Beta	Gamma	Zeta
Direct material-A	22,000	18,400	2,200	0	16,200	0
Direct material-B	34,000	35,200	2,200	9,900	21,600	1,500

It can be seen from the above that the scarcity of material-B is a binding constraint and therefore the contributions of each product and the component per kg of material-B must be compared.

	Alpha	Beta	Gamma	Zeta
	Rupees			
Contribution	17.9	36.8	42.3	14.0
Contribution /kg of material-B	8.95	12.27	10.58	5.60
Rank	3	1	2	4

AL should manufacture 120 units of Zeta and continue to purchase 480 units from the market.

Ans.6

**Fowl Limited (FL)**  
**Cost of Production Report**  
For the month ended 31 May 2012

<b>Quantities</b>	
Units to be accounted for:	
Opening Work in process	15,000
Input units during the month	(W-1) 82,500
	97,500
Units accounted for:	
Completed and transferred to finished goods	75,000



**COST ACCOUNTING**  
Suggested Answers  
Intermediate Examination - Autumn 2012

Loss due to rejection	12,500
Closing Work in process	10,000
	97,500

**W-1: Calculation of input units:**

Units produced - X	50,000
Units produced - Y	25,000
Wastage	12,500
Closing W.I.P	10,000
	97,500
Less: Opening W.I.P	(15,000)
Input units during the month	82,500

Normal loss units [as the opening units are already tested therefore normal loss is on input units only] $[82,500 \times 10\%]$	8,250
Abnormal loss units $[12,500 - 8,250]$	4,250

Equivalent Units of Production: (Weighted Average)	Material	Conversion
Transferred to finished goods:		
Product - X	50,000	50,000
Product - Y	25,000	25,000
Abnormal loss	4,250	2,125
Closing inventory	10,000	7,500
<b>A</b>	89,250	84,625

Cost incurred:	Rs.	Rs.
Opening W.I.P	90,000	25,000
During the month (Product X and Y)	547,125	228,875
Less: Sale of normal loss $(8,250 \times Rs. 1.5)$	(12,375)	-
<b>B</b>	624,750	253,875
<b>Total cost to be accounted for <math>(624,750 + 253,875)</math></b>		878,625
Rate per unit of equivalent product <b>B ÷ A</b>	7.00	3.00
Total per unit cost Rs. $(7 + 3)$		10

Cost accounted for:	Rs.
Transferred out $(75,000 \times Rs. 10)$	750,000
Abnormal loss:	
- Material $(4,250 \times Rs. 7)$	29,750
- Conversion cost $(2,125 \times Rs. 3)$	6,375
	36,125
Closing work in process	
- Material $(10,000 \times Rs. 7)$	70,000
- Conversion cost $(10,000 \times 75\% \times Rs. 3)$	22,500
	92,500
Total cost accounted for	878,625

**COST ACCOUNTING**  
Suggested Answers  
Intermediate Examination - Autumn 2012

Ans.7

**Zodiac Limited (ZL)**  
**Statement of cost and sales for the year 2012**

Maximum production capacity = 300,000 units per annum

Particulars	5 months	7 months
Capacity utilized	70%	92%
Production	$\frac{300,000 \times 5 \times 70\%}{12}$ =87,500 units	$\frac{300,000 \times 7 \times 92\%}{12}$ =161,000 units
	<b>Rs.</b>	<b>Rs.</b>
Sales @ Rs. 34 per unit	2,975,000	
Direct materials @ Rs. 12 per unit	(1,050,000)	(1,932,000)
Direct wages @ 8 per unit or Rs. 150,000 per month whichever is higher	(750,000)	(1,288,000)
<b>Overheads</b>		
Fixed (5:7)	(312,500)	(437,500)
Variable @ Rs. 6 per unit	(525,000)	(966,000)
Semi variable (W-1)	(262,500)	(472,500)
<b>Total Cost</b>	<b>(2,900,000)</b>	<b>(5,096,000)</b>
Profit during first 5 months	75,000	
Desired profit during next 7 months (Rs. 936,000 – Rs. 75,000)		861,000
Sales required for next 7 months		5,957,000

Required selling price per unit for last 7 months =  $\frac{\text{Total sales required for last 7 months}}{\text{Units produced during last 7 months}}$

$$= \text{Rs. } \frac{5,957,000}{161,000} = \text{Rs. 37 per unit.}$$

**W-1: Semi-variable overheads**

- (a) For first 5 months at 70% capacity = Rs. (450,000 + Rs. 180,000) × 5/12  
= Rs. 262,500
- (b) For remaining 7 months at 92% capacity = Rs. (450,000 + Rs. 360,000) × 7/12  
= Rs. 472,500

Ans.8

**Tychy Limited (TL)**

	Note	Rs.
Technical manager – meeting	1	NIL
Wire – C	2	8,160
Wire – D	3	600
Components	4	2,400
Direct labour	5	3,250
Machine running cost	6	450
Fixed overhead	7	NIL
<b>Total relevant cost</b>		<b>14,860</b>

**COST ACCOUNTING**  
Suggested Answers  
Intermediate Examination - Autumn 2012

**Notes:**

1. In case of technical manager's meeting with the potential client, the relevant cost is NIL because it is not only a past cost but also the manager is paid an annual salary and therefore TL has incurred no incremental cost on it.
2. Since wire-C is regularly used by TL, its relevant value is its replacement cost. The historical cost is not relevant because it is a past cost and the resale value is not relevant since TL is not going to sell it.
3. Since wire-D is to be purchased for the contract therefore its purchase cost is relevant. TL only requires 50 kg of wire-D but due to the requirement of minimum order quantity TL will be purchasing 60 kg of the material and since TL has no other use for this material, the full cost of purchasing the 60 kg is the relevant cost.
4. Since the components are to be purchased from the market at a cost of Rs. 80 each. Therefore, the entire purchase price is a relevant cost.
5. The 100 hours of direct labour are presently idle and hence have zero relevant cost. The remaining 150 hours are relevant. TL has two choices: either use its existing employees and pay them overtime at Rs. 23 per hour which is a total cost of Rs. 3,450: or engage the temporary workers which would cost TL Rs. 3,250 including supervision cost of Rs. 100. The relevant cost is the cheaper of the two alternatives i.e. Rs. 3250.
6. The lease cost of machine will be incurred regardless of whether it is used for the manufacture of motors or remains idle. Hence, only the incremental running cost of Rs. 15 per hour is relevant.
7. Fixed overhead costs are incurred whether the work goes ahead or not so it is not a relevant cost.

**(THE END)**



**THE INSTITUTE OF CHARTERED ACCOUNTANTS OF PAKISTAN****EXAMINERS' COMMENTS**

<b>SUBJECT</b>	<b>SESSION</b>
Cost Accounting	Intermediate Examination - Autumn 2012

**General:**

The overall performance was rather disappointing as compared to previous attempt, although there was enough margin for the students to get through. Many students lacked the knowledge of some of the very basic concepts such as normal and abnormal loss. Students also lacked practice as some of the simple steps were carried out using lengthy procedures which affected their ability to complete the paper in the given time. It is vital that candidates cover the entire syllabus and do not take the chance that their favourite topics will appear in the paper.

Question-wise comments are as under:

- Q.1 (a) Profit as per cost accounts was given and the students were required to compute profit as per financial accounts after incorporating the given adjustments. The question was generally attempted well. The common errors were as follows:
- Most of the students got confused in dealing with the under and over recovery of overheads. Since the cost accounts are prepared on absorption costing therefore any over recovery of overheads was required to be added back to profit as per cost accounts and vice versa.
  - Notional rent was to be added back to cost accounts whereas majority of the students either ignored it or deducted it from profit as per cost accounts.
  - Transfer to reserve funds does not require any adjustment as the same is neither an expenses nor revenue. Many students adjusted it by either adding or deducting it from costing profit.
- (b) A large number of students although correctly arrived at the price level where profit would be maximum but failed to compute the marginal revenues and costs and therefore lost easy marks.

- Q.2 It was a very simple question requiring computation of labour cost per piece at different efficiency levels. Majority of the students performed well and secured good marks. However, many students failed to comprehend that when piece-rate earnings fall below time-rate earnings, the time rate earnings are paid and therefore at 60% efficiency level, they wrongly computed the total labour cost at Rs. 144 instead of Rs. 168. Similarly, many students after calculating the total labour cost, did not compute the labour cost per piece which in fact was the requirement of the question.
- Q.3 (a) This part of the question required application of simultaneous equations to compute the administrative and factory overheads. A very mixed response was observed. Those students who were able to formulate the correct equations secured full marks. However, those students who did not have a clear idea about the formulation of the equations made all sort of errors. Another common error was that the profit of Product Petal was computed at 25% of the prime cost instead of 25% of cost.
- (b) The correct definition of idle time was provided by almost all the students. However, very few of them could describe the treatment of idle time in cost accounting. Majority of the students wrote that it should be charged to FOH and did not differentiate between normal and abnormal idle time.
- Q.4 This question, with a potential 15 marks, required to reconcile the physical stock with balance as per book and to determine the cost of closing inventories. An average response was witnessed as most of the students were able to secure between 5 to 10 marks. The most common errors were as follows:

**Reconciliation of physical and book balance:**

- Most of the students could not compute the stock as per books which could have been arrived at by simply adding purchases and opening inventory and subtracting the issued quantities.
- 200 litres of Chemical Gee which was returned from production after month end, was also adjusted i.e. shown as a reconciling item.
- 100 litres of Chemical Bee which was returned from production process on the last day of the month before the stock check, was not shown as a reconciling item.
- 100 litres of Chemical Gee held by supplier on ML's behalf was not adjusted i.e. not shown in the reconciliation.

**Valuation**

- Many students used simple average instead of weighted average.
- Effect of errors noted at point (vii) was correctly adjusted in the reconciliation but these corrections were ignored at the time of valuation.



- Q.5 This question was based on Make or Buy decision. Three products were being manufactured whereas the fourth product was being purchased from the market. The candidates were required to ascertain whether the fourth product should also be manufactured internally or not.

The question was attempted in an average manner. Most of the students reached the right conclusion but they skipped some important calculations which costed them a few marks. The most common errors were as follows:

- Only material B was the limiting factor as sufficient quantity of raw material A was available to meet the entire requirement. Many students did not test this and therefore got confused in the later stages.
- Some students got confused by the fact that sale price of Zeta was not given. They failed to realize that for the purpose of this decision, the cost at which Zeta is purchased would be compared with its manufacturing cost and the difference between the two would be treated as a sort of contribution margin for comparison purposes.

- Q.6 This was a balanced question on process costing. However, the overall response to this question was below average. Students made various conceptual errors and lost easy marks. The common mistakes were as follows:

- Normal loss units, were taken as either of the following:
  - 10% of opening WIP + units put in process; or
  - 10% of closing WIP + completed units.

In fact, both methods were incorrect. Normal loss should have been taken as 10% of input units as opening units had been tested in the previous year.

- A significant number of students treated normal loss as well as abnormal loss in the same manner.
  - A large number of students failed to deduct proceeds from sale of normal loss, from the cost of production.
  - While computing equivalent production units as regards raw material, most of the students added 50% of the abnormal loss. According to the question, the entire material was added at the beginning of the process, hence the above treatment was incorrect because at the time of rejection, abnormal loss units were 100% complete as regards material cost.
- Q.7 This question required computation of selling price per unit to achieve a targeted total profit for the year. Information pertaining to first five months of the year was provided alongwith certain projections related to the next seven months. The overall response to this rather simple question was quite poor as the candidates made simple mistakes, even while carrying out some of the very basic steps, as have been discussed in the next paragraph.



*Examiners' Comments on Cost Accounting – Autumn 2012*

Based on annual production capacity of 300,000 units, the production capacity of the remaining 7 months should have been calculated as 175,000 units. A significant number of students either forgot to pro-rate the annual capacity on the remaining months altogether whereas many of them took it as 300,000 unit minus units produced during the first five months. A large majority of candidates also made various types of errors in the computation of semi-variable overheads. Again, lack of study/selective study and tendency to rush to a conclusion were main causes of failure.

- Q.8 This was quite an easy question on relevant costs and was well responded. Some areas where candidates made disappointing errors are discussed below:
- Most of the students considered the cost of 50 Kg of Wire D as the relevant cost. In fact, the cost of total quantity purchased i.e. 60 kg should have been considered as relevant cost because the remaining 10 kg was of no use and could not be disposed of either.
  - Most of the students considered cost of 250 direct labour hours as relevant. Since, at that time 100 hours were already idle, the relevant cost should have been restricted to cost of 150 direct labour hours.
  - Only few student realized that the company could have used its permanent employees by paying them overtime or could have hired temporary workers and that the lower of the two should have been considered as the relevant costs.
  - Many students did not give the reasons for their treatment which was an important requirement of the question. Just writing “Sunk” or “because it is not relevant” is not enough. An explanation is required as to why a particular cost is not relevant or why it is a sunk cost.

*THE END*



The Institute of Chartered Accountants of Pakistan

## Cost Accounting

Intermediate Examination  
Spring 2013  
Module D

8 March 2013  
100 marks - 3 hours  
Additional reading time - 15 minutes

- Q.1 (a) What do you understand by the terms “Scrap”, “Defectives” and ‘Spoilage’? Briefly describe the accounting treatment of scrap and defective units. (10)
- (b) Replica Limited (RL) produces and markets a single product. The product requires a specialised component P which RL procures from a supplier using economic order quantity. Following information is available from RL’s records for component P:

Price of component P	Rs. 150 per unit
Cost of placing an order	Rs. 50
Carrying cost per unit per annum	10% of purchase price
Total of holding and ordering costs	Rs. 3,000 per annum
Normal lead time	12 days
Safety stock	Nil

Assume 300 working days in a year.

**Required:**

- (i) Calculate the economic order quantity (EOQ) and re-order level of component P.
- (ii) What would be your advice to the company, if the supplier offers a 2% price discount on purchases in lots of 3,000 components? (10)
- Q.2 Hulk Limited (HL) produces and markets a single product. The company uses standard costing system. Following is the standard cost card per unit of the finished product:

Direct material	2.8 kg at Rs. 6.75 per kg
Direct labour	Rs. 150 per hour
Variable production overheads	Rs. 12 per direct labour hour
Fixed production overheads	Rs. 18 per direct labour hour

The standard labour hours required for producing one unit of finished product is 30 minutes whereas HL’s standard operating capacity per month is 15,000 hours.

Actual results for the month of February 2013 were as under:

Direct material @ Rs. 6.25 per kg	Rs. 504,000
Direct labour	Rs. 160 per hour
Variable production overheads	Rs. 175,000
Fixed production overheads	Rs. 17 per direct labour hour

Actual labour hours consumed by HL for producing 27,000 units was 33 minutes per unit of finished product.

**Required:**

- (a) Compute material, labour and overhead variances. Use four variance method. (14)
- (b) List any **four** causes of unfavourable material price variance. (02)



Q.3 Z Limited (ZL) manufactures various products. Following information relating to product-A has been extracted from ZL's business plan for the year ending 30 June 2014:

Direct material per unit	12 kg at Rs. 2 per kg
Average labour rate per worker	Rs. 56 per day
Average working hours in a day	8 hours
Average labour efficiency	65%
Standard time required for each unit of product-A	2.6 hours
Variable overheads	Rs. 10 per labour hour
Fixed overheads	2% of direct material cost
Annual production	25,000 units

In order to improve the production efficiency and reduce cost of conversion, the management has sought suggestions from the workers. It has announced a reward equal to three months savings in labour cost to the worker, whose suggestion would be accepted.

In response to management's offer, one of the workers has suggested to use electric cutter in the manufacturing process. The proposal is expected to reduce standard time for making each unit of product-A by 20%. It would also improve labour efficiency from 65% to 80%. The cutter can be purchased at a cost of Rs. 15,000 and is estimated to have an effective life of one year.

**Required:**

Assuming there is no beginning or ending inventory of product-A:

- (a) Calculate the amount of reward payable to the worker as announced by ZL. (06)
- (b) Prepare a statement showing annual cost of production and net savings (if any) in total cost of production of product-A. (05)

Q.4 Neutron Limited (NL) is engaged in the business of manufacture and supply of plastic toys. The company uses 5 identical injection moulding machines in its machining department which were acquired at a cost of Rs. 1,000,000. These machines have a useful life of 10 years and are manned by three dedicated operators. Following information has been extracted from NL's records for a period of six months:

Normal time available per month per operator	220 hours
Absenteeism without pay per month per operator	20 hours
Leave with pay per month per operator	25 hours
Average idle time per month per operator	15 hours
Average labour rate per hour per operator	Rs. 35
Average estimated rate of production bonus	15% of labour cost
Fuel and power	Rs. 118,000
Indirect labour	Rs. 115,000
Lighting and electricity	Rs. 95,000

Other expenses related to the department are as follows:

Repair and maintenance per annum	6% of machine cost
Insurance	Rs. 140,000 per annum
Sundry expenses	Rs. 131,800 per annum
Allocated administrative overheads	Rs. 120,000 per annum

**Required:**

Calculate a machine hour rate (inclusive of operators' wages) for the machining department. (10)



- Q.5 Colon Limited (CL) manufactures two joint products Pollen and Stigma in the ratio of 65:35. The company has two production departments A and B. Pollen can either be sold at split off point or can further be processed at department-B and sold as a new product Seeds. Stigma is sold without further processing. Following information relating to the three products is available from CL's records:

	Pollen	Stigma	Seeds
	-----Rupees-----		
Sales price per kg	90	300	125
Total selling expenses	135,000	306,000	180,000

Following further information relating to the two departments is available:

	Department A	Department B
Material X	75,000 kg at Rs. 60 per kg	-
Material Y	-	12,000 kg at Rs. 25 per kg
Labour @ Rs. 150 per hour	12,000 hours	3,600 hours
Variable overheads	Rs. 125 per labour hour	Rs. 65 per labour hour
Fixed overheads	Rs. 100 per labour hour	Rs. 50 per labour hour
Material input output ratio	100:88	100:96

Material is added at the beginning of the process. Joint costs are allocated on the basis of net realisable value at split off point.

**Required:**

- (a) Calculate the joint costs and apportion them to the two products. (10)  
 (b) Advise CL whether it should produce Seeds or sell Pollen without further processing. (06)

- Q.6 Altar Limited (AL) produces and markets a single product. Following information is available from AL's records for the month of February 2013:

Sales price	Rs. 26 per unit
Direct material (2 kg at Rs. 5 per kg)	Rs. 10 per unit
Direct labour	Rs. 2 per unit
Variable overheads	Rs. 4 per unit
Fixed overheads	Rs. 3.50 per unit
Selling expenses	Rs. 295,000
Administration expenses	Rs. 101,400
Production (Good units)	175,000 units
Closing inventory	30,000 units

**Additional information:**

- (i) Inspection is performed at the end of production and defective units are estimated at 20% of the inspected units. The defective units are sold as scrap at Rs. 5 per unit.  
 (ii) Fixed overheads per unit are calculated on the basis of good units produced.  
 (iii) As compared to last month, selling expenses in February 2013 have decreased by Rs. 42,000.  
 (iv) In January 2013, AL produced and sold 180,000 units.

**Required:**

Assuming there was no inventory at the beginning of February 2013, calculate break-even sales in quantity for the month of February 2013. (12)

Q.7 Qamber Limited (QL) is engaged in the manufacture and sale of textile products. In February 2013 QL received an order from JCP, a chain of stores, for the supply of 11,000 packed boxes of its products per month at an agreed price of Rs. 8,000 per box. The boxes would be supplied every month for a period of one year. It was further agreed that:

- Each box would contain a pillow cover, a bed sheet and a quilt cover.
- QL would be solely responsible for the quality of supplied products whether they are being manufactured at its own facility or outsourced to third party, either wholly or partially.
- JCP would provide its logo and printed materials for the packing of these boxes.

Following information is available for the manufacture of **each unit** of these products:

		Products		
		Pillow Cover	Bed Sheet	Quilt Cover
Cloth required	(Meters)	1	4	5
Cost of cloth per meter	(Rs.)	200	300	400
Direct labour per meter	(Minutes)	30	15	18
Machine time	(Minutes)	30	75	120
Variable overheads per machine minute	(Rs.)	5	4	3.75
Outsourcing cost	(Rs.)	750	2,000	3,500

For in-house completion of the above order, a total of 45,000 machine hours and 25,500 labour hours are estimated to be available each month. The labourers are paid at a uniform rate of Rs. 400 per hour. The cost incurred on quality check, before supply of the boxes to JCP, is estimated at Rs. 300 per box. Fixed overheads are estimated at Rs. 10,000,000 per month.

**Required:**

Calculate net profit for the month, assuming QL wants to produce as many products as possible within the available resources, and outsource the rest to a third party.

(15)

(THE END)

**COST ACCOUNTING**

Suggested Answers

Intermediate Examination - Spring 2013

**Ans.1 (a) Scrap:**

Scrap is the discarded material in the production process/ Incidental residue that may be obtained from manufacture. Scrap cannot be put back into production for the same purpose as before but may be usable for a different purpose or production process, or sold to outsiders for a nominal amount.

**Defectives:**

- Units that do not meet production standards and must be processed further in order to be saleable along with good units, or sold as irregulars.
- Defectives can be classified as normal defective and abnormal defective.

**Spoilage:**

- Spoiled Units in manufacturing process cannot normally be made into standard finished units without incurring uneconomical cost. They do not meet production standards and are either sold for their salvage value or discarded. Spoiled units are taken out of the production process and no further work is performed on them.
- Spoilage can either be normal or abnormal.

**Accounting treatment for scrap:**

- No entry is normally made on the books when scrap is returned to the materials inventory.
- **Allocated (applied) to specific job:**  
When scrap is relatively significant and is identifiable with the process or job, the cost of scrap will be transferred to scrap account and any realisation from sale of such scrap will be credited to the job or process account and any unrecovered balance in the scrap account will be transferred to profit and loss account.
- **Allocated (applied) to all jobs:**  
When scrap cannot be linked to a particular product / job / process, the value of scrap (i.e. net scrap value after deducting any sale related expenses) should be deducted from the overheads or from the materials cost.

**Accounting treatment for defective units:**

The accounting treatment of defectives is as follows:

**Normal defective:**

- Cost of rectification of normal defect is charged to good units.
- If defect can be identified with specific job, rework cost should be charged to work in process inventory for the specific job.
- If defect cannot be identified with specific job / process, rework cost of normal defect should be charged to production overheads.

**Abnormal defective:**

- Cost of rectification of abnormal defective units should be transferred to income statement as a period cost.



**COST ACCOUNTING**  
Suggested Answers  
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(b) (i) **Computation of EOQ**

$$EOQ = \sqrt{\frac{2AOC}{CC}}$$

Where EOQ = Economic Order Quantity

A = Annual demand

OC = Ordering cost per order

CC = Carrying cost per unit per annum

Annual usage of component P is computed as follows:

$$\sqrt{2 \times A \times OC \times CC} = Rs. 3,000$$

$$\sqrt{2A \times Rs. 50 \times 0.10 \times Rs. 150} = Rs. 3,000$$

$$\sqrt{1,500A} = Rs. 3,000$$

$$1,500A = 3,000^2$$

$$A = 6,000$$

∴ Annual consumption of component P is 6,000 units.

$$EOQ = \sqrt{\frac{2AOC}{CC}} = \sqrt{\frac{2 \times 6,000 \times 50}{0.10 \times 150}} = 200 \text{ units}$$

**Computation of re-order level:**

*Re - order Level = Normal Lead Time × Normal Usage*

Where,

$$\text{Normal Usage} = \frac{\text{Annual usage}}{\text{Normal working days in a year}}$$

$$= \frac{6,000}{300} = 20 \text{ units per day}$$

Therefore, Reorder level = 12 × 20 = 240 units

(ii) **Advise as to the acceptance of offer: (Lot size is 3,000 units)**

	Rupees
Ordering cost [(6,000 ÷ 3,000) × Rs. 50]	100
Carrying cost [3,000 units ÷ 2 × Rs. 14.7]	22,050
Total cost	22,150
Less: Present cost of ordering and holding inventory	(3,000)
Extra cost	19,150
Purchase discount [6,000 units × Rs. 150 × 2%]	18,000
Additional cost if purchase discount is accepted	1,150

**Advise:** Hence, purchase discount offer cannot be accepted

**COST ACCOUNTING**  
Suggested Answers  
Intermediate Examination - Spring 2013

**Ans.2 (a) Material Variances (Actual Production: 27,000 units)**

Standard Qty of raw material per unit of finished goods			2.8 kg
Standard price of raw material per kg			Rs. 6.75
Actual price of raw material per kg			Rs. 6.25
Standard Qty of raw material at actual production [27,000 × 2.8]			75,600kg
Actual Qty of raw material used [ 504,000 ÷ Rs. 6.25]			80,640kg
<b>Direct material usage variance [SP (AQ-SQ)]</b>	[6.75 (80,640 – 75,600)]	Adv.	Rs. (34,020)
<b>Direct material price variance [AQ (SP-AP)]</b>	[80,640 (6.75-6.25)]	Fav.	Rs. 40,320
<b>Labour Variances</b>			
Standard time allowed per unit of finished goods			30 minutes
Standard direct labour rate per hour			Rs. 150
Actual rate per hour			Rs. 160
Standard hours allowed for actual production [27,000 × 30/60]			13,500 hours
Actual hours worked for actual production [ 27,000 × 33/60]			14,850 hours
<b>Direct labour efficiency variance [ SR (SH-AH)]</b>	[150 (13,500 – 14,850)]	Adv.	Rs. (202,500)
<b>Direct labour rate variance [ AH (AR-SR)]</b>	[14,850 (160-150)]	Adv.	Rs. (148,500 )
<b>Variable overhead variances</b>			<b>Rupees</b>
Actual variable overheads	(i)		175,000
Variable overheads based on actual hours at std. rate [14,850 × Rs. 12]	(ii)		178,200
Variable overheads based on std. hours at std. rate [13,500 × Rs. 12]	(iii)		162,000
<b>Variable OH efficiency variance [VOH at AH – VOH at SH]</b>	[(ii) – (iii)]	Adv.	(16,200)
<b>Fixed overhead variances</b>			
Actual fixed overheads [AH × AR] [14,850 × Rs. 17]	(iv)		252,450
Fixed overheads based on actual hours at std. rate [14,850 × Rs. 18]	(v)		267,300
Fixed overheads based on std. hours at AP at std. rate [13,500 × Rs. 18]	(vi)		243,000
Budgeted fixed overheads [ Std. capacity x std. rate] [15,000 × 18]	(vii)		270,000
<b>Fixed overheads efficiency variance [FOH at AH – FOH at SH]</b>	[(v) – (vi)]	Adv.	(24,300)
<b>Factory overhead spending variance:</b>			
Actual fixed and variable overheads [(i) + (iv)]	[ 175,000 + 252,450]		427,450
Less: Budgeted overheads:			
Variable overheads based on actual hours at std. rate [14,850 × Rs. 12]			(178,200)
Budgeted fixed overheads [ Std. capacity x std. rate] [15,000 × 18]			(270,000)
			(448,200)
		Fav.	20,750
<b>Idle capacity variance / Production volume variance</b>	[(vi) – (vii)]	Adv.	(27,000)

(b) Unfavorable price variance may be caused by:

- inaccurate standard prices
- inflationary cost increases
- scarcity in raw material supplies resulting in higher prices
- Purchasing department inefficiencies.
- Purchase of better quality products

**COST ACCOUNTING**  
Suggested Answers  
Intermediate Examination - Spring 2013

**Ans.3 (a) Computation of Amount of reward Payable to the worker:**

Standard time = 2.6 hrs.		
Labour efficiency = 65%		
Direct labour hours required	= 2.6 hrs. × 100/65	= 4 hrs.
For 25,000 units time required	= 25,000 × 4 hrs.	= 100,000 hrs.
Labour cost @ Rs. 7 per hour [56/8]	= Rs. 700,000	
Standard time after use of cutter	= 2.6 hrs. – 0.52 hrs.	= 2.08 hrs.
labour hours required per unit at improved efficiency	= 2.08 hrs. × 100/80	= 2.6 hrs.
Total labour hours required	= 25,000 × 2.6 hrs.	= 65,000 hrs.
Annual saving in time	= 100,000 – 65,000	= 35,000 hrs.
Cost of annual saving in time	= 35,000 hours × Rs.7	= Rs. 245,000
reward equal to 3 months saving in labour cost [245,000/12 × 3]		= Rs. 61,250

**(b) Annual Cost of Production and Savings to the ZL:**

Particulars		Before Suggestion	After Suggestion
		(100,000 hrs.)	(65,000 hrs.)
Direct materials	(25,000 × 12 × 2)	600,000	600,000
Direct labour	((@ Rs. 7 per hour)	700,000	455,000
Variable overheads	((@ Rs. 10 per hour)	1,000,000	650,000
Fixed overheads	((@ 2% of direct material cost)	12,000	12,000
Cost of cutter		-	15,000
Total cost		2,312,000	1,732,000

  

	<b>(Rs.)</b>
Gross savings in cost [2,312,000 – 1,732,000]	580,000
Less: reward payable to worker	(61,250)
Net savings in cost	518,750

**Ans.4 Computation of Machine Hour Rate**

	Rupees
Operator's wages (W-1)	126,000
Production bonus (15% of labour cost)	18,900
Fuel and power consumed	118,000
Indirect labour	115,000
Lighting and electricity consumed	95,000
Repair and maintenance [ 6% of machine cost of Rs. 1,000,000/2]	30,000
Insurance [Rs. 140,000 / 2]	70,000
Depreciation [Rs. 1,000,000 / 10 / 2]	50,000
Sundry expenses [Rs. 131,800 / 2]	65,900
Allocated administrative overheads [Rs. 120,000 / 2]	60,000
Total overheads of machining department	748,800

$$\text{Machine hour rate} = \frac{\text{Total overheads of machining department}}{\text{Hours of machines operation}}$$

$$= \frac{\text{Rs. 748,800}}{2,880 \text{ hrs.}} = \text{Rs. 260 per machine hour}$$



**COST ACCOUNTING**  
Suggested Answers  
Intermediate Examination - Spring 2013

**Working: W-1**

Total utilizable hours p.m. [160 hrs. × 3 operators × 6 months] (W 1.1)	2,880hours
Hours per month for which wages are paid to an operator [220 hrs. – 20 hrs.]	200 hours
Total wages paid to operators [200 hrs. × 3 operators × 6 months × Rs. 35]	Rs. 126,000
<b>W 1.1</b>	<b>Hours</b>
Normal hours available per month per operator	220
Less: Absenteeism	(20)
Leave hours	(25)
Idle time	(15)
Utilizable hours per operator per month	160

**Ans.5 (a) Calculation of Joint costs:**

	<b>Dept. A</b>	
	<b>Rupees in '000</b>	
Material X [75,000 × Rs. 60]	4,500	
Labour [12,000 × Rs. 150]	1,800	
Variable overheads [12,000 × Rs. 125]	1,500	
Fixed overheads [12,000 × Rs. 100]	1,200	
Total cost	9,000	
<b>Apportionment of joint costs:</b>		
Input of material X in dept. A	75,000 kg	
Yield (88% of input material X)	66,000 kg	
Ratio of output for Pollen and Stigma	65:35	
Quantity of Pollen produced at split off point (66,000 × 65/100)	42,900 kg	
Quantity of Stigma produced at split off point (66,000 × 35/100)	23,100 kg	
<b>Statement showing apportionment of joint costs:</b>		
	<b>Pollen</b>	<b>Stigma</b>
	<b>Rupees in '000</b>	
Sales [42,900 × 90] and [23,100 × 300]	3,861	6,930
Less: Selling expenses	(135)	(306)
Net realisable value	3,726	6,624
Ratio	36%	64%
Allocation of joint costs [9,000 × 36%] and [9,000 × 64%]	3,240	5,760

**(b) Advise to CL whether it should produce Seeds or sell Pollen without further processing:**

<b>Computation of output of Seeds:</b>	
Transfer of Pollen to dept. B for further processing	42,900 kg
Input of material Y in dept. B	12,000 kg
Total material in dept. B	54,900 kg
Yield (96% of input material) [54,900 × 96%]	52,704 kg
<b>Statement showing profit earned from Seeds:</b>	
	<b>Seeds</b>
	<b>Rs. in '000</b>
Sales [52,704 × 125]	6,588
Less: Expenses	
▪ Joint costs	(3,240)
▪ Cost incurred in dept. B (W-1)	(1,254)
▪ Selling expenses	(180)
Profit from Seeds	1,914



**COST ACCOUNTING**  
Suggested Answers  
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**Ans.7 Calculation of net profit for the month:**

<i>Computation of limiting factor:</i>	
Estimated labour hours available each month	25,500
Divided by : labour hours required per box $[(30 \times 1)+(15 \times 4)+(18 \times 5)] \div 60$	3
No. of boxes that can be produced within available labour hours	8,500
Estimated machine hours available each month	45,000
Divided by : machine hours required per box $[(30 + 75 + 120)] \div 60$	3.75
No. of boxes that can be produced within available machine hours	12,000

Therefore, limiting factor is labour hours.

	Products		
	Pillow Cover	Bed Sheet	Quilt Cover
Direct material $[1 \times 200], [4 \times 300], [5 \times 400]$	200	1,200	2,000
Direct labor $[400 \times 30 \div 60 \times 1], [400 \times 15 \div 60 \times 4], [400 \times 18 \div 60 \times 5]$	200	400	600
Variable overhead $[5 \times 30], [4 \times 75], [3.75 \times 120]$	150	300	450
Variable cost per product	550	1,900	3,050
Less: Outsourcing cost per product	(750)	(2,000)	(3,500)
Cost saving from in-house production	200	100	450
Direct labour hours per unit	0.50	1.00	1.50
Cost saving per labour hour	400	100	300
Ranking	1	3	2

Scarce hours allocated as per ranking:

	Quantity	Labour hours used	Available hours
			25,500
First Produce – Pillow cover	11,000	5,500	20,000
Then Produce – Quilt cover	11,000	16,500	3,500
Finally produce – Bed sheet	3,500	3,500	-
No. of Bed sheets to be outsourced	7,500		

**Statement showing net profit for the month:**

	Products			Rs. in '000
	Pillow Cover	Bed Sheet	Quilt Cover	
	-----Rupees-----			
Sales $[11,000 \times \text{Rs. } 8,000]$				88,000
Less: Expenses:				
Units produced	11,000	3,500	11,000	
Variable manufacturing cost per product	550	1,900	3,050	
	6,050,000	6,650,000	33,550,000	(46,250)
Units outsourced		7,500		
Outsourcing cost per bed sheet		2,000		
		15,000,000		(15,000)
Cost on quality check $[11,000 \times \text{Rs. } 300]$				(3,300)
Total variable costs				(64,550)
Total contribution				23,450
Less: Fixed cost				(10,000)
Net profit for the month				13,450

**(THE END)**



**THE INSTITUTE OF CHARTERED ACCOUNTANTS OF PAKISTAN****EXAMINERS' COMMENTS**

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<b>SUBJECT</b>	<b>SESSION</b>
Cost Accounting	Intermediate Examination - Spring 2013

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**General Comments:**

Overall it was an easy question paper and candidates who had studied all parts of the syllabus did well on this paper. However, candidates who seemed to have focused on selective topics failed to obtain the required marks. This may explain why many candidates had better marks on questions 2, 5 and 7, than on questions 1 and 3. It has time and again been emphasized that each examination paper covers many areas of the syllabus, so concentrating on few areas of the syllabus and giving less attention to other equally important areas will decrease the chances of success.

Specific comments are as under:

**Question 1**

This question consisted of two parts. Part (a) required theoretical description and accounting treatment of terms "Scrap", "Defectives" and "Spoilage". Part (b) required candidates to calculate Economic Order Quantity and Re-order Level of a component P. Candidates were also required to advise on availing supplier's discount by calculating costs under present and proposed scenario.

**Question 1 (a)**

Although these concepts are of very basic nature and frequently tested in computational questions but this discursive question was unfortunately very poorly attempted by a majority of the candidates. Candidates appeared to be confused and were barely able to distinguish and describe these concepts. Surprisingly most of the candidates completely failed to give accounting treatment of abnormal defective units.

**Question 1 (b)**

The key to solving this problem was to calculate the annual demand using the concept that at EOQ, holding and carrying costs are equal. A small minority of the candidates wrote that "since the annual demand is not given therefore this question cannot be solved". Most common logical mistake observed was in finding out annual requirement of the component P. Many candidates also used EOQ for calculating re-order level which shows lack of conceptual understanding on their part.

**Question 2**

This question also consisted of two parts. Part (a) covered the fundamental area of variance analysis whereas part (b) required candidates to list any four causes of unfavourable material price variance.

**Question 2 (a)**

It was a straight forward question and was perhaps one of the best answered questions on the paper. It required some basic calculations for materials and labour variances, followed by relatively more complex calculations on overhead variances using four variances method. The materials and labour variance calculations were especially performed well by the candidates. However, relatively few candidates were able to correctly calculate overhead variances using four variance method. Fixed factory overhead spending and idle capacity variances were not calculated by majority of the candidates.

**Question 2 (b)**

Candidates did generally well on this part of the question and were able to satisfactorily list the causes of unfavourable material price variance.

**Question 3**

This question was divided into two parts. Part (a) invited candidates to calculate the amount of worker's reward. Part (b) required candidates to prepare a statement showing annual cost of production and net savings that can be achieved as a result of improved labour efficiency and reduction in standard time of production.

**Question 3 (a)**

It was the worst attempted question on the paper. Computation of hours saved due to improved time and labour efficiency was the key in solving this question. Some of the common mistakes observed were as follows:

- The candidates did not take into consideration the labour efficiency level while computing direct labour hours required for making each unit of product-A.
- Some of the candidates increased the annual production instead of reducing direct labour hours required for making each unit of product-A at improved efficiency level of 80%.

**Question 3 (b)**

The performance on this part also remained poor. Majority of the candidates completely ignored the effect of reward cost, calculated in part (a) above, while calculating net savings in cost of production.

**Question 4**

This question required the candidates to calculate machine hour rate for machining department. It was an easy and straightforward question. Barring few exceptions, the candidates generally performed well. However, almost all the candidates made occasional calculation errors and therefore, very few could obtain full marks.



**Question 5**

This question consisted of two parts. Part (a) invited candidates to calculate the joint costs and apportion them between two products Pollen and Stigma on the basis of NRV at split off point. Part (b) asked the candidate to advise whether the company should produce a third product Seeds or sell Pollen at split off point without further processing.

**Question 5 (a)**

Candidates generally performed well on this part of the question. However, some of the candidates ignored selling expenses while computing the NRV.

**Question 5 (b)**

An average performance was witnessed here. Some of the common mistakes observed were as follows:

- The cost of material (Pollen) transferred from Department A, was not considered in arriving at the cost of Department B.
- Many candidates who transferred the cost of Department A to Department B correctly, computed the yield on the basis of Material Y only.

**Question 6**

This question required candidates to calculate break-even sales in quantity. Some of the common mistakes were as follows:

- Variable costs were calculated on the basis of gross units instead of good units produced.
- While calculating variable cost per good unit, sale proceeds of defective units was not adjusted.
- Many candidates treated selling expenses as variable instead of bifurcating them into fixed and variable elements.

**Question 7**

This question required calculation of net profit after determination of the optimum production plan based on total production requirements and the given constraints. This question was generally answered well by most of the candidates. However, instead of ranking the products on the basis of limiting factor i.e. labour hours, many candidates tried to rank them on the basis of total savings achieved from in-house production.

*THE END*





The Institute of Chartered Accountants of Pakistan

## Cost Accounting

Intermediate Examination  
Autumn 2013  
Module D

6 September 2013  
100 marks - 3 hours  
Additional reading time - 15 minutes

- Q.1 (a) Rahat Limited (RL) produces and markets a single product Beta. Following are the details of RL's monthly production and related costs for the past six months:

	March	April	May	June	July	August
Units	1,115	2,185	1,265	1,610	2,645	1,380
Costs (Rs. '000)	1,775	2,300	1,660	1,840	2,875	2,300

**Required:**

Using least square method, calculate the estimated cost to produce 1,800 units of Beta. (09)

- (b) What do you understand by 'Period cost'? Briefly describe 'Product cost' in relation to both manufacturing and merchandising firms. (06)
- (c) Gama Industries (GI) has secured an order for production of a new product Alpha which would require 600 hours of direct labour. The spare capacity available with GI is 450 direct labour hours. The additional labour hours may be obtained by either:
- paying overtime at time and a half; or
  - diverting labour from the production of product Zeta which earns a contribution margin of Rs. 24 in three labour hours.

**Required:**

Calculate the relevant cost of labour for the production of Alpha, assuming labourers are paid at a uniform rate of Rs. 20 per hour. (04)

- Q.2 Design Limited (DL) produces and markets two products viz. Olive and Mint. Following information is available from DL's records for the year ended 30 June 2013:

		Olive	Mint
Selling price per unit	Rs.	760	550
Variable cost of production per unit	Rs.	520	430
Selling and distribution expenses per unit	Rs.	40	20
Fixed cost	Rs.	4,400,000	5,200,000
Number of units produced and sold		120,000	150,000

The above sales volumes are based on the market demand for these products. DL is currently operating at 75% of the installed capacity. Time required for producing each unit of Olive and Mint is the same. In order to utilize the spare capacity of the plant, the marketing department has suggested the following options to the management:

**Option 1:** Introduce a single pack of both the products Olive and Mint. The price of the single pack would be 90% of the combined price of separate products. It would increase overall market demand for these products resulting in utilisation of full capacity. However, it is estimated that the sale of separate units of each products would reduce by 18%.

**Option 2:** To launch a new product Salsa at a price of Rs. 380 per unit. Salsa is estimated to have a demand of 80,000 units per annum and a unit variable cost equal to 40% of the variable cost of Olive. It would result in additional fixed costs of Rs. 3,200,000 per annum.

**Required:**

Evaluate the above options and advise the management about the most feasible option. (11)

Q.3 Big Limited (BL) manufactures and supplies consumer durables. It uses a fixed time period inventory model whereby inventory count is carried out every month. In order to employ inventory optimization and keep costs under control, the management has approved to implement ABC plan on test basis, for reviewing inventory in one of BL's departments. This approach would categorize the inventory on the following basis:

- Items that account for upto 25% of the annual consumption in units would be classified as 'A'
- Items that account for more than 25% but less than or equal to 60% of the annual consumption in units would be classified as 'B'
- Items that account for more than 60% of the annual consumption in units would be classified as 'C'.

The 'A' items would be counted once after every 30 days; 'B' items once after every 45 days; and 'C' items once after every 90 days.

Following information is available from BL's records of the concerned department:

Item Code	101	102	103	104	105	106	107	108
Annual consumption (Units '000)	550	300	300	600	125	325	500	750
Rate per unit (Rs.)	50	400	40	45	600	120	20	25

Each inventory count is estimated to cost Rs. 2,500 per item. Assume 360 days in a year.

**Required:**

Classify the above inventory items according to the ABC plan and calculate annual savings, if any, if the above approach is implemented. (12)

Q.4 Crystal Limited (CL) is engaged in the business of supplying plastic chairs to schools and hospitals in Karachi. Following data has been extracted from CL's business plan:

	Actual	Forecast			
	Aug. 2013	Sep. 2013	Oct. 2013	Nov. 2013	Dec. 2013
Purchases (Rs. '000)	600	520	680	640	560

**Additional information:**

- (i) All the above amounts are exclusive of sales tax. The company uses Just-in-time inventory system and therefore has a negligible stock at any point of time.
- (ii) Sales tax is charged at the rate of 17% and is payable on the 15th day of the next month along with the sales tax return. Refunds, if any, are received one month after submission of the sales tax return.
- (iii) 70% of the sales are made to hospitals on two months credit whereas the rest of the sales are made to schools on credit of one month. All debtors are expected to promptly settle their debts. CL earns a uniform gross profit of 20 percent on sales.
- (iv) 10% of the creditors are paid in the month of purchase, 60% are paid in the first month subsequent to purchase and the remaining 30% are paid in the second month following the purchase.
- (v) Monthly salaries and wages amount to Rs. 95,000 and are paid in the month in which they are incurred.
- (vi) A monthly rent of Rs. 50,000 is paid in advance on quarterly basis.
- (vii) Selling expenses for September are estimated at Rs. 40,000. 35% of selling expenses are fixed whereas remaining amount varies with the variation in sales. Selling expenses are paid in the month in which they are incurred.
- (viii) Other overhead expenses are estimated at 6% of the sales for the previous month.
- (ix) Cash and bank balances as at 30 September 2013 are estimated to be Rs. 1,000,000.

**Required:**

Prepare a month-wise cash budget for the **quarter** ending 31 December 2013. (16)



- Q.5 Power Limited (PL) is engaged in the business of overhaul and repair of turbo-generators. The company uses job order costing system. Following data has been extracted from the cost cards relating to jobs completed in the month of August 2013:

	Rs. '000
Materials issued	55,000
Direct labour	41,000
Overheads on material	25%
Overheads on direct labour	80%

The clients are billed at each month-end on the basis of cost cards and PL earns a profit of 20% of the invoice value for each completed job.

Actual expenses for the month of August 2013 were as under:

	Rs. '000
Factory wages (inclusive of indirect labour)	65,000
Factory expenses	15,000
Store expenses	7,500
Other office expenses	4,500

Following information is also available:

- (i) Material requisitions not recorded in the cost cards amounted to Rs. 5,600,000.
- (ii) Direct labour shown as indirect in the cost cards amounted to Rs. 2,900,000.
- (iii) Details of stock and work in process for the month of August 2013 are as under:

	Opening	Closing
	-----Rs. '000-----	
Stock of materials	5,000	5,500
WIP - material	10,000	10,500
WIP - labour	2,500	4,500

**Required:**

Calculate the following for the month of August 2013:

- (a) Purchases
  - (b) Direct labour
  - (c) Under / over absorbed overheads
  - (d) Actual profitability of completed jobs
- (12)**

- Q.6 (a) Maroof Engineering (ME) produces and markets a single product. In order to keep pace with the changing technology, ME's management has decided to install high-tech machines in its production department which would result not only in improving the productivity but would also reduce the number of workers from the present level of 500 to 400 workers. Following information is available from ME's records for the year ended 31 August 2013:

Sales per month	Rs. 12,000,000
Wages paid to workers per month	Rs. 2,000,000
Other benefits	35% of wages
Production per month	80,000 units
Profit/volume (P/V) ratio	30%

After the installation of high-tech machines, the company is expected to produce 89,600 units per month. The management has also decided to pay 1.6% incentive wages to the workers for every 2% increase in productivity.

**Required:**

Calculate the annual financial implication of the proposal.

**(11)**



- (b) Following data is available from the production records of Mian Industries for the month of August 2013. The company uses process costing to value its output.
- Input materials 5,000 units at the rate of Rs. 49 per unit.
  - Conversion costs Rs. 30,000.
  - Normal loss, which is 10% of input materials, is sold as scrap at Rs. 19 per unit.
  - Actual loss 650 units.
  - There were no opening or closing stocks.

Assume inspection is performed at the end of the process.

**Required:**

Calculate the amount of abnormal loss and cost of one unit of output.

(03)

- Q.7 Zaiqa Limited (ZL) is engaged in the business of manufacturing fruit jam. It has three production and two service departments. Following information is available from ZL's records for the month of August 2013:

	Rupees
Rent and rates	85,000
Indirect wages	60,000
General lighting	75,000
Power	150,000
Depreciation machinery	50,000

Following further information relating to the departments is also available:

	Production departments			Service departments	
	Selection	Jam making	Bottling	Storage	Distribution
Direct wages (Rs.)	60,000	80,000	32,000	8,000	20,000
Power consumed (KWH)	1,000	6,000	2,000	1,000	-
Floor area (Sq. ft)	1,500	2,000	1,250	1,000	500
Light points (Nos.)	10	20	15	5	10
Production hours	1,533	3,577	1,815	-	-
Labour hours per bottle	0.10	0.25	0.15	-	-
Cost of machinery (Rs.)	600,000	1,200,000	900,000	300,000	-

After production, the jam bottles are finally packed in a carton consisting of 12 bottles. The service departments costs are apportioned as follows:

	Production departments			Service departments	
	Selection	Jam making	Bottling	Storage	Distribution
Storage	10%	30%	40%	-	20%
Distribution	20%	50%	30%	-	-

Raw and packing material costs of Rs. 36 and labour cost of Rs. 25 is incurred on each bottle.

**Required:**

Calculate the cost of each carton.

(16)

(THE END)

**COST ACCOUNTING**  
Suggested Answers  
Intermediate Examination - Autumn 2013

A.1 (a)

	Units (x)	Overheads Rs.000' (y)	(xy)	(x <sup>2</sup> )
March	1,115	1,775	1,979,125	1,243,225
April	2,185	2,300	5,025,500	4,774,225
May	1,265	1,660	2,099,900	1,600,225
June	1,610	1,840	2,962,400	2,592,100
July	2,645	2,875	7,604,375	6,996,025
August	1,380	2,300	3,174,000	1,904,400
	10,200	12,750	22,845,300	19,110,200

$$b \text{ (Variable cost per unit)} = \frac{n(\sum xy) - (\sum x)(\sum y)}{n(\sum x^2) - (\sum x)^2} = \frac{6 \times 22,845,300 - 10,200 \times 12,750}{6(19,110,200) - (10,200)^2} = 0.6611$$

$$a \text{ (Fixed costs per month)} = \frac{(\sum y) - b(\sum x)}{n} = \frac{(12,750 - 0.6611(10,200))}{6} = 1,001.13$$

**Estimated cost to produce 1,800 units:**

$$Y = a + b(x)$$

$$= 1,001.13 + 0.6611 \times 1,800 = \text{Rs. } 2,191.11$$

(b) **Product cost:**

The aggregate of costs that are associated with a unit of product is called product cost.

In case of a manufacturing firm, it includes only the costs necessary to complete the product. viz. direct material, direct labour and factory overhead. It may or may not include the element of overhead depending upon the type of costing system in use-absorption or direct.

Product costs for a merchandising firm include the cost to purchase the product plus the transportation costs paid by the retailer or wholesaler to get the product to the location from where it will be sold or distributed.

**Period costs:**

All non-product expenditures which are incurred for managing the firm and selling the product are expensed in the period in which they are incurred and are called period costs.

It is associated with a time period rather than manufacturing or trading activity.

Period costs primarily include the general, selling and administrative costs that are necessary for the management of the company but are not involved directly or indirectly in the manufacturing process or in the purchase of the products for resale.

(c) **Calculation of relevant cost of labour:**

Labour hours required for the production of Alpha	600 hours
Spare capacity available (Not relevant)	450 hours
Remaining hours required	<u>150 hours</u>
150 hours could either be obtained from:	
▪ over time [150 × 1.5 × 20]	Rs. 4,500
▪ curtailing production of Zeta [(150 × 20) + (150 ÷ 3 × 24)]	Rs. 4,200

The relevant cost of labour would be Rs. 4,200 as it would be cheaper to obtain labour by diverting it from the production of Zeta.

**COST ACCOUNTING**  
Suggested Answers  
Intermediate Examination - Autumn 2013

A.2

	Products	
	Olive	Mint
Sale price	760	550
Less: Variable cost	(560)	(450)
Contribution margin / unit	200	100
No. of units produced and sold	120,000	150,000
Existing contribution margin	24,000,000	15,000,000

<b>Option 1:</b>	
<b>Additional profit from the introduction of packaged products:</b>	
Quantity of packaged products:	<b>Units</b>
Reduction in sale of Olive [120,000 × 18%]	21,600
Reduction in sale of Mint [150,000 × 18%]	27,000
Under utilization of existing capacity [(120,000 + 150,000) × 75%] – 270,000	90,000
	138,600
Units of packaged products [138,600 ÷ 2]	69,300
	<b>Rupees</b>
Selling price per package (760 + 550) × 90%	1,179
Variable cost [560 + 450]	1,010
Contribution margin of packaged products	169
Contribution margin from sale of packaged products [69,300 × 169]	11,711,700
Less: Reduction in contribution margin [200 × 21,600] + [100 × 27,000]	(7,020,000)
	4,691,700
<b>Option 2:</b>	
<b>Additional profit from Salsa</b>	
Contribution margin from Salsa [380 × 80,000] – [560 × 40% × 80,000]	12,480,000
Less: Additional fixed cost	3,200,000
	9,280,000
Additional profit [9,280,000 – 4,691,700]	4,588,300

**Decision:**

The management should produce Salsa as it would result in an additional profit of Rs. 4,588,300 as compared to the introduction of a single pack of both the products.



**COST ACCOUNTING**  
Suggested Answers  
Intermediate Examination - Autumn 2013

A.3

Item Code	Annual Usage Unit	Rate per Unit-Rs.	Annual Cost	Cum. Annual Usage	Cum. Annual Usage%	Category	No. of Counts in a year
102	300	400	120,000	300	8.70	A	12
105	125	600	75,000	425	12.32	A	12
106	325	120	39,000	750	21.74	A	12
101	550	50	27,500	1,300	37.68	B	8
104	600	45	27,000	1,900	55.07	B	8
108	750	25	18,750	2,650	76.81	C	4
103	300	40	12,000	2,950	85.51	C	4
107	500	20	10,000	3,450	100.00	C	4
	3,450		329,250				64

Inventory count cost – current [ 2,500 × 8 × 12]	240,000
Inventory count cost as per new plan [64 × 2,500]	(160,000)
Savings	80,000

A.4

**Month-wise Cash Budget**

	Rs. in '000		
	Oct	Nov	Dec
Opening balance	1,000	833.10	708.14
<b>Receipts:</b>			
Collection from hospitals and schools W-1	842.40	830.70	976.95
<b>Payments:</b>			
Purchases W-2	(655.20)	(734.76)	(753.48)
Sales tax payable W-3	(22.10)	(28.90)	(27.20)
Salaries and wages	(95)	(95)	(95)
Rent	(150)	-	-
Selling expenses: W-4			
▪ Variable (4% of sales)	(34)	(32)	(28)
▪ Fixed	(14)	(14)	(14)
Overhead expenses	(39)	(51)	(48)
Total payments	(1,009.30)	(955.66)	(965.68)
Closing balance	833.10	708.14	719.41

**WORKING NOTES:**

**W-1: Calculation of sales and collections**

	-----Rs. in '000-----				
	Aug	Sep	Oct	Nov	Dec
Purchases	600	520	680	640	560
Add: gross profit (25% of cost)	150	130	170	160	140
Sales - Gross	750	650	850	800	700
Sales to hospitals – 70%	525	455	595	560	490
Add: sales tax @17%	89.25	77.35	101.15	95.20	83.30
Collection from hospitals- A	614.25	532.35	696.15	655.20	573.30
Sales to schools – 30%	225	195	255	240	210
Add: sales tax @17%	38.25	33.15	43.35	40.80	35.70
Collection from schools - B	263.25	228.15	298.35	280.80	245.70
Total collection (A+B)			842.40	830.70	976.95

**COST ACCOUNTING**  
Suggested Answers  
Intermediate Examination - Autumn 2013

**W-2: Purchases**

	-----Rs. in '000-----				
	Aug	Sep	Oct	Nov	Dec
Purchases	600	520	680	640	560
Add: Sales Tax @17%	102	88.40	115.60	108.80	95.20
	702	608.40	795.60	748.80	655.20
Payment to creditors:					
10% - month of purchase			79.56	74.88	65.52
60%-following month			365.04	477.36	449.28
30%- second month			210.60	182.52	238.68
			655.20	734.76	753.48

**W-3: Sales tax**

	-----Rs. in '000-----				
	Aug	Sep	Oct	Nov	Dec
Output tax	127.50	110.50	144.50	136.00	119.00
Less: Input tax	(102.00)	(88.40)	(115.60)	(108.80)	(95.20)
S.tax payable / (refundable)	25.50	22.10	28.90	27.20	23.80
Sales tax payments			22.10	28.90	27.20

**W-4: Calculation of variable Selling expenses**

	Rs. in '000
Selling expenses – Sep 2013	40
Less: fixed expenses – 35%	(14)
Variable selling expenses	26
Sales for the month of Sep 2013	650
Variable selling expenses as a % of sales $[26 \div 650 \times 100]$	4%

**COST ACCOUNTING**  
Suggested Answers  
Intermediate Examination - Autumn 2013

A.5	<b>Purchases for the month of August 2013:</b>	<b>Rs. in '000</b>
	Materials issued as per cost cards	55,000
	Add: Materials issued but not booked in cost cards	5,600
	Closing stock of: raw material	5,500
	Less: Opening stock of: raw material	(5,000)
	Purchases	61,100
	<b>Direct labor for the month of August 2013:</b>	
	Direct labor as per cost card	41,000
	Add: Direct labour booked as indirect in cost cards	2,900
	Direct labour	43,900
	<b>Unabsorbed overheads</b>	
	Indirect labour (65,000 – 43,900)	21,100
	Factory expenses	15,000
	Store expenses	7,500
	Actual overheads for the period	43,600
	Overhead - on material [ (55,000+5,600) ×25% ]	15,150
	Overhead - on labour [ (41,000+2,900) ×80% ]	35,120
	Absorbed overheads as per cost cards	50,270
	Over absorbed overhead	(6,670)
	<b>Actual profitability of completed jobs for the month of August 2013:</b>	
	Sales (W-1)	190,338
	Actual Material consumed [10,000 – 10,500] + [55,000 + 5,600]	(60,100)
	Actual Direct labour [2,500 – 4,500] + [41,000 + 2,900]	(41,900)
	Actual overhead	(43,600)
		(145,600)
	Less: Other office expenses	(4,500)
	Net Profit	40,238
	<b>W-1:</b>	
	Materials consumed	60,100
	Direct labour	41,900
	Overhead - on material	15,150
	Overhead - on labour	35,120
		152,270
	Profit (152,270 ÷ 80 × 20)	38,068
	Sales	190,338



**COST ACCOUNTING**  
Suggested Answers  
Intermediate Examination - Autumn 2013

**A.6 (a) Improvement in Productivity after Installation of high tech machines:**

Proportionate output of 400 workers on the basis of existing productivity level = $\frac{80,000 \text{ units}}{500} \times 400$	64,000 units
Expected output of 400 workers after mechanisation	89,600 units
Improvement in productivity ( 89,600 – 64,000 units)	25,600 units
% of improvement in productivity = $\frac{25,600 \text{ units}}{64,000 \text{ units}} \times 100$	40%
Incentive wages payable (@ 1.6% for every 2% improvement) [40%×1.6%÷2%]	32%
Annual wages to 400 workers before incentive $\frac{\text{Rs.}2,000,000}{500} \times 400 \times 12$	Rs. 19,200,000
Selling price per unit = $\frac{\text{Rs. } 12,000,000}{80,000}$	Rs. 150.00

	Inst. Of high tech machines	
	Before	After
Wages payable per annum [2,000,000 × 12]	24,000,000	19,200,000
Other benefits [@ 35% of wages]	8,400,000	6,720,000
Incentive wages [@ 32% of wages]	-	6,144,000
	32,400,000	32,064,000

	Rs.
Gross saving per annum (32,400,000 – 32,064,000)	336,000
Add: Increase in contribution [89,600 units – 80,000 units) × 12 × (150 × 0.30)]	5,184,000
Increase in annual contribution due to mechanisation	5,520,000

(b) Cost per unit =  $\frac{5,000 \times \text{Rs.}49 + 30,000 - 5,000 \times 10\% \times \text{Rs.}19}{\frac{[5,000 - 5,000 \times 10\% ]}{4,500}}$  = Rs. 59

Abnormal loss (units) = Total loss – Normal loss = 650 – 500 = 150 units.

Amount of abnormal loss to be charged to Profit and loss Account = (Rs. 59 – Rs. 19) × 150  
= Rs. 6,000

**A.7**

**Zaiqa Limited**  
**Primary Distribution of Overheads**

Items	Basis of Apportionment	Total overheads	Production Depts.			Service Depts.	
			Selection	Jam making	Bottling	Storage	Distribution
Direct wages	Given	28,000	-	-	-	8,000	20,000
Rent and rates	Floor area	85,000	20,400	27,200	17,000	13,600	6,800
General lighting	Light points	75,000	12,500	25,000	18,750	6,250	12,500
Indirect wages	Direct wages	60,000	18,000	24,000	9,600	2,400	6,000
Power	KWH consumed	150,000	15,000	90,000	30,000	15,000	-
Depreciation	Cost of machinery	50,000	10,000	20,000	15,000	5,000	-
Total departmental overheads		448,000	75,900	186,200	90,350	50,250	45,300

**COST ACCOUNTING**  
Suggested Answers  
Intermediate Examination - Autumn 2013

**Secondary Distribution of Overheads**

Items	Production Depts.			Service Depts.	
	Selection	Jam making	Bottling	Storage	Distribution
Total overheads as above	75,900	186,200	90,350	50,250	45,300
(1 : 3 : 4 : 2)	5,025	15,075	20,100	(50,250)	10,050
(2 : 5 : 3 : 0)	11,070	27,675	16,605	-	(55,350)
Total	91,995	228,950	127,055		
Production hours	1,533	3,577	1,815		
Rate per hour (Rs)	60.0	64.0	70.0		

**Cost of one carton**

	Rupees	
Raw and packing material (36 × 12)		432
Direct labour (25 × 12)		300
Overheads :		
Selection (0.1 × 12 × 60)	72	
Jam making (0.25 × 12 × 64)	192	
Bottling (0.15 × 12 × 70)	126	390
Total		1,122

**(THE END)**

**THE INSTITUTE OF CHARTERED ACCOUNTANTS OF PAKISTAN****EXAMINERS' COMMENTS**

<b>SUBJECT</b>	<b>SESSION</b>
Cost Accounting	Intermediate Examination - Autumn 2013

**General:**

Overall it was a balanced paper and candidates who seemed to have covered all parts of the syllabus did well in this paper. It also showed some improvement from the previous session. However, candidates who seemed to have focused on selective topics once again failed to perform well. Questions 1 and 7 were the best answered questions on the paper, followed by questions 2 and 4. Question 3 was the worst answered question.

**Specific comments are as under:****Question 1 (a)**

This question required to calculate the estimated cost of 1800 units of a product using 'Least square method'. A large number of candidates secured very good marks, as the question involved no complications. Still there were few cases where basic formulae were incorrect whereas some students made abnormally high number of clerical errors.

**Question 1 (b)**

In this part, elementary concepts of 'Period cost' and 'Product cost' were required to be explained. Generally the answers were well written and candidates secured good marks. However, some students did not understand the difference between product costs of manufacturing and merchandising concerns. Few candidates seemed confused as regards the treatment of overheads.

**Question 1 (c)**

The performance on this part of the question was satisfactory. However, many candidates compared the overtime amount with loss of margin on diverting labour from the production of product Zeta and ignored the normal wages which were required to be paid in any case.

**Question 2**

In this question, a situation was given where a manufacturing firm had 2 options for optimum utilization of its spare capacity and the candidates were asked to propose the best solution. This question was poorly attempted in general and only few candidates could secure passing marks. Common observations noted were as follows:



- There were two ways of solving the question i.e. by comparing the relevant (incremental) revenue/cost only or by comparing the total profit. Most students seemed confused and mixed up both approaches.
- Many students ignored the fact that price of single pack would be 10% less than the combined price of separate packs.
- In working out variable costs some students considered variable cost of production and ignored the variable selling costs.
- Many students ignored the fact that after introduction of single pack the regular sale of individual products would be reduced.
- Additional fixed costs on the new products were ignored.

**Question 3**

This was the worst attempted question. Virtually none of the candidates were able to take a correct direction. It was obvious that students had completely ignored the topic of inventory management by ABC plan. This resulted in loss of valuable marks which could have been obtained with minimum effort. A lot of candidates failed in this attempt just because they scored nothing in this question.

**Question 4**

The question was based on simple projected cash flow statement and was good scoring opportunity with a bit of focus. Candidates generally secured passing marks as no complications were involved. Despite simplicity, following mistakes were made and resultantly some easy marks were lost:

- (i) Many candidates failed to calculate the value of GST on sales which resulted in incorrect values of collection from debtors.
- (ii) Many candidates failed to bifurcate selling expenses into variable and fixed expenses.
- (iii) Sales tax on purchases was ignored.
- (iv) Many candidates were unable to calculate net sales tax payable.

**Question 5**

This question required candidates to compute Purchases, Direct labour, Under / over absorbed overheads and Actual profit of completed jobs from among the given set of data. Although it was a simple question but unfortunately performance in this question remained below average. The common mistakes observed were as follows:

- (i) While calculating the amount of purchases many candidates surprisingly ignored the value of opening and closing stock of raw material. In sharp contrast, many candidates also adjusted the value of opening and closing stock of material work-in-process.

- (ii) While calculating unabsorbed overheads, most of the candidates took into consideration the value of both direct as well as indirect wages.
- (iii) While calculating actual net profit many candidates failed to adjust the value of over-absorbed overheads.

**Question 6 (a)**

In this part the candidates were required to calculate the annual financial implication of a proposal under the given scenario. Majority of the candidates were unable to produce satisfactory answers. Contrary to the requirement of the question many candidates calculated the monthly implication instead of annual financial implication. In computing the increase in productivity, majority of the candidates did not consider the impact of the reduction in labour force from 500 to 400 workers.

**Question 6 (b)**

It required the candidates to calculate the amount of abnormal loss and cost of each unit of output. The performance on this part was satisfactory with the exception that most of the candidates failed to adjust the sale value of the scrap material from the unit cost of output while computing the amount of abnormal loss.

**Question 7**

This question required candidates to calculate cost of producing a carton of a product. During this process they were required to allocate overheads to various production and service departments and then allocate service department overheads to production departments.

Most of the candidates performed very well. However, in few cases the candidates selected inappropriate basis for the allocation of overheads. For instance, general lighting and indirect wages were allocated on the basis of floor area instead of more appropriate basis of light points and direct wages respectively.

*THE END*





The Institute of Chartered Accountants of Pakistan

## Cost Accounting

Intermediate Examination  
Spring 2014  
Module D

7 March 2014  
100 marks - 3 hours  
Additional reading time - 15 minutes

Q.1 (a) What is 'opportunity cost'? Give two practical examples of opportunity cost. (04)

(b) A company annually produces 600 units of a product. Each unit requires 6 kg of material Y. The costs related to material Y are as follows:

Cost per kg.	Rs.	16,000
Inspection charges per order	Rs.	20,000
Transportation cost per trip (upto 400 units per trip)	Rs.	25,000
Annual warehousing cost per unit	Rs.	100
Financing cost		15%

**Required:**

- (i) Economic Order Quantity for material Y. (05)  
 (ii) Total ordering and holding costs, if each order is based on EOQ and the company maintains a safety stock of 30 units. (04)

Q.2 Alpha Limited is preparing its departmental budgets and product cost estimates for the next year. The costs and related data for the year ending 31 December 2014 have been estimated as follows:

	Machining	Assembly	Finishing	Maintenance	Total
<b>Costs:</b>	<b>Rs. in 000</b>				
Direct wages	274	146	328	-	748
Indirect wages	46	27	36	137	246
Direct materials	365	46	18	-	429
Indirect materials	68	18	36	91	213
Power	-	-	-	-	465
Light and heat	-	-	-	-	46
Depreciation	-	-	-	-	108
Rent and rates	-	-	-	-	114
Warehousing cost	-	-	-	-	98
<b>Other data:</b>					
Direct labour hours	12,000	8,000	16,000	6,000	42,000
Machine hours	40,000	2,000	3,000	-	45,000
No. of employees	6	4	8	3	21
Floor area (m <sup>2</sup> )	1,000	400	300	300	2,000
Net book value of fixed assets (Rs. 000)	20,000	8,000	3,000	4,000	35,000

80% of the maintenance department's time is used in the maintenance of machines whereas the remaining time is consumed in cleaning and maintenance of factory buildings.

**Required:**

Calculate appropriate overhead absorption rates for the machining, assembly and finishing departments. (12)



Q.3 (a) The following information relates to a week's work for three employees:

	Employee		
	A	B	C
Output (units)	160	276	68
Time allowed (hours per unit)	0.5	0.25	0.75
Basic hourly wage rate (Rupees)	80	100	70
Hours worked as direct labour	48	54	30
Hours worked as indirect labour	-	-	12

The normal working week is 42 hours. For the first six hours, overtime is paid at 50% above the normal rate. Any further overtime is paid at double the normal rate. Bonus is paid at three-fifth of the normal rate for the hours saved.

**Required:**

Using the information given above, calculate the total wages earned by each employee. (08)

(b) The following is a summary of payroll of LMN Factory Limited for the month of February 2014:

	Rupees
Basic salary	420,000
Allowances	147,000
Gross salary	567,000
Deductions :	
Loans to staff	(13,000)
Income tax	(15,500)
Employees' provident fund contribution	(35,000)
Net salary	503,500

The company is also required to pay the following:

- Company's contribution to the provident fund which is equal to employees' contribution
- 5% of the basic salary to a government organisation

**Required:**

Pass journal entries to record the payroll cost for the month of February 2014. (06)

Q.4 XY Limited manufactures and sells a single product. The selling price and costs for the year ended 31 December 2013 were as follows:

	Rs. per unit
Selling price	1,600
Direct material	630
Direct labour	189
Production overheads (40% fixed)	220
Selling and distribution overheads (60% fixed)	165

Other information is as follows:

- (i) During the year, 12,000 units were produced.
- (ii) The opening and closing stocks were 4,000 and 3,000 units respectively
- (iii) Fixed overhead cost per unit is based on normal capacity which is 15,000 units.
- (iv) Overhead costs have increased by 10% over the previous year and raw material and labour by 5%.
- (v) The company uses FIFO method for costing its inventory.

**Required:**

- (a) Profit and loss account for the year ended 31 December 2013 under absorption costing and marginal costing. (14)  
 (b) Reconciliation of profit worked out under the two methods. (02)

Q.5 ABC Limited deals in manufacturing and marketing of perfumes. The company has three brands to cater for different classes of customers. The selling prices and contribution margins for the year 2013 were as follows:

	A	B	C
	Rs. per unit		
Sale price	10,000	8,000	5,000
Contribution margin	5,000	3,000	2,000

Total sale for the year 2013 was Rs. 15,600 million and sales volume ratio for A, B and C was 2:3:5 respectively.

The following estimates pertain to the year ending 31 December 2014:

- The average sale prices and variable costs for the next year are expected to increase by 14% and 8% respectively.
- The normal market growth is estimated at 5% per annum. However, the company plans to launch an aggressive marketing campaign for which additional advertising budget of Rs. 250 million has been approved. With increased advertisement, increase in sales volume for A, B and C has been forecasted at 15%, 12% and 10% respectively.

**Required:**

Compute the projected contribution margin for the year 2014 and the impact of advertising on profit of the company. (13)

Q.6 Orient Stores Limited (OSL) operates retail outlets at various petrol pumps across the city. The average monthly performance of these outlets is as under:

	Rs. in '000
Sales	1,500
Rent expense	50
Other fixed costs	150

OSL earns contribution margin of 15% on items on which retail prices are printed. These items constitute 40% of the total sales. All other items are sold at the contribution margin of 25%.

Sohaib Enterprises (SE) has offered OSL to establish an outlet at one of its petrol pumps located in a posh area of the city. OSL's planning department estimates that:

- At the proposed location, the sales volumes would be 20% lower than average.
- Being a posh area, OSL would be able to charge 10% higher prices on items on which retail prices are not printed.
- Other fixed costs would be the same as the average of the existing outlets.

**Required:**

- (a) Determine the break-even sales under the assumptions that SE would monthly charge:  
 Option I : rent of Rs. 75,000  
 Option II : rent of Rs. 50,000 plus 5% commission on total sales. (14)
- (b) Which of the above options would you recommend and why? (02)

Q.7 The following projections are contained in the budget of Scientific Chemicals Limited for the year ending 31 December 2014:

(i) Annual local and export sales

	Product C031		Product D032	
	Rs. per unit	Units	Rs. per unit	Units
Local sales	1,965	40,000	1,410	50,000
Export sales	2,100	25,000	1,500	24,000

(ii) Raw material and labour per unit

		Product C031	Product D032
Raw material-A at Rs. 25 per kg.	(Kg.)	4.0	3.0
Raw material-B at Rs. 60 per kg.	(Kg.)	3.5	2.6
Skilled labour hours at Rs. 250 per hour	(Hours)	2.4	2.0
Semi-skilled hours at Rs. 120 per hour	(Hours)	5.0	2.5

(iii) Variable overheads for each unit of product C031 and D032 are estimated at Rs. 125 and Rs. 60 respectively.

(iv) Fixed overheads including admin & selling overheads would amount to Rs. 3 million per month.

The company is faced with the under-mentioned constraints:

- The supplier of material-B can supply 27,700 kg. per month only.
- Only 35 skilled workers will be available for each shift of 8 hours while factory will be operated for 25 days in a month on 3 shift basis.

**Required:**

Determine optimal production plan for the next year assuming that the company cannot afford to terminate the export sales contract because of the heavy damages payable in case of default.

**(16)**

**(THE END)**



**COST ACCOUNTING**  
Suggested Answers  
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**Ans.1 (a)** An **opportunity cost** is a cost that measures the opportunity lost or sacrificed when the choice of one course of action requires that an alternative course of action be given up.

The following are examples of opportunity costs:

- (i) If scarce resources such as machine hours are required for a special contract then the opportunity cost represents the lost profit that would have been earned from the alternative use of the machine hours.
- (ii) An employee is paid Rs. 100 per hour and is charged out at Rs. 250 per hour for committed work. If that employee is redirected to other assignment, the lost contribution of Rs. 150 per hour represents the opportunity cost of the employee's time.
- (iii) A company owns the building in which it operates, and thus pays no rent for office space. If the building was rented out, the company would receive rent of Rs. 4 million per annum. The foregone money from this alternative use of the property (i.e. rent of Rs. 4 million) is an opportunity cost of using it as office space.
- (iv) A private investor purchased shares of Rs. 100,000 and after one year the investment has appreciated in value of Rs. 105,000. The investor's return is 5 percent. If the investor invested in a bank certificate with an annual yield of 7 percent, after a year, the opportunity cost of purchasing shares is Rs. 7,000.

**(b) (i) Economic Order quantity**

Requirement of material Y per annum (6×600)	<b>kg.</b>	3,600
Ordering costs per order:		
Inspection		20,000
Transportation cost		25,000
	<b>Rs.</b>	45,000
Holding costs per kg per annum:		
Financing cost (15% of 16,000)		2,400
Warehousing cost		100
	<b>Rs.</b>	2,500

$$EOQ = \sqrt{\frac{2 \times \text{Annual required units} \times \text{costs per order}}{\text{Holding costs per kg per annum}}}$$

$$= \sqrt{\frac{2 \times 3,600 \times 45,000}{2,500}}$$

$$= \sqrt{129,600} = 360kg$$

**(ii) Ordering and holding costs**

Number of purchase orders	(3,600÷360) kg.	10
Average inventory excluding safety stock	(360÷2)	180
Safety stock		30
Average inventory including safety stock	<b>kg.</b>	<b>210</b>
Total holding cost	(2,500×210)	525,000
Total ordering costs	(45,000×10)	450,000

**COST ACCOUNTING**  
Suggested Answers  
Intermediate Examinations – Spring 2014

**Ans.2 Overhead analysis sheet for Alpha Limited for the year ending 31 December 2014:**

Expense	Machining	Assembly	Finishing	Maintenance	Total	Basis of apportionment
----- Rupees in '000 -----						
Direct wages	-	-	-	-	-	
Indirect wages	46	27	36	137	246	Actual
Direct material	-	-	-	-	-	
Indirect material	68	18	36	91	213	Actual
Power	413	21	31	-	465	Machine hours
Light and heat	23	9	7	7	46	Floor area
Depreciation	62	25	9	12	108	Book value
Rent and rates	57	23	17	17	114	Floor area
Warehousing costs	83	11	4	-	98	Direct materials
	752	134	140	264	1,290	
Reallocation of maintenance costs	188	9	14	(211)	-	80% based on the machine hours. 20% based on the floor area.
	31	13	9	(53)	-	
	971	156	163	-	1,290	
	40,000 Machines hours	8,000 Dir. labour hours	16,000 Dir. labour hours			
Overheads absorption rate Rs.	24.28	19.50	10.19			

**Ans.3 (a)**

	Employee		
	A	B	C
Hours worked	48	54	42
Normal hours per week	42	42	(30+12)=42
Overtime hours	6	12	-
Normal wages (48×80), (54×100), (42×70)	3,840	5,400	2,940
First six overtime hours (6×80×50%), (6×100×50%)	240	300	-
Overtime hours > 6 hours (6×100)	-	600	-
Total wages (A) Rs.	4,080	6,300	2,940
<b>Bonus amount</b>			
Hours allowed (160×0.5), (276×0.25), (68×0.75)	80	69	51
Direct hours worked	48	54	30
Bonus hours earned/Time saved	32	15	21
Hourly bonus rate - at three fifth of the normal rate	(80×3/5)=48	(100×3/5)=60	(70×3/5)=42
(B) Rs.	1,536	900	882
Total wages (A+B) Rs.	5,616	7,200	3,822

**COST ACCOUNTING**  
Suggested Answers  
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(b) Journal Entries

	Dr.	Cr.
-----Rupees-----		
Salaries	420,000	
Allowances	147,000	
Loans to staff		13,000
Staff income tax payable		15,500
Trustees- provident fund payable		35,000
Salary payable/bank		503,500
<i>(Payroll for the month of February 2014)</i>		
Co's contribution to provident fund	35,000	
Trustees- provident fund payable		35,000
<i>(Being Co. contribution to PF for February 2014)</i>		
Contribution to the Government organization	21,000	
Account payable - Government organization		21,000
<i>(Amount payable to a government organisation at 5% of basic salary for February 2014)</i>		

Ans.4 (a) XY Limited  
Profit and loss account for the year ended 31 December 2013

	Absorption Costing	Marginal Costing
-----Rupees-----		
Sales (13,000 units at Rs.1,600), (4,000+12,000-3000)×1,600	20,800,000	20,800,000
<b>Cost of sales:</b>		
Opening Stock [4,000×980(B)], [4,000×900(A)]	(3,920,000)	(3,600,000)
Manufacturing cost for the year (12,000×1,039), (12,000×951)	(12,468,000)	(11,412,000)
	(16,388,000)	(15,012,000)
Closing stock [3,000×1,039(B)], [3,000×951(A)]	3,117,000	2,853,000
Unabsorbed production overheads [(15,000-12000)×88]	(264,000)	-
Cost of sales	(13,535,000)	(12,159,000)
Gross profit / Gross contribution margin	7,265,000	8,641,000
Selling and distribution overheads (13,000×165)	(2,145,000)	
Variables selling and distribution overhead (13,000×165×40%)		(858,000)
<b>Net contribution margin</b>		7,783,000
Fixed production overheads (15,000×88)		(1,320,000)
Fixed selling and distribution overheads (13,000×165×0.6)		(1,287,000)
<b>Net profit</b>	<b>5,120,000</b>	<b>5,176,000</b>

W-1: Production overhead rate:

	2013	2012
-----Rupees-----		
Direct material [(630/1.05)=600]	630	600
Direct labour [(189/1.05)=180]	189	180
Production overheads – variable (220×60%=132), (132/1.1=120)	132	120
<b>Production rate for marginal costing (A)</b>	<b>951</b>	<b>900</b>
Production overheads - fixed (220×40%=88), (88/1.1=80)	88	80
<b>Production rate for absorption costing (B)</b>	<b>1,039</b>	<b>980</b>



**COST ACCOUNTING**  
Suggested Answers  
Intermediate Examinations – Spring 2014

(b) Reconciliation of net profit under Marginal and Absorption costing:

	<b>Rupees</b>
Net profit under marginal costing	5,176,000
Under absorption costing	
▪ Fixed overheads brought from the last year as included in the opening inventory (4,000×80)	(320,000)
▪ Fixed overheads carried forward to the next year as included in the closing inventory (3,000×88)	264,000
Net profit under absorption costing	<b>5,120,000</b>

Ans.5

			A	B	C	Total
<b>Projected contribution margin(CM) for 2014</b>						
Projected CM on sales for 2014 (after advertising)						
<i>Rs. in million</i>	C×K		3,120	2,827	3,058	9,005
CM on normal sales growth rate of 5%						
<i>Rs. in million</i>	C×H		2,850	2,649	2,920	8,419
Additional CM due to advertising						586
Advertising cost						(250)
Net increase in profit due to advertising						336
<i>Rs. in million</i>						
<b>Working:</b>						
Sale price per unit	<i>Rs.</i>	A	10,000	8,000	5,000	
CM per unit	<i>Rs.</i>		5,000	3,000	2,000	
Variable cost per unit	<i>Rs.</i>	B	5,000	5,000	3,000	
Revised sales price with 14% increase	<i>Rs.</i>	(A×1.14)	11,400	9,120	5,700	
Revised variable cost with 8% increase	<i>Rs.</i>	(B×1.08)	(5,400)	(5,400)	(3,240)	
Projected CM per unit for 2014	<i>Rs.</i>	C	6,000	3,720	2,460	
<b>Sales quantities for 2013 and 2014:</b>						
Sales volume ratio		D	2	3	5	10
Sales ratio		E (A×D)	20,000	24,000	25,000	69,000
Total sales	<i>Rs. in million</i>	F(E=69×15.6)	4,522	5,426	5,652	15,600
Total sales quantities for 2013	<i>Units in million</i>	G (F÷A)	0.452	0.678	1.130	
Sales quantities for 2014 at estimated normal growth of 5%	<i>Units in million</i>	H (G×1.05)	0.475	0.712	1.187	
Sales volume increase % for 2014 with advertising		J	15%	12%	10%	
Sale quantities for 2014 having advertising effect	<i>Units in million</i>	K [G×(1+J)]	0.520	0.760	1.243	

**COST ACCOUNTING**  
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Ans.6 (a) Break-even sales for the new outlet

	Option I	Option II
	Rs. in '000	
Sales - Retail price printed (1,500×40%×0.8)	480.00	480.00
Sales - Retail price not printed (1,500×60%×0.8×1.1)	792.00	792.00
5% Commission on sales to the outlet owner	-	(63.60)
<b>Net sales</b>	<b>1,272.00</b>	<b>1,208.40</b>
Variable cost of sales – Retail price printed (480×85%)	(408.00)	(408.00)
Variable cost of sales – Retail price not printed (1,500×60%×0.8×75%)	(540.00)	(540.00)
<b>Contribution margin</b>	<b>324.00</b>	<b>260.40</b>
Fixed costs including Rent (150+75), (150+50)	(225.00)	(200.00)
<b>Profit</b>	<b>99.00</b>	<b>60.40</b>
Contribution margin %	25.47%	21.55%
Break-even sales	883.39	928.07

(b) I would recommend option I as under option I, profit on expected sales is much higher and the break-even sales is also lower than option II.

Ans.7

	Product C031	Product D032
	-----Rs. per unit-----	
Sales price	1,965.00	1,410.00
<b>Variable costs</b>		
Material A	(100)	(75)
Material B	(210)	(156)
Labour skilled	(600)	(500)
Labour semi skilled	(600)	(300)
Overheads	(125)	(60)
	(1,635)	(1,091.00)
<b>Contribution margin per unit</b>	<b>330</b>	<b>319</b>
Contribution margin per limiting factor:		
▪ Material B	94.29	122.69
▪ Skilled labour	137.50	159.50
Priority	2	1

Optimal production using limiting factors:	Material B (kg)	Skilled labour (hrs.)
Available resources per annum (27,700×12), (35×3×25×12×8)	332,400	252,000
Total required resources:		
C031 (40,000+25,000)×3.5, 2.4	(227,500)	(156,000)
D032 (50,000+24,000)×2.6, 2.0	(192,400)	(148,000)
Shortage of material B and skilled labour	(87,500)	(52,000)
Reduction in production of C031 (priority 2) [(87,500÷3.5), (52,000÷2.4)]	(25,000)	(21,667)
Production would be as under:		
	C031	D032
	-----Units-----	
1 <sup>st</sup> priority for export sales	25,000	24,000
Local sales	15,000	50,000
	<b>40,000</b>	<b>74,000</b>

**(THE END)**



<b>THE INSTITUTE OF CHARTERED ACCOUNTANTS OF PAKISTAN</b>	
<b>EXAMINERS' COMMENTS</b>	
<b>SUBJECT</b> Cost Accounting	<b>SESSION</b> Intermediate Examination - Spring 2014

**General:**

The performance in this attempt was really good as almost 60% of the candidates were able to pass. The students who were unable to pass this time need to seriously reconsider their strategy and preparation style.

Question-wise comments:

**Question 1(a)**

This part required explanation of the concept of Opportunity Cost with two examples. Some of the students treated opportunity cost as a measure of cost rather than a measure of benefit. The examples given by such students were vague and irrelevant.

**Question 1(b)**

In this part the students were required to calculate EOQ and Total Ordering and Holding costs. EOQ was correctly calculated by almost all the students. Most students also seemed well versed in the calculation of ordering and holding cost except that very few of them understood the effect of safety stock in the calculation of holding costs.

**Question 2**

This question required candidates to apportion overheads into four different departments and reallocate the cost of service department to production departments. The mistakes observed in this question were as follows:

- Direct Material and Direct Wages were also apportioned unnecessarily.
- Inappropriate basis were selected to apportion the expenses, specifically in cases of 'Power' and 'Warehousing'.
- Numerous types of errors were observed in the re-allocation of maintenance cost.

**Question 3**

This question aimed to test the students in calculation of wages based on labour rewards and incentives and passing of journal entries to record the payroll costs. This was generally attempted well to the extent of calculations but in journal entries the performance was quite below standard. While recording Provident Fund majority of the students booked the liability on the credit side but corresponding entry on debit side was missed. Similar error was also made in respect of contribution to government organization.



**Question 4**

The question required preparation of profit and loss account under marginal as well as absorption costing and to reconcile the profit under the two approaches. The common mistakes observed were as follows:

- Many candidates did not understand the calculation/treatment of unabsorbed overheads.
- Many candidates were unable to work back the value of opening stock correctly as they reduced the per unit labour and material cost of 2013 by 5% instead of dividing them by 1.05. Similar error was also made in calculating the per unit overhead costs.
- Significant number of students omitted the reconciliation part altogether.
- Many students showed total lack of conceptual understanding as they tried to prepare the reconciliation on the assumption that the difference is on account of change in the quantity of opening and closing stock.

**Question 5**

This question requiring computation of projected contribution margin pertained to a company which produced 3 products. The sale price and contribution per unit for the year and projected rates of increase thereof were given along with total sales and ratio of sales volumes of the individual products. Rate of normal growth in sales volume as well as growth on account of planned advertisement campaign were also provided.

This was one of the worst attempted questions as very few students could comprehend the overall situation. Though it was not a difficult question, most of the students proceeded in a haphazard manner without a proper plan for achieving their ultimate objective. Other common errors were as follows:

- In most cases, total sale of Rs. 15,600 million was broken down simply on the basis of sales volume ratio, without considering the sale price.
- Many candidates applied the rate of growth due to advertising campaign over and above the normal growth rates which showed lack of adequate attention towards reading and understanding of the question.
- Impact of marketing campaign was not determined separately.
- Many candidates unnecessarily splitted the advertising costs among the three products.

**Question 6**

According to the scenario given in this question, a company operated a chain of retail outlets at various petrol pumps. It intended to establish another store and had 2 options i.e. pay rent for the premises at Rs. 75,000 per month or pay rent @ Rs. 50,000 per month plus commission at 5% of sales. Further, there were two categories of products each with a different contribution margin percentage. Candidates were required to work-out the break-even sales under each option and to give their recommendations as regards the better option.

The performance in this question was also quite poor. The significant errors were as follows:

- The calculation required for sale, variable cost and margins were straightforward but a lot of candidates could not apply mathematical proportions correctly.
- Many students made errors in determining the impact of 10% increase in prices on the contribution margin of the products whose existing margin was 25%. They considered the revised margin as 35%, whereas the correct figure was 31.82%.
- Many students treated commission on sales as a fixed cost.

**Question 7**

According to the scenario given in the question, a company produced two products each of which was exported as well as sold locally. The requirement was to determine the optimal production plan keeping in view the limited resources plus the condition that export sales cannot be terminated.

Many students got confused because there were two limiting factors. They produced two production plans i.e. on the basis of each limiting factor which was not the correct approach. Other common errors were as follows:

- While calculating contribution margin per unit, the candidates considered export sale also which was incorrect because export was mandatory and therefore only local sale should have been considered.
- Many students considered only one of the two limiting factors and ignored the other.

*THE END*





The Institute of  
Chartered Accountants  
of Pakistan

**Certificate in Accounting and Finance Stage Examinations**

5 September 2014  
3 hours – 100 marks  
Additional reading time – 15 minutes

**Cost and Management Accounting**

Q.1 Ababeel Foods produces and sells chicken nuggets. Boneless chicken is minced, spiced up, cut to standard size and semi-cooked in the cooking department. Semi-cooked pieces are then frozen and packed for shipping in the finishing department.

Inspection is carried out when the process in the cooking department is 80% complete. Normal loss is 5% of input and comprises of:

- 2% weight loss due to cooking; and
- 3% rejection of nuggets. The rejected nuggets are sold at Rs. 60 per kg.

Overheads are applied at the rate of 120% of direct labour cost. Inventory is valued using weighted average cost. Following information pertains to cooking department for the month of June 2014:

	Kg.	Material ----- Rs. in '000 -----	Labour
Opening work in progress (100% complete to material and 50% complete to conversion)	30,000	6,260	1,288
Costs for the month	420,000	50,000	20,000
Weight after cooking	440,000	-	-
Transferred to finishing department	362,000	-	-
Closing work in progress (100% complete to material and 65% complete to conversion)	65,000	-	-

**Required:**

Prepare process account for cooking department for the month of June 2014. (15)

Q.2 Auto Industries Limited (AIL) manufactures auto spare parts. Currently, it is operating at 70% capacity. At this level, the following information is available:

Break-even sales	Rs. 125 million
Margin of safety	Rs. 25 million
Contribution margin to sales	20%

AIL is planning to increase capacity utilization through the following measures:

- (i) Selling price would be reduced by 5% which is expected to increase sales volume by 30%.
- (ii) Increase in sales would require additional investment of Rs. 40 million in distribution vehicles and working capital. The additional funds would be arranged through a long-term loan at a cost of 15% per annum. Depreciation on distribution vehicles would be Rs. 5 million.
- (iii) As a result of increased production, economies of scale would reduce variable cost per unit by 10%.

**Required:**

- (a) Prepare profit statements under current and proposed scenarios. (07)
- (b) Compute break-even sales and margin of safety after taking the above measures. (04)



- Q.3 Omega Limited (OL) is the sole distributor of goods produced by ABC Limited which is a leading brand in the international market. OL is now planning to establish a factory in collaboration with ABC Limited. The factory would be established on a land which was purchased at a cost of Rs. 20 million in 2005. The existing market value of the land is Rs. 40 million. The cost of factory building and plant is estimated at Rs. 30 million and Rs. 100 million respectively.

The factory will produce goods which are presently supplied by ABC Limited. The sale for the first year of production is estimated at Rs. 300 million. The existing profit margin is 20% on sales. As a result of own production, cost per unit would decrease by 10%. The sale price and cost of production per unit (excluding depreciation) are expected to increase by 10% and 8% respectively, each year.

Following further information is available:

- ABC Limited would assist in setting up of the factory for which it would be paid an amount of Rs. 10 million at the time of signing the agreement. In addition, ABC Limited would be paid a royalty equal to 3% of sales.
- The factory building and installation of plant would be completed and commercial production would start one year after signing the agreement.
- 50% of the cost of plant would be financed through a five year loan with interest payable annually at 10% per annum. Principal would be repaid at the end of 5<sup>th</sup> year.
- A working capital injection of Rs. 15 million would be required at the commencement of commercial production.
- OL charges depreciation on factory building and plant under the straight line method.
- OL uses a five year project appraisal period. The residual value of the factory building and plant after five years is estimated at 50% and 10% of cost respectively.
- The market value of the land after five years is estimated at Rs. 70 million.
- OL's cost of capital is 12%.

**Required:**

Calculate the net present value of the project assuming that unless otherwise specified, all cash inflows/outflows would arise at the end of year. Ignore taxation.

(15)

- Q.4 Hexa Limited is a manufacturer of various machine parts. Following information has been extracted from the cost records of one of its products AXE for the month of June 2014:

- (i) Standard cost per unit:

	Rupees
Raw material	170.00
Direct labour (1.25 hours)	150.00
Overheads	137.50

- (ii) Based on normal capacity of 128,000 direct labour hours, fixed overheads are estimated at Rs. 2,560,000.

- (iii) Following information pertains to production of 100,000 units of product AXE:

Actual direct labour hours worked		130,000
Unfavorable material usage variance	Rs.	820,000
Unfavorable material price variance	Rs.	600,000
Actual direct labour cost	Rs.	16,250,000
Actual fixed and variable overheads	Rs.	15,500,000

**Required:**

Compute the following for the month of June 2014:

- (a) Actual material cost (02)  
 (b) Labour variances (04)  
 (c) Overhead variances, using four variance method (10)

- Q.5 (a) What are the non-financial considerations relevant to make-or-buy decision? (03)
- (b) Alpha Limited (AL) manufactures and sells products A, B and C. In view of limited production capacity, AL is meeting the demand for its products partly through imports.

The following information has been extracted from the budget for the next year:

	A	B	C
Machine hours used in production	240,000	225,000	270,000
	----- No. of units -----		
Sale	42,000	35,000	26,500
Production	30,000	25,000	22,500
Imports	12,000	10,000	4,000
	----- Rs. in million -----		
Sales	252.00	175.00	185.50
Cost of production:			
- Direct material	48.00	31.25	40.50
- Direct labour	45.00	40.00	56.25
- Variable overheads	33.00	25.00	29.25
- Fixed overheads	28.80	27.00	32.40
Cost of import of finished products	68.40	47.00	26.88

**Additional information:**

- (i) AL is working at 100% capacity.
- (ii) AL believes that it can obtain substantial quantity discounts from foreign suppliers if it increases the import volumes. Each product is supplied by a different supplier. After intense negotiations, the suppliers have offered discounts of 15%, 10% and 12% for products A, B and C respectively.

**Required:**

Prepare a product-wise plan of production/imports to maximise the company's profitability. (15)

- Q.6 Modern Engineering Workshop (MEW) is engaged in production of customised spare parts of textile machinery. The following information pertains to the jobs worked by MEW during the month of June 2014:

	Job 101	Job 202
Size of job order	4,000 units	5,000 units
	----- Rs. in '000 -----	
Opening work in process	15,000	-
Raw material consumed	10,000	31,000
Direct labour used (Rs. 100 per hour)	5,000	8,000

- (ii) Overheads are applied to jobs at Rs. 25 per direct labour hour. Under/over applied overheads are transferred to cost of sales.
- (iii) Job 101 was completed during the month and the goods were sent to the warehouse for delivery to the customer. During the transfer to the warehouse, 160 units were damaged. Net realizable value of the damaged units was Rs. 500,000. Remaining units were transferred to the customer.
- (iv) Job 202 is in process; however, 2,000 units are fully complete and were transferred to the warehouse during the month while 3,000 units are 70% complete as at 30 June 2014.
- (v) Actual overheads for the month of June 2014 amounted to Rs. 4,000,000.

**Required:**

Prepare journal entries to record the above transactions. (11)



- Q.7 (a) Briefly describe the following terms giving an example in each case: (02)
- (i) Incremental cost (02)
- (ii) Avoidable and unavoidable costs
- (b) Salman Limited (SL) has two production departments, PD-A and PD-B, and two service departments, SD-1 and SD-2. A summary of budgeted costs for the year ending June 2015 is as follows:

	PD-A	PD-B	SD-1	SD-2	Total
	----- Rs. in '000-----				
Direct labour	5,400	3,648	-	-	9,048
Direct material	13,500	9,120	-	-	22,620
Indirect labour	1,900	600	50	20	2,570
Indirect materials	900	1,100	150	55	2,205
Factory rent	-	-	-	-	1,340
Power cost	-	-	-	-	1,515
Depreciation	-	-	-	-	3,500

Other related data is as follows:

	PD-A	PD-B	SD-1	SD-2
Production (units)	2,250	800	-	-
Direct labour hours (per unit)	20	38	-	-
Machine hours	19,250	12,250	2,800	700
Kilowatt hours (000)	800	600	50	150
Floor area (square feet)	5,000	4,000	500	500
Basis of overhead application	Machine hours	Direct labour hours	-	-

SL allocates the costs of service departments applying repeated distribution method. Details of services provided by SD-1 and SD-2 to the other departments are as follows:

Service Departments	PD-A	PD-B	SD-1	SD-2
SD-1	30%	65%	-	5%
SD-2	55%	35%	10%	-

**Required:**

Compute the departmental overhead absorption rate. (10)

(THE END)



**Cost and Management Accounting**  
Suggested Answers  
Certificate in Accounting and Finance – Autumn 2014

**Ans.1 Ababeel Foods**  
Cooking department production and cost for June 2014

**Process account - Cooking department**

	Kg.	Rs. in '000'		Kg.	Rs. in '000'
Opening WIP	30,000	(W-2)9,094	Normal loss:		
Material	420,000	50,000	▪ weight loss (W.1)	7,700	-
Labour		20,000	▪ rejection (W.1)	11,550	693
Overheads (20,000*1.2)		24,000	Abnormal loss:		
			▪ weight loss (W.1)	2,300	
			▪ rejection (W.1)	1,450	
				(W.2)	3,750
			Transferred out (W.2)	362,000	88,328
			Closing WIP (W.2)	65,000	13,244
	<b>450,000</b>	<b>103,094</b>		<b>450,000</b>	<b>103,094</b>

**W-1: Normal and abnormal losses:**

	Total loss	Normal loss (Cooking loss at 2% & rejection loss at 3% of input) Kg.	Abnormal loss (Balancing)
<b>Weight loss:</b>			
Opening WIP	30,000		
Input for the month	420,000		
	450,000		
Transferred to finishing department	(362,000)		
Closing WIP	(65,000)		
<b>Total loss</b>	<b>23,000</b>		
Weight loss (450,000-440,000)	10,000	(450,000-65,000)×2%	7,700
Rejection loss (balancing)	13,000	(450,000-65,000)×3%	11,550
	<b>23,000</b>	<b>19,250</b>	<b>3,750</b>

**W-2: Cost and equivalent quantity:**

	Material cost	Conv. cost	Total cost
	<b>Rs. in '000'</b>		
Opening WIP	1,288*2.2	6,260	2,834
Cost added	20,000*2.2	50,000	44,000
Normal rejection valued @ Rs. 60 per kg	11,550*60	(693)	-
<b>Total cost</b>	<b>(A) 55,567</b>	<b>46,834</b>	<b>102,401</b>
	<b>Rupees</b>		
<b>Cost per kg.</b>	<b>(A×1,000)÷(B)</b>	<b>129.0</b>	<b>115.0</b>
	<b>Equivalent kg.</b>		
	<b>Material</b>	<b>Conv.</b>	<b>Total cost (Rs. in '000)</b>
Finished goods	362,000	362,000	88,328
Closing WIP (100% to material and 65% to conv.)	65,000	42,250	13,244
Total abnormal loss (100% to material and 80% to conv.)	3,750	3,000	829
<b>Total equivalent quantity and cost</b>	<b>(B) 430,750</b>	<b>407,250</b>	<b>102,401</b>

**Cost and Management Accounting**  
Suggested Answers  
Certificate in Accounting and Finance – Autumn 2014

Ans.2 (a) Auto Industries Limited  
Profit statement

		Current	Proposed
		Rs. in million	
Sales	(125+25), 150*1.3*0.95	150.00	185.25
Variable cost of sales	(150*80%), 120*90%*1.3)	(120.00)	(140.40)
Contribution margin		30.00	44.85
Fixed cost	(125*20%), 25+5+ (40*15%)	(25.00)	(36.00)
<b>Net profit</b>		<b>5.00</b>	<b>8.85</b>

(b) Break-even sales	(185.25-44.85)×36	148.70
Margin of safety	(185.25-148.7)	36.55

Ans.3

**Omega Limited**  
Net present value of the project

	Year 0	1	2	3	4	5	6
Cash inflows/(outflows) – Rs. in million							
Land	(40.00)	-	-	-	-	-	70.00
Factory building	(10.00)	(20.00)	-	-	-	-	15.00
Plant installation	-	(100.00)	-	-	-	-	10.00
Loan	-	50.00	-	-	-	-	(50.00)
Working capital	-	(15.00)	-	-	-	-	15.00
Sales (10% growth)	-	-	300.00	330.00	363.00	399.30	439.23
Cost of goods sold (8% growth)	-	-	W.1 (195.00)	(210.60)	(227.45)	(245.64)	(265.30)
Royalty (3% of sales)	-	-	(9.00)	(9.90)	(10.89)	(11.98)	(13.18)
Interest on loan	-	-	-	-	-	-	-
Net cash flows	(50.00)	(85.00)	96.00	109.50	124.66	141.68	220.75
PV factor at 12%	1.00	0.89	0.80	0.71	0.64	0.57	0.51
Present value	(50.00)	(75.65)	76.80	77.75	79.78	80.76	112.58
<b>Net present value of the project</b>	-	-	-	-	-	-	<b>302.02</b>

W.1 Cost of goods sold:

	Rs. in million
Cost of own production (Including depreciation)	(300×80%×90%)
Depreciation – factory building	(30×50%)÷5
Depreciation – Plant	(100×90%)÷5
	<b>195.00</b>

**Cost and Management Accounting**  
Suggested Answers  
Certificate in Accounting and Finance – Autumn 2014

Ans.4 (a)	<b>Actual direct material cost</b>		<b>Rupees</b>
	Standard material cost	100,000*170	17,000,000
	Un-favorable material usage variance		820,000
	Un-favorable material price variance		600,000
			<b>18,420,000</b>

(b)	<b>Direct labour variances</b>		<b>Favorable/ (Adverse)</b>
	<b>1 Direct labour rate variance</b>		
	(Standard rate per hour-Actual rate per hour)*Actual hours		
	$[(150/1.25)-(16,250,000/130,000)]*130,000$		(650,000)
<b>2 Direct labour efficiency variance</b>			
(Standard hours-Actual hours)*Standard rate per hour			
$(100,000*1.25)-130,000*120$		(600,000)	

(c)	<b>Overhead variances</b>		
	<b>1 Overhead spending variance</b>		
	Standard variable overheads for actual hours	130,000*90 (W-1)	11,700,000
	Standard fixed overheads		2,560,000
	Total standard overheads		14,260,000
	Total Actual overheads		15,500,000
			(1,240,000)
	<b>2 Variable overhead efficiency variance</b>		
	(Standard hours-Actual hours)*Standard rate per hour		
	$(125,000-130,000)*90$		(450,000)
	<b>3 Fixed overhead efficiency variance</b>		
	(Standard hours used-Actual hours used)*Standard rate per hour		
	$(125,000-130,000)*20$		(100,000)
	<b>4 Fixed overhead capacity variance</b>		
	(Normal capacity - Actual capacity used)*Standard fixed rate		
$(128,000-130,000)*20$		40,000	

<b>W-1: Fixed and variable overheads rate per direct labour hour</b>		
Standard total overheads rate per labour hour	137.5/1.25	110.00
Standard fixed overhead rate per labour hour	2,560,000/128,000	20.00
Standard variable overhead rate per labour hour	Rs.	90.00

Ans.5 (a) **Non-financial considerations relevant to make or buy decision:**

**Risks of outsourcing work:**

- (i) Supplier may produce items to a lower standard of quality.
- (ii) The supplier may fail to meet delivery dates and the buyer may dependent on the supplier to commit onward delivery to its buyer. In case of buying of a component, production process of the end-product may be held up by a lack of component.

**Benefits of outsourcing work:**

- (i) Outsourcing work will enable the management to focus all of its efforts on those aspects of operation the entity does best.
- (ii) The external supplier may have specialist expertise which enables it to provide outsourced products more efficiently and at a cheaper price.



**Cost and Management Accounting**  
Suggested Answers  
Certificate in Accounting and Finance – Autumn 2014

Ans.5 (b) **Alpha Limited**  
**Production/import plan to maximise AL's profit**

		Product-A	Product-B	Product-C
Capacity utilisation	Machine hours (A)	240,000	225,000	270,000
Sales of units to be produced	(B)	30,000	25,000	22,500
Sales of units to be imported	(C)	12,000	10,000	4,000
Total sale units		<b>42,000</b>	<b>35,000</b>	<b>26,500</b>
<b>Rupees in million</b>				
<b>Variable Cost of production:</b>				
Direct material		48.00	31.25	40.50
Direct labour		45.00	40.00	56.25
overheads		33.00	25.00	29.25
Total cost	(D)	126.00	96.25	126.00
<b>Rupees</b>				
Cost per produced unit	F (D÷B)	<b>4,200.00</b>	<b>3,850.00</b>	<b>5,600.00</b>
<b>Rupees in million</b>				
<b>Cost of imports:</b>				
Existing cost of imported finished goods:		68.40	47.00	26.88
Bulk discount offered		15%	10%	12%
Discounted price of imported goods	(F)	58.14	42.30	23.65
<b>Rupees</b>				
Cost per imported unit	G (F÷B) Rs.	<b>4,845.00</b>	<b>4,230.00</b>	<b>5,912.00</b>
Loss per unit on imports	(F-G)	<b>(645.00)</b>	<b>(380.00)</b>	<b>(312.50)</b>
<b>Production Plan:</b>				
Machine hours per unit	H (A÷B)	8.00	9.00	12.00
Loss per machine hour on imports	Rs.	(80.63)	(42.22)	(26.04)
Production priority to save loss on imports				
Production from available hours of 735,000 in sequence of the above priority:				
Product-A	Units demand	42,000		
	Hrs. utilized (42,000×8)	336,000		
Product-B	Units demand		35,000	
	Hrs. utilized (35,000×9)		315,000	
Product-C	Units from remaining hrs.			7,000
	Remaining hrs, [735-336-315]			84,000
<b>Import plan:</b>				
<b>Product-C:</b>				
Demand exceeding production	(26,500-7,000)	-	-	19,500
Total units		<b>42,000</b>	<b>35,000</b>	<b>26,500</b>

**Cost and Management Accounting**  
Suggested Answers  
Certificate in Accounting and Finance – Autumn 2014

**Ans.6 Modern Engineering Works**  
**Journal entries**

Date	Particulars	Debit	Credit
		Rs. in '000	
1	Work in process Job # 101	10,000	
	Work in process Job # 202	31,000	
	Raw material		41,000
	<i>(Raw material consumed for jobs)</i>		
2	Work in process Job # 101	5,000	
	Work in process Job # 202	8,000	
	Payroll		13,000
	<i>(Direct labour cost allocated to jobs)</i>		
3	Work in process Job # 101            5,000/100*25	1,250	
	Work in process Job # 202            8,000/100*25	2,000	
	Factory overheads applied		3,250
	<i>(Overheads applied to the jobs @ Rs. 25 per direct labour hour)</i>		
4	Factory overheads applied	3,250	
	Cost of sales – overhead under applied    (4,000–3,250)	750	
	Factory overheads control		4,000
	<i>(Transfer of applied factory overheads to control a/c and under applied overheads charged to cost of sales)</i>		
5	Finished goods (Job # 101) (15,000+10,000+5,000+1,250)*3,840/4,000	30,000	
	Damaged goods (at NRV)	500	
	Profit and loss account (damaged goods cost exceeding NRV) (31,250×160/4,000)-500	750	
	Work in process Job # 101		31,250
	<i>(WIP of Job order # 101 transferred to finished goods)</i>		
6	Cost of sales	30,000	
	Finished goods		30,000
	<i>(Finished goods of Jobs # 101 transferred to cost of sales)</i>		
7	Finished goods (31,000+8,000+2,000)/(2,000+3,000*0.7)*2,000	20,000	
	Work in process Job # 202		20,000
	<i>(Units fully completed for Job # 202 transferred to finished goods)</i>		

**Cost and Management Accounting**  
Suggested Answers  
Certificate in Accounting and Finance – Autumn 2014

**Ans.7 (a) (i) Incremental cost**

An incremental cost is the additional cost that will occur if a particular decision is taken. Provided that this additional cost is a cash flow.

**Example:**

To produce 1,000 units, a company incurred variable cost of Rs. 1.2 million. At a normal capacity of 2,000 units, fixed cost incurred was Rs. 0.6 million. The incremental cost of making one extra unit would be Rs. 1,200 and it would not affect the fixed cost.

**(ii) Avoidable and unavoidable costs**

An avoidable cost could be saved (avoided), depending whether or not a particular decision is taken. An unavoidable cost is a cost that will be incurred anyway.

**Example:**

A company is paying Rs. 0.5 million annually for a warehouse on a short term lease and incurring an annual cost of Rs. 0.4 million on maintenance and security of the warehouse. One year of the lease is remaining and the warehouse is no more required.

The rental cost of the warehouse is unavoidable cost; therefore, it should be ignored while taking any decision. However, by closing down the warehouse the company can avoid annual maintenance and security costs of Rs. 0.4 million.

**(b) Salman Limited**

**Allocation of overheads and overheads absorption rate**

	Allocation basis	Total	PD-A	PD-B	SD-1	SD-2
		Rs. in 000				
Direct labour		-	-	-	-	-
Direct material		-	-	-	-	-
Indirect labour		-	1,900	600	50	20
Indirect materials		-	900	1,100	150	55
Factory rent	Floor area	1,340	670	536	67	67
Power	Kilowatt hrs.	1,515	758	568	47	142
Depreciation	Machine hrs.	3,500	1,925	1,225	280	70
			<b>6,153</b>	<b>4,029</b>	<b>594</b>	<b>354</b>
<b>Allocation of service departments cost:</b>						
SD-1	30:65:5		178	386	(594)	30
SD-2	55:35:10		211	134	39	(384)
SD-1	30:65:5		12	25	(39)	2
SD-2	55:35:10		1	1	0	(2)
			<b>6,555</b>	<b>4,576</b>	<b>-</b>	<b>-</b>
<b>Allocation basis</b>			<b>Machine hrs.</b>	<b>D. labour hrs.</b>		
Machine/D. labour hours			19,250	30,400	800×38	
<b>Overhead absorption rate per hour</b>		<b>Rs.</b>	<b>340.52</b>	<b>150.53</b>		

(THE END)



<b>INSTITUTE OF CHARTERED ACCOUNTANTS OF PAKISTAN</b>	
<b>EXAMINERS' COMMENTS</b>	
<b>SUBJECT</b> Cost and Management Accounting	<b>SESSION</b> Certificate in Accounting and Finance – Autumn 2014

**General:**

It was a balanced paper with a good mix of easy, moderate and difficult questions. However, the overall performance in the paper was about average. This was probably because of the fact that one of the easiest questions on job order costing was poorly attempted.

Question-wise comments:

**Question 1**

This question required preparation of process account of Cooking Department of a food processing company. As is usual, the key issue was to calculate the process loss and bifurcation thereof between normal and abnormal loss. In the given situation, the normal loss required further bifurcation between loss due to cooking and loss due to rejection.

The performance was just about average as majority of the students seemed familiar with the overall process but made various mistakes in the calculation and treatment of process losses. Some of the frequent mistakes are enumerated below:

- Total loss was calculated on the material input during the month only. Since opening work in process was only 50% complete as regards conversion and the inspection takes place when it is 80% complete, hence, loss should have been calculated on the opening work in process as well. Further, no loss should have been computed on the closing stock as it was only 65% complete.
- Normal loss was not bifurcated between weight and rejection losses and in most such cases, disposal of rejected nuggets was ignored.
- Normal loss was also included in equivalent production.
- In arriving at the equivalent production, the fact that abnormal loss quantity was only 80% complete as regards conversion was ignored and entire quantity of abnormal loss was included in equivalent production as regards conversion cost also.
- Inventory was valued using FIFO method instead of average cost.
- Some students ignored the applied overheads.

**Question 2**

This was a straightforward question in which existing break-even sales, margin of safety and contribution margin percentage were given. The question also provided information about certain proposed measures and the impact thereof on the financial performance of the company during the next period. The requirement was to:

- (a) Prepare profit statements under current and proposed scenarios and;
- (b) Compute break-even sales and margin of safety as a result of taking the proposed measures.

Overall performance in this question was average. For the existing situation, most of the students computed the sales correctly by adding the breakeven sales and the margin of safety. Almost all students correctly calculated the variable costs as 80% of sales and the fixed costs by multiplying the break-even sales with contribution margin percentage.

However, various errors were noted in calculating the figures for the next period. Some of these are enumerated below:

- Impact of 5% decline in sales price was determined by dividing the sales under existing scenario by 1.05 instead of multiplying it by 0.95.
- Only about half the candidates were able to compute the variable costs correctly as the remaining candidates calculated it by multiplying the sale with 70%. The students need to understand the difference between 10% decline in variable cost percentage and 10 % decline in cost per unit.
- A significant number of candidates did not take into account the interest on loan, in the computation of break-even sales.

#### **Question 3**

A poor performance was witnessed in this question which required computation of NPV of a project. A number of errors were observed. The most common among them are as follows:

- Majority of the students ignored the fact that installation of plant was to be completed in one year and hence the cash flows were to be computed for Year 0 to 6. Instead, they determined cash flows for Year 0 to 5.
- A significant number of candidates did not understand the concept of Year 0 and took outflows pertaining to Year 0 in Year 1.
- Instead of its market value, cost of land was taken as outflow.
- Market value of land at the end of the period of five years was ignored.

#### **Question 4**

This question on variances was straightforward and most of the students attempted it well. Some of the common errors are as follows:

- Many students could not compute the actual material cost correctly as they deducted the unfavourable variances from the standard cost instead of adding them. Some students did not attempt it altogether.
- Many students could not correctly bifurcate the total overhead rate per labour hour into fixed and variable portions and consequently, made errors in the computation of variances.



**Question 5 (a)**

A mixed response was seen in this 3 mark theory question. A large number of students scored full marks whereas few students did not attempt it altogether. However, it was noted that those who secured full marks in this part, performed much better in the second part as well.

**Question 5(b)**

This was a difficult question and required good understanding of the concept involved in make or buy decisions as well as in determining the optimum production plan in a situation where production capacity is limited and each product can be produced as well as purchased from outside suppliers.

The answer involved the following key steps:

- Determining the variable cost of production of each product.
- Dividing the difference between the discounted cost of imports and the variable cost of production by number of production hours to determine the order of ranking. (The same result could have been obtained by dividing the difference between the contribution margin of own produced and imported units by the number of production hours but it was a slightly lengthy method)
- Preparing optimum production plan from the available production hours based on the order of ranking.

Most of the students performed poorly in this question as they started making calculations without a proper plan. As could be seen from the steps described above, the key step was to determine the ranking and that is where most students erred as they failed to use the appropriate basis for the ranking. A large number of students used the following basis for the purpose of ranking:

- Discount offered.
- Discount offered divided by production hours per unit.
- Import price after discount or import price after discount divided by production hours per unit.
- Contribution margin on internally produced goods divided by production hours per unit.

**Question 6**

It was a simple question requiring journal entries based on job order costing. Probably because such questions are not tested frequently, the performance was much below the expected level. The basic entries for charging materials, labour and overhead costs to WIP of respective jobs were correct in majority of the answers. However, majority of the students made errors in the entries related to closure of applied FOH, recording of damaged goods and consequential loss and transfer of WIP to finished goods.

Some students prepared t-accounts which were not required.



*Examiners' Comments on Cost and Management Accounting - Autumn 2014*

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**Question 7(a)**

This part required brief description of some of the very elementary cost accounting concepts but was not very well-answered. Almost 50% of the students gave incorrect examples.

**Question 7(b)**

This was the easiest question of this paper. It required calculation of absorption rate. Cost was to be allocated to all departments based on relevant drivers and thereafter, service departments' cost was to be allocated to the products.

Most of the students performed well in this question. However, some of the common mistakes are mentioned below:

- Many students did not allocate the service departments' costs to the products.
- A significant number of students did not understand the repeated distribution method and allocated the service departments cost in one step i.e. to the products only.
- Many students included the direct material and direct labour costs in the overheads.

*THE END*



The Institute of  
Chartered Accountants  
of Pakistan

**Certificate in Accounting and Finance Stage Examinations**

4 March 2015  
3 hours – 100 marks  
Additional reading time – 15 minutes

**Cost and Management Accounting**

Q.1 KPK Dairies Limited (KDL) is planning to introduce three energy flavored milk from 1 July 2015. In this respect, following projections have been made:

		C-Plus	I-Plus	V-Plus
Planned production	(No. of packets)	540,000	275,000	185,000
Sales	(No. of packets)	425,000	255,000	170,000
<b>Production cost per packet:</b>		----- Rupees -----		
Direct material		100	98	97
Direct labour		15	13	12
Variable overheads		23	19	16
Fixed overheads		25	22	20
<b>Selling and distribution cost per packet:</b>				
Variable overheads		12	8	10
Fixed overheads		5	5	5
<b>Total cost per packet</b>		<b>180</b>	<b>165</b>	<b>160</b>

KDL will sell its products through a distributor at a commission of 5% of sale price and expects to earn a contribution margin of 40% of net sales i.e. sales minus distributor's commission.

**Required:**

Compute break even sales in packets and rupees, assuming that ratio of quantities sold would be as per projections. (17)

Q.2 Diamond Investment Limited (DIL) is considering to set-up a plant for the production of a single product X-49. The details relating to the investment are as under:

- (i) The cost of plant amounting to Rs. 160 million would be payable in advance. It includes installation and commissioning of the plant.
- (ii) Working capital of Rs. 20 million would be required at the commencement of the commercial operations.
- (iii) DIL intends to sell X-49 at cost plus 25% (cost does not include depreciation on plant). Sales for the first year are estimated at Rs. 300 million. The sales quantity would increase at 6% per annum.
- (iv) The plant would be depreciated at the rate of 20% under the reducing balance method. Tax depreciation is to be calculated on the same basis. Estimated residual value of the plant at the end of its useful life of four years would be equal to its carrying value.
- (v) Tax rate is 34% and tax is payable in the year the liability arises.
- (vi) DIL's cost of capital is 18%. All costs and prices are expected to increase at the rate of 5% per annum.

**Required:**

Compute the following:

- (a) Net present value of the project (12)
- (b) Internal rate of return of the project (05)

*Assume that unless otherwise specified, all cash flows would arise at the end of the year.*

- Q.3 Sigma Limited (SL) is a manufacturer of Product A. SL operates at a normal capacity of 90% against its available annual capacity of 50,000 machine hours and uses **absorption costing**. The following summarised profit statements were extracted from SL's budget for the year ending 31 December 2015.

	Actual - 2014		Budget - 2015	
	Units	Rs. in '000	Units	Rs. in '000
Sales	4,125	49,500	4,600	56,580
Opening inventory	400	(3,400)	600	(5,400)
Cost of production	4,325	(38,925)	4,500	(44,325)
Closing inventory	600	5,400	500	4,925
Under absorbed production overheads		(100)		-
Selling and administration cost (30% fixed)		(3,000)		(5,250)
Net profit		<b>9,475</b>		<b>6,530</b>

Other relevant information is as under:

	2014	Budget - 2015
Standard machine hours per unit	10 hours	10 hours
Standard production overhead rate per unit	Rs. 2,000	Rs. 2,250
Estimated fixed production overheads at normal capacity	Rs. 3,600,000	Rs. 4,050,000
Actual production overheads (Actual machine hours 44,000)	Rs. 8,750,000	-

**Required:**

- (a) What do you understand by under/over absorbed production overheads? (02)
  - (b) Analyse the under absorbed production overheads of SL for the year ended 31 December 2014, into spending and volume variances. Give two probable reasons for each variance. (06)
  - (c) Prepare budgeted Profit and Loss Statement for the year ending 31 December 2015, using **marginal costing**. (07)
  - (d) Analyse the difference between budgeted profit determined under absorption and marginal costing, for the year ending 31 December 2015. (02)
- Q.4 KS Limited operates two production departments A and B to produce a product XP-29. Following information pertains to Department A for the month of December 2014.

	Litres	Rs. in '000
Opening work in process (Material 100%, conversion 80%)	15,000	
▪ Material	-	5,000
▪ Direct labour and overheads	-	2,125
Actual cost for the month:		
▪ Material	120,000	36,240
▪ Direct labour	-	14,224
▪ Overheads	-	11,500
Expected losses	5%	-
Closing work in process (Material 100%, conversion 80%)	17,000	-
Units transferred to Department B	110,000	-

KS uses FIFO method for inventory valuation. Direct materials are added at the beginning of the process. Expected losses are identified at the time of inspection which takes place at the end of the process. Overheads are applied at the rate of 80% of direct labour cost.

**Required:**

- (a) Equivalent production units (02)
- (b) Cost of goods transferred to Department B (09)
- (c) Accounting entries in the cost accounting system. (06)



Q.5 Zee Chemicals Limited (ZCL) produces two joint products, Alpha and Beta from a single production process. Both products are processed upto split-off point and sold without any further processing.

Presently, ZCL is considering the following proposals:

- Expansion of the existing facility by installing a new plant
- Installation of a refining plant to sell either Alpha or Beta after refining

To assess the above proposals, following data has been gathered:

(i) Actual cost incurred in the month of December 2014:

	Rs. in '000
Direct material	15,000
Variable conversion costs (Rs. 230 per hour)	4,890
Fixed overheads	2,600

(ii) Actual production and selling price for the month of December 2014:

	Litres	Selling price per litre (Rs.)
Alpha	11,300	1,000
Beta	14,700	1,125

(iii) There is no process loss and joint costs are apportioned between Alpha and Beta according to the weight of their output.

(iv) Details of the proposed plans are as follows:

	Expansion of existing facility	Installation of refining plant
Capacity in machine hours per month	5,000	5,000
	----- Rs. in '000 -----	
Cost of plant and its installation	20,000	25,000
Estimated residual value at the end of life	1,400	2,800
Estimated additional fixed overheads per month	250	500
Estimated useful life of the plant	20 Years	20 Years

(v) Estimated variable cost of refining and sales price of refined products:

	Alpha	Beta
	Rupees per liter	
Direct material	90	125
Conversion cost (Rs. 150 per hour)	68	80
Selling price	1,380	1,525

(vi) There would be no loss during the refining process. There is adequate demand for Alpha and Beta at split-off point and after refining.

**Required:**

Evaluate each of the above proposals and give your recommendations.

(16)

- Q.6 Hi-tech Limited (HL) assembles and sells various components of heavy construction equipment. HL is working on a proposal of assembling a new component EXV-99. Based on study of the product and market survey, the following information has been worked out:

Projected lifetime sale of the component EXV-99	Units	500,000
Selling price per unit	Rs.	11,000
Target gross profit percentage		40%

Information about cost of production of the new component is as follows:

- (i) One unit of EXV-99 would require:

Parts no.	Net quantity	Cost per unit/kg (Rs.)
XX	1 unit	2,350
YY	1.5 kg	1,400
ZZ	1 unit	1,200

The above parts would be imported in a lot, for production of 1,000 units of EXV-99. Custom duty and other import charges would be 15% of cost price. HL is negotiating with the vendor who has agreed to offer further discount.

- (ii) On average, assembling of one unit of EXV-99 would require 1.8 skilled labour hours at Rs. 200 per hour. The production would be carried out in a single shift of 8 hours. At the start of each shift, set-up of machines would require 30 minutes. 6% of the input quantity of YY and ZZ would be lost during assembly process.
- (iii) HL works at a normal annual capacity of 4,000,000 skilled hours. Actual production overheads and skilled labour hours for the last two quarters are as under:

Quarter ended	Total assembly hours	Production overheads (Rs.)
30-Sep-2014	950,000	65,600,000
31-Dec-2014	1,050,000	68,000,000

- (iv) A special machine that would be used exclusively for the production of EXV-99 would be purchased at a cost of Rs. 1,500,000.

**Required:**

From the above information, determine the discount that HL should obtain in order to achieve the target gross profit.

(16)

(THE END)

**Cost and Management Accounting**  
Suggested Answers  
Certificate in Accounting and Finance – Spring 2015

**A.1 KPK Dairies Limited**

Break-even sales:				C-Plus	I-Plus	V-Plus	Total
- In total	- No. of packets(H÷G)	A					287,660
- Product wise	- No. of packets (A×C)	B	143,830	86,298	57,532		287,660
- Product wise	- Rupees (B×D)		37,850,303	20,893,609	13,625,879		72,369,791
<b>W.1: Sales quantity ratio</b>							
-----Litres-----							
Projected sales			425,000	255,000	170,000		850,000
Sales quantity ratio		C	0.5	0.3	0.2		1.0
<b>W.2: Contribution margin per combination:</b>							
-----Rupees-----							
Gross sales price per unit	(E÷0.57*)	D	263.16	242.11	236.84		
Commission at 5% of sales			(13.16)	(12.11)	(11.84)		
Variable cost per unit		E	(150.00)	(138.00)	(135.00)		
			(100+15+23+12)	(98+13+19+8)	(97+12+10+10)		
Contribution margin (CM) per unit		F	100.00	92.00	90.00		
CM in sales quantity ratio	(C×F)	G	50.00	27.60	18.00		95.60
VC% to sales: (100-5%)×60% = 57%*							
<b>W-3: Fixed overheads</b>							
Production fixed overheads			13,500,000	6,050,000	3,700,000		23,250,000
			(540,000×25)	(275,000×22)	(185,000×20)		
Selling and distribution fixed overheads			2,125,000	1,275,000	850,000		4,250,000
			(425,000×5)	(255,000×5)	(170,000×5)		
		H					27,500,000

**A.2 Diamond Investment Limited**

**(a) Net Present Value (NPV) of the project**

	Year 0	Year 1	Year 2	Year 3	Year 4
<b>Cash inflows/(outflows) - Rupees in million</b>					
Sales (yearly increase: volume 6% & price 5%)	-	300.00	333.90	371.63	413.62
Cost (Sales ÷ 1.25)	-	(240.00)	(267.12)	(297.30)	(330.90)
Plant depreciation at 25% of WDV	-	(32.00)	(25.60)	(20.48)	(16.38)
Net profit	-	28.00	41.18	53.85	66.34
Tax @ 34%	-	(9.52)	(14.00)	(18.31)	(22.56)
Add back depreciation	-	32.00	25.60	20.48	16.38
Cost of plant and its installation	(160.00)	-	-	-	65.54
Working capital	(20.00)	-	-	-	20.00
Projected cash flows	(180.00)	50.48	52.78	56.02	145.70
PV factor at 18%	1.00	0.85	0.72	0.61	0.52
Present value	(180.00)	42.91	38.00	34.17	75.76

NPV at 18%  
(NPV<sub>A</sub>)

10.84

**(b) Internal Rate of Return (IRR) of the project:**

PV factor at 22%	1.00	0.82	0.67	0.55	0.45
PV at 22% (Projected cash flow × PV factor)	(180.00)	41.39	35.36	30.81	65.57

NPV at 22%

(NPV<sub>B</sub>) (6.87)

$IRR = A\% + \left(\frac{NPV_A}{NPV_A - NPV_B}\right) \times (B\% - A\%)$	$= 18\% + \left(\frac{10.84}{10.84 - (-6.87)}\right) \times (22\% - 18\%)$	<b>20.45%</b>
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**Cost and Management Accounting**  
Suggested Answers  
Certificate in Accounting and Finance – Spring 2015

**A.3 Sigma Limited**

**(a) Under /over absorbed production overheads:**

Production overhead rate is predetermined at beginning of the year based on budgeted annual overheads and budgeted annual production. Overhead are applied to actual hours/units using predetermined overhead rate. However, actual overheads and actual production may differ from the budgeted overheads and production, therefore, it would result in under/over absorption of production overheads.

**(b) Analyse of under absorbed production overheads into a spending and volume variance:**

<b>(i) Spending variance</b>		
Hours allowed for actual production of 4,325 units	4,325×10	43,250
		<b>Rs. in '000</b>
Budgeted variable overheads for hours allowed	43,250×0.12 <sup>1</sup>	5,190
Standard fixed overheads		3,600
		8,790
Actual overheads		8,750
Favourable spending variance	A	<b>40</b>
<b>(ii) Volume variance</b>		
Estimated fixed overheads at normal capacity	45,000×0.08 <sup>2</sup>	3,600
Fixed overheads for hours allowed for actual production	43,250×0.08 <sup>2</sup>	3,460
Adverse volume variance	B	<b>(140)</b>
Under absorbed production overheads	(A+B)	<b>(100)</b>

<sup>1</sup>Variable cost per hour [(2,000÷10)–(3,600,000÷(50,000×90%))]=120

<sup>2</sup>Fixed cost per hour [(2,000÷10) –120]=80

**Reasons for favourable spending variance:**

- (i) Lesser spending/ decrease in price of overhead items as compared to budget.
- (ii) Over-estimating overhead expenditure while preparing the budget.

**Reasons for adverse volume variance:**

- (i) Under-utilisation of available capacity
- (ii) In-efficient use of machine hours

**(c) Budgeted Profit and Loss Statement – using marginal costing  
For the year ending 31 December 2015**

	<b>Rs. in '000</b>
Sales	56,580
Variable cost of sales:	
Opening inventory	5,400-(600×0.8 <sup>3</sup> )
Cost of production	(44,325–4,050)
Closing inventory	4,925-(500×0.9 <sup>4</sup> )
	<b>(40,720)</b>
Gross contribution margin	15,860
Variable selling and administration cost	5,250×70%
Net contribution margin	12,185
Fixed production overheads	(4,050)
Fixed selling and distribution overheads	5,250×30%
Net profit	<b>6,560</b>

<sup>3</sup> Fixed cost per unit – 2014 [3,600,000÷(50,000×90%÷10)]=800

<sup>4</sup> Fixed cost per unit – 2015 [4,050,000÷(50,000×90%÷10)]=900

**(d) Analysis of budgeted profit as per Marginal and Absorption costing:**

	<b>Rs. in '000</b>
Net profit under marginal costing	6,560
Under absorption costing:	
fixed overheads brought from the last year as included in the opening inventory	(600×0.8) <sup>3</sup>
fixed overheads carried forward to the next year as included in the closing inventory	(500×0.9) <sup>4</sup>
Net profit under absorption costing	<b>6,530</b>

**Cost and Management Accounting**  
Suggested Answers  
Certificate in Accounting and Finance – Spring 2015

**A.4 (a) KS Limited**

Equivalent production:

	Material	Conversion
	----- Litres -----	
Units completed and transferred out	110,000	110,000
Closing WIP (100% material and 80% conversion)	17,000	13,600
Opening WIP (100% material and 80% conversion)	(15,000)	(12,000)
Abnormal loss W.1	2,100	2,100
Equivalent production (A)	<b>114,100</b>	<b>113,700</b>

Cost per litre:

		----- Rupees -----	
Cost incurred in December 2014 (B)	36,240,000	25,603,200	<small>(14,224,000×1.8)</small>
Cost per litre (B÷A)	<b>317.62</b>	<b>225.18</b>	

**(b) Cost of goods transferred to Department B**

	Rs. in '000
From opening WIP:	
- Cost incurred prior to 1 Dec. 2014	5,000+2,125
- Conversion cost incurred in Dec. 2014	15,000×20%×225.18
	7,801
From units started and completed in Dec. 2014	[(110,000-15,000)×(317.62+225.18)]
	<b>59,367</b>

**W.1: Abnormal loss**

	Litres
Opening WIP	15,000
Units started in December 2014	120,000
Closing WIP	(17,000)
Units completed in December 2014	118,000
Transferred to department B	(110,000)
Normal loss	118,000 × 5%
Abnormal loss	<b>2,100</b>

**(c) Accounting entries for the month of December 2014**

Date	Description	Debit	Credit
		Rs. in '000	
31-Dec-2014	WIP - Department A	61,843	
	Raw material		36,240
	Payroll		14,224
	Applied overheads 14,224×80%		11,379
	<i>(Cost charged / overheads applied to department A)</i>		
31-Dec-2014	Applied overheads	11,379	
	Cost of sale (under applied overheads)	121	
	Overhead control account		11,500
	<i>(Under-absorbed overheads charged to P&amp;L account)</i>		
31-Dec-2014	WIP - Department B	59,367	
	P&L account (abnormal loss) [2,100×(317.62+225.18)]	1,140	
	WIP - Department A		60,507
	<i>(Units transferred to B and abnormal loss charged to department B and P&amp;L account respectively)</i>		

**Cost and Management Accounting**  
Suggested Answers  
Certificate in Accounting and Finance – Spring 2015

**A.5 Zee Chemicals Limited**

Evaluation of proposals for expansion of the existing facility / installation of refining plant

	Expansion (Sale at split-off point)		Refining plant (Sale after refining)	
	Alpha	Beta	Alpha	Beta
Sales/incremental sales value per litre	1,000	1,125	380 (1,380-1,000)	400 (1,525-1,125)
Variable cost at split-off point/cost of refining per litre	(765) (15,000+4,890)÷(11,300+14,700)	(765) (11,300+14,700)	(158) (90+68)	(205) (125+80)
Contribution margin per litre <b>A</b>	<b>235</b>	<b>360</b>	<b>222</b>	<b>195</b>
<b>CM from 5,000 hours:</b>				
Total hours worked in December 2014	21,261 Hrs. (4,890,000÷230)			
Hours per litre for refining			0.453 Hrs. (68÷150)	0.533 Hrs. (80÷150)
Production from 5,000 hours <b>B</b>	2,657 Ltrs. (5,000/21,261×11,300)	3,457 Ltrs. (5,000/21,261×14,700)	11,038 Ltrs. (5,000÷0.453)	9,381 Ltrs. (5,000÷0.533)
Contribution margin <b>(A×B)</b>	<b>1,868,915</b> (2,657×235)+(3,457×360)		<b>2,450,436</b> (11,038×222)	<b>1,829,295</b> (9,381×195)
<b>Fixed overheads:</b>				
Depreciation per month (20,000-1,400)÷20÷12 (25,000-2,800)÷20÷12	(77,500)		(92,500)	(92,500)
Additional fixed overheads per month	(250,000)		(500,000)	(500,000)
<b>Net profit per month</b>	<b>1,541,415</b>		<b>1,857,936</b>	<b>1,236,795</b>

**Recommendations:**

As refining of Alpha produces the highest profit, ZCL should install refining plant to refine and sell 11,038 litres of Alpha.



**Cost and Management Accounting**  
Suggested Answers  
Certificate in Accounting and Finance – Spring 2015

**A.6 Hi-Tech Limited**  
Discount required from vendors to achieve target gross profit from sale of EXV-99

	W.1	Rs. in million
Total cost estimated		3,624.27
Target cost	[11,000×60%×500,000]	3,300.00
Cost gap		324.27
Discount amount to be obtained from the vendor	[324.27÷1.15]	<b>281.97</b>
Required discount %	[(281.97÷2,931(W.1))×100]	<b>9.62%</b>

**W.1: Cost estimate for 500,000 units of EXV-99:**

Material XX (2,350×500,000)		1,175.00
Material YY (incl. process loss at 6%)(1.5÷0.94×1,400×500,000)		1,120.00
Material ZZ (incl. process loss at 6%)(1.0÷0.94×1,200×500,000)		636.00
		<b>2,931.00</b>
Custom duty and other import charges	[2,931×15%]	439.65
<b>Direct labour:</b>		
Labour cost	(1.8×200×500,000)	180.00
Labour set up cost	(1.8÷7.5×0.5×200×500,000)	12.00
<b>Production overheads:</b>		
Variable	[1.80×24.00(W.2)×500,000]	21.60
Fixed	[1.80×42.80(W.3)×500,000]	38.52
Fixed – cost of machine		1.50
<b>Total cost</b>		<b>3,624.27</b>

**W.2: Variable overhead rate per hour:**

	Hours	Rupees
Quarter ended 31 December 2014	1,050,000	68,000,000
Quarter ended 30 September 2014	(950,000)	(65,600,000)
	100,000	2,400,000
Variable overhead rate per hour (using high-low method)	(2,400,000÷100,000)	<b>24.00</b>

**W.3: Fixed overhead rate per hour:**

Cost for the quarter ended 30 September 2014		65,600,000
Less: Variable cost	[950,000×24(W.3)]	(22,800,000)
Fixed overheads per quarter		42,800,000
Fixed overheads per annum	[42,800,000×4]	171,200,000
Fixed overhead rate per hour at normal capacity of 4,000,000 hrs.	[171,200,000÷4,000,000]	<b>42.80</b>

(THE END)

**INSTITUTE OF CHARTERED ACCOUNTANTS OF PAKISTAN****EXAMINERS' COMMENTS**

<b>SUBJECT</b>	<b>SESSION</b>
Cost and Management Accounting	Certificate in Accounting and Finance – Spring 2015

**General:**

The overall performance in this attempt was almost the same as in the last attempt. Most of the students fared badly in questions which required in-depth analysis of data. On the other hand, the questions requiring straightforward calculations were performed better. Question-wise comments are given below:

**Question 1**

According to the question, a company produced three types of products which were sold in packets. The candidates were required to calculate breakeven sales in rupees as well as in number of packets of the three products, assuming that ratio between sales quantities of the three products would be as per the projections.

The important thing to note was that 5 packets of C-Plus, 3 packets of I-Plus and 2 packets of V-Plus (since the sales ratio in terms of quantity was 5:3:2) represented a combination. Breakeven sales in rupees divided by sales value of this combination could have given the sales in number of combinations; and multiplying the number of combinations by 5, 3 and 2 could have given the number of packets of C-Plus, I-Plus and V-Plus respectively. Similarly, fixed cost divided by contribution margin on this combination could have given the number of packets to break even, as discussed above and the number of packets so arrived could have been used to arrive at the break-even sales in rupees.

Following common mistakes were noted:

- Fixed cost were to be calculated by multiplying fixed production overhead rate with planned production in packets and fixed selling and distribution overhead rate with projected sales quantities. But commonly students multiplied planned production quantity or projected sales quantity with sum of both the rates instead of their respective rates.
- Many students tried to compute the break even on individual product basis instead of the overall basis.
- Many students did not understand the treatment of commission. They either multiplied the net sales by 5% to arrive at the amount of commission or multiplied the net sales by 1.05. The correct method was to divide the net sale by 0.95 to arrive at the gross sales before commission. Many students ignored the commission altogether and computed the break even on the basis of net sales.



- Many students tried to solve the question by working out a weighted average. Though some of them were able to produce a correct answer but the method was too lengthy and took a lot of their time.

### **Question 2**

It was a simple question requiring computation of net present value of a project. More than 60% students were able to secure passing marks in this question. Some of the common mistakes were as follows:

- First year sale was given. Next year's sale should have been calculated by applying increase in volume by 6% and increase in price by 5% separately i.e. by multiplying the previous year's sales by 1.06 and 1.05. Many students applied a combined increase of 11% which was incorrect.
- To find out cost of sale, the students used a number of different methods. The correct method was to divide sales by 1.25 or multiply sale by 0.80. However, many candidates computed it by multiplying sales by 0.75. Some of the students followed the correct method for the first year but thereafter they increased it by 5% each year i.e. took the effect of cost increase but ignored the volume increase.
- Majority of the candidates ignored the changes in working capital altogether. A number of candidates included the increase in working capital in their calculations but ignored the recovery thereof, at the end of the project.
- Many candidates could not compute the PV factor correctly.
- A number of candidates were unable to determine the IRR correctly as they had little idea of interpolation.

### **Question 3**

This question tested the students on variances and marginal v/s absorption costing. It turned out to be the most poorly attempted question of this paper. There were four parts and performance in each part is discussed below:

- (a) The candidates were required to explain the under/over absorbed production overheads. Generally the response was poor. Most of the candidates gave incomplete answers.
- (b) It was quite surprising that very few students calculated spending variance and volume variance correctly. Many of them did not attempt this part altogether.
- (c) This part required preparation of budgeted profit and loss statement under marginal costing. The overall performance was again very poor. Very few students were able to calculate the opening and closing inventory correctly by excluding the impact of fixed costs from the value of inventory under absorption costing. Many students ignored this aspect altogether and took the value of inventory as given in the question which was based on absorption costing. Other common errors were as follows:
  - The fixed selling and administration expenses were ignored.



- Net contribution margin was not calculated. Instead, only net profit was calculated.
- (d) Since very few students were able to work out the profit under marginal costing correctly, this part requiring analysis of profit under marginal and absorption costing could not be performed. Some candidates gave general comments on the two methods and the difference between them, which were not required.

**Question 4**

This was a straightforward question on process accounting, requiring calculation of equivalent production units, cost of goods transferred and accounting entries in the cost accounting system. Majority of the students who attempted the question scored passing marks. However, working out correct normal loss and hence abnormal loss again proved difficult for many students. Further, many candidates followed the weighed average method instead of FIFO method. There were many students who did the first two parts correctly but were unable to pass journal entries, which is quite alarming. Failure to pass correct journal entries depict serious conceptual weakness. The students must try to overcome this weakness otherwise they would face serious problems in the remaining papers and also in their practical life.

**Question 5**

This question required evaluation of two proposals, one related to expansion of existing facility and the other related to installation of plant for further processing of the products which were being sold without further processing. All such questions are usually solved using the same approach i.e. by comparing the incremental revenues and incremental costs. However, majority of the students made a number of mistakes in the process, mostly because of lack of conceptual understanding and also because of their inability to grasp the overall situation presented in the question.

Common mistakes are discussed below:

- Majority of the students could not calculate incremental revenues and costs for the expansion option. Main reason thereof was that the candidates were unable to compute the existing plant capacity of 21261 hours by dividing the total variable conversion costs in December 14 by conversion costs per hour. Therefore, they were also unable to work out the increase in production and consequently the increase in revenues and costs due to expansion of existing facilities.
- Under the refining option, most candidates were able to determine the incremental contribution margin due to refining correctly. However, they were unable to calculate the total increase in contribution margin because of the same reasons, as discussed above i.e. because they could not determine the quantity that the plant would be able to refine.
- In case of expansion option, some students computed the enhanced production due to expansion for both products correctly but they determined the increase in contribution margin on the basis of one product only.

**Question 6**

In this question, the costs of producing a new product were given and the candidates were required to determine the percentage of discount that should be negotiated with the foreign supplier of raw material in order to earn the target profit. The question was quite straightforward and majority of the students performed well and many of them scored full marks as well.

The errors observed were as follows:

- A number of students were unable to determine the fixed and the variable overheads using the high-low method.
- According to the question, 6% of input quantity i.e. quantity before loss, was estimated to be lost during the process. Many students treated it as 6% of the quantity actually used after the incurrence of loss. There is a very fine difference between the two and the students should understand such issues with clarity.
- According to the question, 30 minutes in each shift were to be used for setting up the machines. Hence, the actual time available for production in an 8-hour shift was 7.5 hours. The labour cost pertaining to setting up time was ignored by many candidates.
- While determining the required amount of discount, many students ignored the impact of custom duty.

*THE END*





The Institute of  
Chartered Accountants  
of Pakistan

**Certificate in Accounting and Finance Stage Examinations**

10 September 2015  
3 hours – 100 marks  
Additional reading time – 15 minutes

**Cost and Management Accounting**

Q.1 Oceanic Chemicals manufactures two joint products Sigma and Beta in a single process at its production department. Incidental to the production of these products, it produces a by-product known as ZEE. Sigma and ZEE are sold upon completion of processing in production department whereas Beta goes to refining department where it is converted into Theta.

Joint costs are allocated to Sigma and Beta on the basis of their net realizable values. Proceeds from sale of by-product are treated as reduction in joint costs. In both the departments, losses upto 5% of the input are considered as a normal loss.

Actual data for the month of June 2015:

Cost	Department	
	Production	Refining
	----- Rs. in '000 -----	
Material input at Rs. 50 per kg	3,000	-
Direct labour at Rs. 100 per hour	2,500	350
Production overheads	1,850	890
Output	----- Liters-----	
Sigma	34,800	-
Beta	16,055	-
ZEE (by-product)	5,845	-
Theta	-	15,200

Sigma, Theta and by-product ZEE were sold at Rs. 300, Rs. 500 and Rs. 40 per liter respectively. There was no work in process at the beginning and the end of the month.

**Required:**

Compute the cost per liter of Sigma and Theta, for the month of June 2015. (12)

Q.2 Sona Limited (SL) is considering investment in a joint venture. The entire cash outlay of the project is Rs. 175 million which would require to be invested by SL immediately. The joint venture partner, Chandi Limited (CL) would provide all the necessary technical support.

The other details of the project are estimated as follows:

- (i) The project would extend over a period of four years.
- (ii) Sales are estimated at Rs. 155 million per annum for the first two years and Rs. 65 million per annum during the last two years.
- (iii) Cost of sales and operating expenses excluding depreciation would be 50% and 10% of sales respectively.
- (iv) CL would be entitled to share equal to 5% of sales and the remaining profit would belong to SL.
- (v) At the end of the project, SL would be able to recover Rs. 100 million of the invested amount.

Assume that all cash flows other than the initial cash outlay arise annually in arrears.

**Required:**

Calculate the project's internal rate of return. (09)



Q.3 The following information pertains to Hope Limited for the latest financial year:

	Rupees
Sales price per unit	1,600
Direct labour per unit	240
Variable cost (other than direct labour) per unit	960
Fixed cost (no labour cost included)	850,000

Volume of sales and production was 6,000 units which represent 80% of normal capacity. The management of the company is planning to increase wages of direct labour by 15% with effect from next financial year.

**Required:**

- (a) Calculate the number of units to be sold to maintain the current profit if the sales price remains at Rs. 1,600 and the 15% wage increase goes into effect. (02)
- (b) The management believes that an additional investment of Rs. 760,000 in machinery (to be depreciated at 10% annually) will increase total capacity by 25%. Determine the selling price in order to earn a profit of Rs. 2 million assuming that all units produced at increased capacity can be sold and that the wage increase goes into effect. (03)

Q.4 Jack and Jill (JJ) manufactures various products. The following information pertains to one of its main products:

- (i) Standard cost card per unit

	Rupees
Direct material (5 kg at Rs. 40 per kg)	200
Direct labour (1.5 hours at Rs. 80 per hour)	120
Factory overheads	130% of direct labour

- (ii) Fixed overheads are budgeted at Rs. 3 million based on normal capacity of 75,000 direct labour hours per month.
- (iii) Actual data for the month of June 2015

	Units
Opening work in process (80% converted)	8,000
Started during the month	50,000
Transferred to finished goods	48,000
Closing work in process (60% converted)	7,000
Rupees	
Material issued to production at: Rs. 38 per kg	1,900,000
Rs. 42 per kg	8,400,000
Direct labour at Rs. 84 per hour	6,048,000
Variable factory overheads	6,350,000
Fixed factory overheads	2,850,000

- (iv) Materials are added at the beginning of the process. Conversion costs are incurred evenly throughout the process. Losses up to 3% of the input are considered as normal. However, losses are determined at the time of inspection which takes place when units are 90% complete.
- (v) JJ uses FIFO method for inventory valuation.

**Required:**

- (a) Compute equivalent production units (05)
- (b) Calculate the following variances for the month of June 2015:
  - Material rate and usage (03)
  - Labour rate and efficiency (03)
  - Variable factory overhead expenditure and efficiency (04)
  - Fixed factory overhead expenditure and volume (04)

Q.5 (a) In the context of 'Options', briefly discuss the term "Intrinsic value". Also state how the intrinsic value in the case of call option and put option would be computed. (02)





Q.8 Reporting Perspective is an important part of the IFAC Sustainability Framework which comprises of five sections.

**Required:**

State any three key considerations for professional accountants as mentioned in each of the following sections of Reporting Perspective:

- (a) Determining materiality (03)
- (b) External review and assurance of sustainability disclosures (03)

Q.9 In May 2015, the board of directors of Sahil Limited (SL) had decided to close one of SL's operating segments at the end of the next year. The sales and production for the next year were budgeted at 50,000 units and on the basis thereof, the budget of the segment for the next year was approved as follows:

	Rs. in '000
Sales	5,000
Direct material (50,000 kg)	(950)
Direct labour	(1,000)
Variable production overheads	(500)
Fixed production overheads	(1,750)
Administrative and selling overheads	(500)
<b>Budgeted net profit</b>	<b>300</b>

However, rumours of the closure prompted majority of the segment's skilled labour to leave the company. Consequently, the management is considering the following alternatives to cope with the issue:

- Close the segment immediately and rent the factory space for one year at a rent of Rs. 40,000 per month; or
- Employ contract labour which would be able to produce a maximum of 40,000 units in the year. The quality of the product is however expected to suffer due to this change.

The following further information is available:

- (i) The sales manager estimates that a sales volume of 30,000 units could be achieved at the current selling price whereas sales volume of 40,000 units would only be achieved if the price was reduced to Rs. 90 per unit.
- (ii) 25,000 kg of raw material is in stock. Any quantity of the material may be sold in the market at a price of Rs. 19 per kg after incurring a cost of Rs. 2 per kg. Up to 15,000 kg can be used in another segment of the company in place of a material which currently costs Rs. 18 per kg.
- (iii) Wages of contract labour would be Rs. 24 per unit. SL would also be required to spend Rs. 40,000 on the training of the contract labour.
- (iv) Due to utilization of contract labour, variable production overheads per unit are expected to increase by 20%.
- (v) Fixed production overheads include:
  - Depreciation of three machines used in the segment amounting to Rs. 170,000. These machines originally costed Rs. 1.7 million and could currently be sold for Rs. 830,000. If the machines are used for production in the next year, their sales value would reduce by Rs. 5 per unit of production.
  - All other costs included in 'fixed production overheads' represent apportionments of general overheads.
- (vi) 40% of administrative and selling overheads are variable whereas the remaining amounts represent apportionment of general overheads.

**Required:**

Advise the best course of action for Sahil Limited.

(16)

(THE END)



**Cost and Management Accounting**  
Suggested Answers  
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**A.1 Oceanic Chemicals**  
**Product-wise cost of Sigma and Theta**

		Sigma	Theta
		----- Rs. in '000' -----	
Joint costs of production	<b>W.2</b>	4,303.49	2770.98
Cost of refining	(350+890)	-	1,240.00
	<b>(A)</b>	4,303.49	4,010.98
No. of units produced	Ltr. <b>(B)</b>	34,800	15,252
Cost per Litre	Rs. <b>(A÷B)</b>	<b>123.66</b>	<b>262.98</b>

**W.1: Joint cost of production**

		Rs. in '000'
Joint cost of production	(3,000+2,500+1,850)	7,350.00
Sale proceeds from by-product ZEE	(5,845×40)	(233.80)
		7116.20
Cost of abnormal loss of production	[7,116.20÷(34,800+16,055+300)×300]	(41.73)
		<b>7,074.47</b>

**W.2: Allocation of joint costs**

	NRV at split-off	Units produced	Total NRV	Joint cost allocation
	Rs.	Ltrs		
Sigma	300.00	34,800	10,440.00	4,303.49
Beta 500-[(350+890)÷15,252]	418.70	16,055	6,722.23	2,770.98
			17,162.23	<b>7,074.47</b>

**W.3: Abnormal loss quantity**

		Production	Refining
		----- Litres -----	
Input quantity	3,000,000÷50	60,000	16,055
Output quantity	(34,800+16,055+5,845)	(56,700)	(15,200)
Production losses		3,300	855
Normal losses up to 5% of input	(60,000×5%), (16,055×5%)	3,000	803
Abnormal loss		<b>300</b>	<b>52</b>

**A.2 Project's Internal rate of return**

		Year 0	1	2	3	4
		----- Rs. in million -----				
Sales		-	155.00	155.00	65.00	65.00
Cost of sales (50%)		-	(77.50)	(77.50)	(32.50)	(32.50)
Operating expense (10%)		-	(15.50)	(15.50)	(6.50)	(6.50)
5% of sales for technical support by CL		-	(7.75)	(7.75)	(3.25)	(3.25)
Investment		(175.00)	-	-	-	100.00
Net cash flows		<b>(175.00)</b>	<b>54.25</b>	<b>54.25</b>	<b>22.75</b>	<b>122.75</b>
<b>Discount factor (15%)</b>		1.00	0.87	0.76	0.66	0.57
Present value		(175.00)	47.20	41.23	15.02	69.97
Net present value at 15%	<b>NPV<sub>A</sub></b>	<b>(1.58)</b>				
<b>Discount factor (12%)</b>		1.00	0.89	0.79	0.71	0.63
Present value		(175.00)	48.28	42.86	16.15	77.33
Net present value at 12%	<b>NPV<sub>B</sub></b>	<b>9.62</b>				
Using the interpolation formula		$A\% + \frac{NPV_A}{NPV_A - NPV_B} \times (B\% - A\%)$				
Internal rate of return (IRR)		$15\% + \frac{-1.58}{-1.58 - 9.62} \times (12\% - 15\%)$				
		<b>14.58%</b>				

**Cost and Management Accounting**  
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**A.3 (a) Units to be sold to maintain the current profit:**

		<b>Rs.</b>
Sales	(6,000 units × 1,600)	9,600,000
Variable cost	[6,000 × (960+240)]	(7,200,000)
Contribution margin	<b>A</b>	2,400,000
Revised contribution margin per unit [1,600–960–(240×1.15)]	<b>B</b>	364
Units to be sold	<b>A÷B</b>	<b>6,593 Units</b>

**(b) Selling price per unit to earn a profit of Rs. 2 million:**

Revised capacity	(6,000 ÷ 0.8 × 1.25) <b>Units</b>	9,375
Revised fixed cost	850,000 + (760,000 × 10%) <b>Rs.</b>	926,000
New selling price = $\frac{926,000+2,000,000}{9,375} + (240 \times 1.15) + 960$	<b>Rs.</b>	1,548

**A.4 Jack and Jill**

**(a) Equivalent units using FIFO:**

	Quantity schedule (Units)	Equivalent production units	
		Material (Units)	Conversion (Units)
Opening WIP (80% conversion)	8,000	(8,000)	(6,400)
Units started during the month	50,000		
	<b>58,000</b>		
Units transferred to finished goods	48,000	48,000	48,000
Closing WIP (60% conversion)	7,000	7,000	4,200
Normal loss 3% of input (58,000-7,000) × 3%	1,530	-	-
Abnormal loss (90% conversion) <b>Bal.</b>	1,470	1,470	1,323
	<b>58,000</b>	<b>48,470</b>	<b>47,123</b>

**Cost and Management Accounting**  
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(b) Variances:		A	B	(A×B)
		kg/Hrs. / Rs.	(Standard-Actual)	Fav./ (adv.) Rupees
<b>Material price variance:</b>				
Actual material usage	W.2	50,000	40 - 38 = Rs. 2.00	100,000
Actual material usage	W.2	200,000	40 - 42 = (Rs. 2.00)	(400,000)
				<b>(300,000)</b>
<b>Material usage variance:</b>				
Standard material rate per kg		40.00	242,350 - 250,000 = (7,650 kgs)	<b>(306,000)</b>
<b>Labour rate variance:</b>				
Actual labour hours	W.2	72,000	80 - 84 = (Rs. 4.00)	<b>(288,000)</b>
<b>Labour efficiency variance:</b>				
Standard labour rate per hour		80.00	70,685 - 72,000 = (1,315 Hrs.)	<b>(105,200)</b>
<b>Variable overhead expenditure variance:</b>				
Actual labour hours at standard rate		72,000	(W.1) 64.00	4,608,000
Actual variable overheads				(6,350,000)
				<b>(1,742,000)</b>
<b>Variable overhead efficiency variance:</b>				
Standard variable overhead rate per hour	W.1	64.00	70,685 - 72,000 = (1,315 Hrs.)	<b>(84,160)</b>
<b>Fixed overhead expenditure variance:</b>				
Budgeted fixed production overhead				3,000,000
Actual fixed production overhead				(2,850,000)
				<b>150,000</b>
<b>Fixed overhead volume variance:</b>				
Standard fixed overhead rate per hour	W.1	40.00	70,685 - 75,000 = (4,315 Hrs.)	<b>(172,600)</b>

W.1: Statement of standard factory overhead rate per hour:	Rs.
Standard factory overhead rate per hour	(120×130%)÷1.5
	104.00
Standard fixed factory overhead rate per hour	3,000,000÷75,000
	40.00
Standard variable factory overhead rate per hour	104-40
	64.00

W.2:	Standard usage of material/labour			Actual usage of material/labour/overheads		
	Eq. units	Per unit	Kg/hrs.	Amount	Per kg/hrs. (Rs.)	kg/hrs.
Material	48,470	5.0 kg	242,350	1,900,000	38.00	50,000
				8,400,000	42.00	200,000
				<b>10,300,000</b>		<b>250,000</b>
D. labour	47,123	1.5 hrs.	70,685	6,048,000	84.00	72,000
V. overheads				6,350,000	88.1944	72,000

- A.5 (a) In the case of 'in the money' option, intrinsic value is the difference between the underlying price and the strike price. An "out-the-money" option has no intrinsic value.

Intrinsic value in the case of call option is computed by deducting the strike price from the underlying price.

Intrinsic value in the case of put option is computed by deducting the underlying price from the strike price.



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(b) Profit/(loss) of the investor on exercising put option at various market prices of shares:

	(i)	(ii)	(iii)
	----- Rupees -----		
Shares' strike price under the option	300	300	-
Premium paid	(60)	(60)	(60)
Shares' market price on expiry date of the option	(180)	(260)	-
<b>Net profit/(loss) of the investor</b>	<b>60</b>	<b>(20)</b>	<b>(60)</b>

In case of (iii) investor will not exercise the option and only book loss of premium.

**A.6 Queen Jewels**  
**Cash budget for the Quarter ending 31 December 2015**

	Rs. in '000'
<b>RECEIPTS:</b>	
<b>Collection from sales excluding 10% sales of high valued items:</b>	
- 7 days sale in September received in October <span style="float: right;">(4,600÷30×7×90%)</span>	966
- Sales for the quarter ending 31 December 2015 <span style="float: right;">(5,000+4,200+5,800)×90%</span>	13,500
- 7 days sale in December collected in January 2015 <span style="float: right;">(5,800/30×7×90%)</span>	(1,218)
	<b>13,248</b>
<b>Collection in advance from 10% sales of high valued items:</b>	
- 8 days(15-7) sales in October received in September <span style="float: right;">(5,000/30×8×10%)</span>	(133)
- Sales for the quarter ending 31 December 2015 <span style="float: right;">(5,000+4,200+5,800)×10%</span>	1,500
- 8 days sale of Jan. 2016 collected in Dec. 2015 <span style="float: right;">(6,000÷30×8×10%)</span>	160
	<b>1,527</b>
<b>Deduction of courier charges from collection</b>	
- No. of orders recorded in the previous month <span style="float: right;">(400+450+470)</span>	1,320
- No. of high value orders of Aug. delivered in Sep. 2015	-
- No. of high value orders of Nov. delivered in Dec. 2015 <span style="float: right;">(470×10%÷2)</span>	(24)
No. of orders delivered previous month	1,296
Courier charges at Rs. 300 per order <span style="float: right;">1,296×300</span>	(389)
<b>Total collection for the quarter</b>	<b>14,386</b>
<b>PAYMENTS:</b>	
Cost of sales for the quarter (cost plus 30%) <span style="float: right;">(5,000+4,200+5,800)÷1.3</span>	11,538
Opening stock 1 October 2015 <span style="float: right;">5,000×90%×25%÷1.3</span>	(865)
Closing stock 31 December 2015 <span style="float: right;">6,000×90%×25%÷1.3</span>	1,038
Purchases	11,712
60% of Sept. purchases paid in Oct. <span style="float: right;">(3,200×60%)</span>	1,920
60% of Dec. purchases to be paid in Jan. 2016 <span style="float: right;">(W.1) 4,496×60%</span>	(2,698)
<b>Payments for purchases</b>	<b>10,934</b>
Expenses paid excluding depreciation and amortisation <span style="float: right;">(50,000-8,000-2,000)÷4</span>	10,000
<b>Net outflow for the quarter ended 31 December 2015</b>	<b>(6,548)</b>
Cash and bank balances as at 1 October 2015	5,500
<b>Cash and bank balances as at 31 December 2015 - Overdraft</b>	<b>(1,048)</b>

**W.1: Purchases for December 2015**

Cost of sales for Dec. 2015 (cost plus 30%) <span style="float: right;">5,800÷1.3</span>	4,462
Opening stock 1 December 2015 <span style="float: right;">4,462×90%×25%</span>	(1,004)
Closing stock 31 December 2015 <span style="float: right;">6,000×90%×25%÷1.3</span>	1,038
<b>Purchases</b>	<b>4,496</b>

**Cost and Management Accounting**  
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**A.7 Chocó-king Limited**

**(a) Economic order quantity (EOQ)**

Annual requirement of the coco powder	80,000 ÷ 0.96 × 90% kg	75,000
Ordering cost per order	(6,000,000 ÷ 120) Rs.	50,000
Storage and handling	20 × 12	240
Other carrying cost	5 × 12	60
Carrying cost per kg	Rs.	<b>300</b>

**Economic order quantity (EOQ)**

$\text{SQRT}[(2 \times \text{Annual demand} \times \text{Ordering cost per order}) \div \text{Carrying cost per kg}]$
$\text{SQRT}[(2 \times 75,000 \times 50,000) \div 300] = \sqrt{25,000,000} = 5,000$

**(b) Analysis of purchases using EOQ / minimum quantity as offered by the vendor:**

	EOQ	Vendor's offer
No. of orders (75,000 ÷ 5,000), (75,000 ÷ 7,500) <b>A</b>	<b>15.00</b>	<b>10.00</b>
Average inventory including buffer stock (Order quantity ÷ 2) + 2,000 <b>B</b>	<b>4,500</b>	<b>5,750</b>
	<b>Rs.</b>	<b>Rs.</b>
Annual cost of placing orders (A × 50,000)	750,000	500,000
Carrying cost (B × 300)	1,350,000	1,725,000
Discount on placing order of 7,500 kg each (75,000 × 600 × 2%)	-	(900,000)
Net cost	<b>2,100,000</b>	<b>1,325,000</b>
<b>Annual saving on acceptance of vendor's offer</b>		<b>775,000</b>

**A.8 Key considerations for professional accountants as per IFAC sustainability framework for the following sections of reporting perspective:**

**(a) Determining materiality**

- (i) In defining report content, materiality should be considered along with the need for other important information characteristics
- (ii) Accountability for materiality thresholds and judgments
- (iii) Linking the determination of materiality to strategy, risk management, and sector benchmarks
- (iv) Determining a process for resolving different expectations regarding materiality
- (v) Where information is reported can help (a) to reinforce materiality criteria, and (b) to keep the length of disclosures manageable (particularly where the application of materiality might vary between reporting for wider stakeholders from investors)

**(b) External review and assurance of sustainability disclosures**

- (i) The quality of external assurance is directly linked to stakeholder inclusiveness
- (ii) Clarifying the purpose and scope of the assurance
- (iii) The choice of service provider
- (iv) Establishing the type of engagement
- (v) Enhancing the assurance statement

**Cost and Management Accounting**  
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**A.9 Sahil Limited**  
**Analysis of options of renting the factory and utilization of contract labour**

	Available options		
	Immediate closure and renting of factory bldg.	Operation using contract labour	
		To produce 30,000 units	To produce 40,000 units
----- Rupees -----			
<b>Incremental savings</b>			
Sales (30,000×100), (40,000×90)		3,000,000	3,600,000
Rental income (40,000×12)	480,000		
Proceeds from sale of machine (830,000-30,000×5), (830,000-40,000×5)	830,000	680,000	630,000
Direct material - Use for other segment (15,000×18)	270,000	-	-
Direct material - sale externally [10,000×(19-2)]	170,000	-	-
Fixed production overheads; apportionment of general overheads (1,750-170= 1580)	-	-	-
Fixed admin and selling overheads; apportionment of general overheads (500×60%=300)	-	-	-
<b>Incremental costs</b>			
Purchase of direct material (5,000×19), (15,000×19)	-	(95,000)	(285,000)
Training of contract labour	-	(40,000)	(40,000)
Contract labour cost (30,000×24), (40,000×24)	-	(720,000)	(960,000)
Variable production overhead (500÷50× 1.2 × 30,000),(500÷50×1.2×40,000)	-	(360,000)	(480,000)
Variable admin. & selling overheads: [(500×40%)÷50×30], [(500×40%)÷50×40]	-	(120,000)	(160,000)
<b>Net savings</b>	<b>1,750,000</b>	<b>2,345,000</b>	<b>2,305,000</b>

**Conclusion:**

Since the highest savings occur with a **production level of 30,000 units**, SL should operate the segment at this level of activity.

**(THE END)**



<b>INSTITUTE OF CHARTERED ACCOUNTANTS OF PAKISTAN</b>	
<b>EXAMINERS' COMMENTS</b>	
<b>SUBJECT</b> Cost and Management Accounting	<b>SESSION</b> Certificate in Accounting and Finance – Autumn 2015

**General:**

The overall performance in this attempt was better than the previous attempt mainly due to very good performances in Questions 2, 3 and 7. Question-wise comments are as follows:

**Question 1**

An average response was observed in this question pertaining to by-products and joint products. The commonly observed errors were as follows:

- Majority of the students did not compute the abnormal loss and those who did compute the quantity did not deduct the cost thereof in arriving at the cost of good production.
- Joint cost of production should have been allocated between Sigma and Beta on the basis of NRV at split point. In arriving at the NRV of Beta many students did not deduct the cost of refining. Further, many students allocated the joint cost on the basis of sale price or on the basis of units produced.

**Question 2**

This was an easy question and the requirement was to compute the IRR of a project. A good performance was witnessed as more than 50% students scored full marks. However, some students lost this scoring opportunity by making the following mistakes:

- Cost of technical support was ignored while determining the net cash flows.
- Cash flows were taken from year 2 to year 5 instead of year 1 to year 4.
- Cost of sales and operating expenses were calculated on sales net of CLs share instead of gross sales.
- Those students who obtained either both negative or both positive present values could not apply them correctly in the formula for interpolation.

**Question 3(a)**

This part of the question was quite easy and almost all the students performed well mostly securing full marks.

**Question 3(b)**

This part of the question was also quite easy and majority of the students secured high marks. The mistakes observed were as follows:

- Many students considered the investment in machinery as addition to fixed cost whereas only the 10% depreciation represented the additional fixed cost.
- Most of the students computed total capacity as 125% of the capacity utilization of 6,000 units whereas the revised capacity should have been worked using the Normal Capacity of 7500  $\left(6000 \times \frac{100}{80}\right)$  units.

**Question 4(a)**

This part requiring computation of Equivalent units of production was quite easy and many students secured full marks. However, many students were confused as regards treatment of the Normal and Abnormal losses. In many cases, either both types of losses were included in the equivalent production or both were excluded.

Further, most of the students did not understand the significance of the fact that inspection takes place when the units are 90% complete. Consequently, they applied the normal loss percentage on the closing WIP also which was only 60% complete. Some of them applied the percentage on units started during the month and ignored the opening units. Further, many students computed the Abnormal Loss related to conversion as if the units were fully converted, instead of restricting the conversion loss to 90% of the units lost.

**Question 4(b)**

This part of the question required computation of variances. One of the most common mistakes observed in the students' response was that units produced and transferred to finished goods were used in calculating the variances instead of Equivalent units. Another common mistake pertained to calculation of Standard Variable Overhead Rate. It should have been computed either as Rs. 104 per unit  $\{(Rs. 120 \times 130\%) - (40 \times 1.5)\}$  or Rs. 64 per hour  $(Rs. 80 \times 130\% - 40)$ . Instead, many students computed it as Rs. 116 per unit  $(Rs. 120 \times 130\% - Rs. 40)$ .

Further, many students did not specify whether the variance calculated by them was Favourable or Unfavourable.

**Question 5(a)**

In this part of the question, the students were required to discuss the term 'Intrinsic Value' and explain how it is computed in the case of call option and put option. Since this topic was included in the syllabus for the first time, majority of the students seemed unprepared and the overall performance was poor. Most of the students either ignored it altogether or used pure guesswork without any success.



**Question 5(b)**

The performance in this part was equally bad. However, some of the seemingly intelligent students were able to grasp the requirement as the data was quite simple. They were able to produce correct answers in this part despite their poor performance in part (a). Many students treated the given option as if it was a call option instead of a put option.

**Question 6**

The overall response to this question was poor. Only few students were able to properly handle the timing of cash flows correctly. The commonly observed errors were as follows:

- Period for collection of sales was 7 days, both in case of sales through courier as well as sales through credit card except sale of high value items. However, collection from sales of high value items was made 8 days in advance i.e. 15 days in advance less 7 days taken by bank to credit the amount. Most of the students failed to analyze this situation correctly and a number of different incorrect alternatives were tried.
- Sales of the high valued items was 25% of sale through credit card i.e. 10% (25 of 40%) of total sales. Instead, many students took it as 25% of total sales.
- While computing payment on account of purchases, most of the students correctly worked out the cost of sales for the quarter. However, the cost of sales needed to be adjusted with opening and closing stocks to arrive at the purchases, which were not correctly dealt with by a large number of students.
- Though it was specifically mentioned in the question that month-wise cash budget is not required, many candidates prepared it on month by month basis and wasted precious time.
- According to the question, stock of high value items was not maintained as these were purchased on receipt of order. Many students failed to understand this and as a result, calculated incorrect values of opening and closing stocks.
- Cost of sales was computed correctly by a number of students; however, the concept of 40% payment in current month and 60% in subsequent month was not applied correctly by most of the candidates.

**Question 7(a)**

Above average performance was witnessed in this question requiring calculation of Economic Order Quantity. The common mistakes were as follows:

- In such questions, it is important to convert all values to the same time frame i.e. either on an annual or monthly basis. Many students took the carrying cost on per month basis and all other values on annualized basis.
- Many students failed to understand that the final product was chocolate but the item to be purchased was coco powder. Consequently, they took the annual demand as 80,000 kg. Further, many students ignored the process losses while determining the purchase quantity. Further, the process losses were 4% of input whereas many candidates calculated it as 4% of output.



*Examiners' Comments on Cost and Management Accounting - Autumn 2015*

- Some students took the Ordering cost as Rs. 120 or as Rs. 6 million instead of Rs. 50,000 i.e. Rs. 6 million divided by number of orders i.e. 120.

**Question 7(b)**

The performance in this part was good. However, the following errors were noted:

- Buffer stock was ignored in the calculation of holding cost.
- Holding cost was calculated on the basis of EOQ instead of average stock.

**Question 8**

This was a theoretical question based on IFAC sustainability frame-work. The performance was very poor. Being a newly introduced topic very few students had the required knowledge and attempted part (a) through guesswork whereas part (b) was mostly left un-attempted.

**Question 9**

This question required the candidates to make a decision on the basis of the given situation. The options available were as follows:

1. Close the factory immediately and rent it.
2. Produce and sell 30,000 units at the current price.
3. Produce and sell 40,000 units at the lower price.

The overall performance was below average. Common mistakes were as follows:

- Majority of the students compared only option 1 with option 3 and ignored option 2.
- Most of the students assumed that in case of renting, fixed costs would not be incurred. This was not correct because fixed costs represented apportionment of expenses and since only one factory/segment was being closed, these costs would have continued to be incurred in any case.
- Most of the students got confused in determining the impact on realizable value of machine under options 2 and 3. Only the decline in value at Rs. 5 per unit should have been taken into consideration. Instead, most of the students determined the impact by adding the entire realizable value of Rs. 830,000 with the amount computed @ Rs. 5 per unit.
- Many students failed to identify the income generated from use of material in other department, if the factory was rented out.
- Many students performed calculations without clearly identifying the option to which they pertained.

*THE END*

Cost and Management Accounting  
Summary of Marking Key  
Certificate in Accounting and Finance – Autumn 2015

**Note regarding marking scheme:**

The marking scheme is given as a guide. However, markers were also advised to award marks for alternative approaches to a question and relevant/well-reasoned comments/explanations.

A.1		<b>Mark(s)</b>
	▪ Calculation of joint costs	2.5
	▪ Allocation of joint costs	4.0
	▪ Determination of abnormal loss quantity	3.0
	▪ Calculation of production-wise cost per litre	2.5
A.2		<b>Mark(s)</b>
	▪ Preparation of cash flows	4.5
	▪ Discounting of the cash flows	3.0
	▪ Determination of IRR	1.5
A.3	(a)	<b>Mark(s)</b>
	▪ Determination of contribution margin	1.0
	▪ Calculation of units to be sold	1.0
		<b>Mark(s)</b>
	(b)	<b>Mark(s)</b>
	▪ Determination of revised capacity and revised fixed cost	2.0
	▪ Determination of new selling price	1.0
A.4	(a)	<b>Mark(s)</b>
	▪ Preparation of quantity schedule	2.0
	▪ Calculation of equivalent production units	3.0
		<b>Marking plan:</b>
	▪ 1.5 marks each for material and labour variance	
	▪ 2.0 marks each for variable and fixed overheads	
A.5	(a)	<b>Mark(s)</b>
	▪ Briefly explanation of 'Intrinsic value'	1.0
	▪ Computation of intrinsic value in the case of call and put option	1.0
		<b>Mark(s)</b>
	(b)	<b>Mark(s)</b>
	▪ Determination of premium paid	1.5
	▪ Determination of shares market price on expiry date	1.5
	▪ Net profit / (loss) of the investor	1.0
A.6		<b>Mark(s)</b>
	▪ Collection from sales	5.0
	▪ Courier charges	1.5
	▪ Payment for purchases	6.5
	▪ Expenses paid	1.0
A.7	(a)	<b>Mark(s)</b>
	▪ Determination of annual requirement	1.0
	▪ Calculation of ordering cost per order	1.0
	▪ Determination of carrying cost	2.0
	▪ Determination of EOQ	3.0

**Cost and Management Accounting**  
 Summary of Marking Key  
 Certificate in Accounting and Finance – Autumn 2015

(b)	Mark(s)
▪ Determination of annual cost of placing orders	2.0
▪ Determination of carrying cost	3.0
▪ Calculation of discount on placing order	0.5
▪ Advise on the offer	0.5

A.8 (a)	Mark(s)
▪ Up to 01 mark for each consideration	3.0

(b)	Mark(s)
▪ Up to 01 mark for each consideration	3.0

A.9	Mark(s)
▪ Incremental sales / rental income under each option	1.5
▪ Proceeds from sale of machine	2.0
▪ Incremental savings from direct material	2.0
▪ Purchase of direct material	2.0
▪ Contract labour and related costs	3.0
▪ Variable overheads	4.0
▪ Ignoring the fixed overheads	1.0
▪ Advise the best course of action	0.5

(THE END)





The Institute of  
Chartered Accountants  
of Pakistan

**Certificate in Accounting and Finance Stage Examinations**

10 March 2016  
3 hours – 100 marks  
Additional reading time – 15 minutes

**Cost and Management Accounting**

- Q.1 Rainbow Paints Limited (RPL) is in the process of preparing its budget for the year ending 28 February 2017. The following data has been extracted from the profit and loss account for the year ended 29 February 2016:

	<b>Rs. in million</b>
Sales (including cash sales of Rs. 19 million)	109.00
Cost of goods sold:	
Materials consumed	(30.00)
Conversion cost - Variable	(18.00)
Conversion cost - Fixed (including depreciation of Rs. 3 million)	(12.00)
Opening finished goods inventory	(5.00)
Closing finished goods inventory	8.00
Gross profit	52.00
Operating expenses:	
Variable	(25.00)
Fixed (including depreciation of Rs. 5 million)	(10.00)
<b>Operating profit</b>	<b>17.00</b>

For preparation of the budget, Cost Control Manager has prepared the following projections/information:

- (i) Sales volume and sales price are expected to increase by 10% and 5% respectively. The ratio of cash and credit sales would be 25:75. Cash sales are made at a discount of 5%.
- (ii) Average collection and payment time in RPL is as follows:

Collection of trade debtors	35 days
Payment to trade creditors	40 days
Payment of expenses	25 days

- (iii) RPL maintains raw material inventory for average 30 days' consumption. Opening and closing finished goods inventory quantity would be the same.
- (iv) Trade creditors as at 29 February 2016 amounted to Rs. 3 million.
- (v) Effect of price increase is estimated as under:
  - Raw material - 10%
  - Variable and fixed expenses (excluding depreciation) - 8%
  - Depreciation - same as last year
- (vi) RPL plans to introduce a new product during the budget period for which it plans to launch an advertisement campaign during September 2016 to February 2017. In this respect payments of Rs. 3 million each would be made on 1 September 2016 and 1 March 2017.
- (vii) RPL operates absorption costing system and uses FIFO method for valuation of inventory.

**Required:**

- (a) Prepare budgeted profit and loss account for the year ending 28 February 2017. (08)
  - (b) Prepare budgeted cash flow statement for the year ending 28 February 2017. (08)
- (Assume that all the transactions occur evenly throughout the year (360 days) unless otherwise specified)*

- Q.2 An investor paid a premium of Rs. 300 for the **option** to buy 500 shares in ABC Limited for Rs. 20,000 at any time during the next three months. The investor exercised his right to buy the shares when the price in the market was Rs. 50 per share.

**Required:**

- (a) Explain the term 'option'. (01)
- (b) In context of the above example, briefly explain:
- (i) What is the strike price? (0.5)
- (ii) Whether the above transaction is a 'call option' or a 'put option'. (1.5)
- (c) Explain whether the above option would be termed as 'in the money' or 'out the money' when the market price is Rs. 35 per share. (02)

- Q.3 Seema Enterprises (SE) produces various leather goods. It operates a standard **marginal** costing system. For one of its products Bela, following information was extracted for the month of December 2015 from SE's budget document for the year 2015.

		Rs. in million
Sales	9,800 units	25.00
Cost of production of 10,000 units:		
Direct material	5,000 kg	9.00
Direct labour	24,000 hrs	3.60
Variable overheads	2,000 machine hrs	4.40
Fixed overheads		3.80

Actual production for the month of December 2015 was 12,000 units whereas SE earned revenue of Rs. 30 million by selling 11,000 units of Bela. Following information pertains to actual cost of production for the month:

- (i) 5,700 kg material was issued to production. Raw materials are valued using FIFO method. Other details relating to the raw material used for Bela are as follows:

		kg	Rs. in million
1-Dec-2015	Opening balance	3,000	5.70
10-Dec-2015	Purchases	15,000	26.25

- (ii) To minimise labour turnover, SE increased production wages by 10% above the standard rate, effective 1 December 2015. This improved labour efficiency by 5% as compared to budget.
- (iii) 2,100 machine hours were worked. Details of overheads are as under:
- Depreciation amounted to Rs. 1.6 million (same as budgeted)
  - Factory building rent amounted to Rs. 1.20 million (same as budgeted)
  - All other overheads were 4% in excess of the budget
- (iv) Variances are treated as period cost and charged to cost of sales.
- (v) There was no opening finished goods inventory of Bela. Actual closing inventory may be valued at standard marginal production costs.

**Required:**

- (a) Compute budgeted and actual profits of Bela for the month of December 2015 using marginal costing. (06)
- (b) Reconcile the budgeted profit with actual profit using relevant variances under marginal costing. (14)



Q.4 Digital Electronics (DE) acquired a plant on 1 January 2016 under a lease arrangement on the following terms:

Lease period (commencing from 1 January 2016)	3 years
Down payment on commencement of lease	Rs. 2.00 million
Lease installments payable annually in arrears	Rs. 3.90 million
Amount payable on expiry of the lease term	Rs. 0.89 million

On the date of acquisition, fair value of the plant was Rs. 10 million. DE depreciates its property, plant and equipment over their useful life. The disposal price of the plant at the end of the useful life of four years is estimated at Rs. 0.50 million.

Net cash inflows from the use of the plant are estimated as under:

Year	2016	2017	2018	2019
Amount (Rs. in million)	5.90	5.20	2.45	1.00

It may be assumed that all cash inflows arise at the end of the year.

**Required:**

Compute internal rate of return (IRR) and advise whether it is feasible to acquire the plant assuming that DE's cost of capital is 15%. (08)

Q.5 Omega Industries Limited (OIL) produces two products Alpha and Beta. These products are processed through Fabrication and Finishing departments. Quality control and Logistics departments provide all the necessary support for the production.

OIL allocates production overheads to Alpha and Beta at a pre-determined rate of Rs. 1,300 and Rs. 500 per unit respectively. Any under/over absorbed overheads are adjusted to cost of sales.

Following actual data has been extracted from the cost records of OIL for the month of December 2015:

		Fabrication	Finishing	Quality control	Logistics	Total
Indirect labour	Rs. in '000	1,500	1,200	500	400	3,600
Factory rent	Rs. in '000					2,000
Power	Rs. in '000					1,200
Depreciation – Plant	Rs. in '000					9,000
<b>Other information:</b>						
Cost of plant	Rs. in '000	32,000	20,000	2,000	6,000	60,000
Floor area	Square feet	10,000	5,000	3,000	2,000	20,000
Power	KWH	50,000	40,000	4,000	6,000	100,000
Hours worked for Alpha		70%	60%	-	-	
Hours worked for Beta		30%	40%	-	-	
<b>Services provided by:</b>						
- Quality control		40%	60%	-	-	100%
- Logistics		60%	35%	5%	-	100%

8,000 units of Alpha and 10,000 units of Beta were produced during the month of December 2015.

**Required:**

- (a) Compute product wise actual overheads for Alpha and Beta. (10)
- (b) Prepare journal entries to record:
- (i) Applied production overheads; and
- (ii) Under/over absorbed production overheads (02)



- Q.6 Quality Chemicals (QC) produces one of its products through two processes A and B. Following information has been extracted from the records of process A for the month of January 2016.

	Quantity Units	Material ----- Rs. in '000 -----	Conversion
Opening work in process	5,000	2,713	1,499
Input during the month	20,000	10,000	5,760
Transferred to process B	18,000	-	-
Closing work in process	6,000	-	-

**Additional information:**

- (i) Materials are introduced at the beginning of the process. In respect of conversion, opening and closing work in process inventories were 40% and 60% complete, respectively.
- (ii) Inspection is performed when the units are 50% complete. Expected rejection is estimated at 5% of the inspected units. The rejected units are not processed further and sold at Rs. 100 per unit.
- (iii) QC uses '**weighted average method**' for inventory valuation.

**Required:**

- (a) Compute equivalent production units and cost per unit. (05)
- (b) Prepare journal entries to record the above transactions. (06)

- Q.7 Global (Pvt.) Limited (GPL) is in the process of preparing bid documents for a special order of 5,000 units of a new product Zeta. In this respect, GPL's technical department has worked-out the following projections/information:

- (i) The order would be completed in 15 days.
- (ii) GPL has sufficient stock of the required materials to produce Zeta. Some of the relevant information is as follows:

	Material A	Material B	Material C
Quantity required	5,000 kg	3,000 kg	2,000 kg
Original purchase price	Rs. 180 per kg	Rs. 150 per kg	Rs. 50 per kg
Current purchase price	Rs. 200 per kg	Rs. 175 per kg	Rs. 60 per kg
Current disposal price	Rs. 100 per kg	Rs. 135 per kg	Nil

- Material A is used by GPL in many products and therefore sufficient stock is maintained.
  - Material B has no use other than in the production of Zeta.
  - The stock of material C was purchased several years ago for another project. It can only be used in the production of Zeta. Otherwise, it will have to be disposed of at a cost of Rs. 10 per kg to meet environmental legislation.
- (iii) The production of Zeta would require:
    - 800 skilled labour hours at Rs. 200 per hour. Presently, 1,440 labour hours remain idle during each month.
    - 250 unskilled labour hours which can be hired at Rs. 120 per hour.
    - 150 machine hours. If the machine is not used for Zeta, it may be leased out at Rs. 4,000 per day.
  - (iv) GPL absorbs overheads at Rs. 400 per skilled and unskilled labour hours. Based on normal capacity of 50,000 hours, fixed overheads are estimated at Rs. 6,000,000. If GPL decides to produce Zeta, fixed overheads would increase by Rs. 150,000.
  - (v) As a result of production of Zeta, general administration cost would increase by Rs. 100,000.
  - (vi) The planning department of GPL has incurred a cost of Rs. 20,000 on preparing feasibility for production of Zeta.

**Required:**

Compute the bid price that GPL should quote, if it wants to earn profit (based on relevant costs only) of 20% of selling price. (12)

- Q.8 Himalayan Rivers (HR) is planning to install a new plant. Planned production from the plant for the next year is 150,000 units. Cost of production is estimated as under:

	<b>Rs. in million</b>
Direct material	6.00
Direct labour	5.00
Production overheads	10.29

Production overheads include the following:

- (i) Factory premises would be acquired on rent at a cost of Rs. 1.8 million per annum.
- (ii) Indirect labour has been budgeted at 30% of direct labour cost, 50% of which would be fixed.
- (iii) Depreciation of the plant would be Rs. 0.5 million.
- (iv) Total power and fuel cost has been budgeted at Rs. 3 million. 80% of power and fuel cost would vary in accordance with the production.
- (v) All remaining production overheads are variable.

The sales and marketing budget includes the following:

- (i) Employment of two sales representatives at a monthly salary of Rs. 25,000 each and a sales commission of 2% on sales achieved.
- (ii) Hiring of a delivery van at Rs. 70,000 per month.
- (iii) Launching an advertisement campaign at a cost of Rs. 1.5 million.

**Required:**

Calculate the breakeven sales revenue and quantity for the next year if HR expects to earn a contribution margin of 40% on sales, net of 2% sales commission. (10)

- Q.9 According to Global Reporting Initiative, an effective sustainability reporting cycle should benefit all reporting organizations. List internal and external benefits **(three each)** of sustainability reporting. (06)

(THE END)

**Cost and Management Accounting**  
Suggested Answers  
Certificate in Accounting and Finance – Spring 2016

**A.1 (a) Rainbow Paints Limited**  
**Budgeted profit and loss account for the year ending 28 February 2017**

		Rs. in million
Sales	(W-1)	125.46
Cost of sales		
Raw material consumption	$30 \times 1.1 \times 1.1$	(36.30)
Conversion cost - Variable	$18 \times 1.1 \times 1.08$	(21.38)
Conversion cost - Fixed	$[(12-3) \times 1.08] + 3$	(12.72)
Cost of goods manufacture		(70.40)
Opening finished goods inventory		(8.00)
Closing finished goods inventory	(W-2)	8.69
		(69.71)
<b>Gross profit</b>		<b>55.75</b>
Operating expenses		
Variable	$25 \times 1.08 \times 1.1$	(29.70)
Fixed	$[(10-5) \times 1.08 + 5] + 6$	(16.40)
		(46.10)
<b>Operating profit</b>		<b>9.65</b>

**W-1: Budgeted sales**

	Cash	Credit	Total
	----- Rs. in million -----		
Existing sales - gross-up of 5% cash disc.	20.00 (19 ÷ 0.95)	90.00 (109 ÷ 19)	110.00
Gross sales after volume & price increase of 10% & 5% in the ratio of 25:75 for cash and credit sales respectively	31.76 (127.05 × 25%)	95.29 (127.05 × 75%)	127.05 (110 × 1.05 × 1.1)
Budgeted sales – net of 5% cash sales discount	30.17 (31.76 × 95%)	95.29	125.46

**W-2: Closing finished goods inventory (same quantity as opening inventory)**

	Opening inventory	Price increase	Closing inventory
Raw material	$[30 \div (30 + 18 + 12)] \times 8$	4.0	10%
Conversion cost – variable	$[18 \div (30 + 18 + 12)] \times 8$	2.4	8%
Conversion cost – fixed (excl. dep.)	$[9 \div (30 + 18 + 12)] \times 8$	1.2	8%
Depreciation	$[3 \div (30 + 18 + 12)] \times 8$	0.4	-
		<b>8.0</b>	<b>8.69</b>



Cost and Management Accounting  
Suggested Answers  
Certificate in Accounting and Finance – Spring 2016

- (b) **Rainbow Paints Limited**  
Budgeted cash flow statement for the year ending 29 February 2017

	Rs. in million
<b>Inflows:</b>	
Sale proceeds:	
Total sale <span style="float: right;">P &amp; L</span>	125.46
Trade debtors - opening balance <span style="float: right;">(109-19)÷360×35</span>	8.75
Trade debtors - closing balance <span style="float: right;">95.29÷360×35</span>	(9.26)
	124.95
<b>Outflows:</b>	
Payments for purchases:	
Purchases for the year <span style="float: right;">(W-3)</span>	(36.83)
Trade creditors - opening balance	(3.00)
Trade creditors - closing balance <span style="float: right;">36.83÷360×40</span>	4.09
	(35.74)
Payments for expenses:	
Exp. for the year (excluding depreciation) <span style="float: right;">(PL) [21.38+12.72+29.7+16.4]-3-5</span>	(72.20)
Accrued expenses - opening balance <span style="float: right;">(18+12-3+25+10-5)×25÷360</span>	(3.96)
Accrued expenses - closing balance <span style="float: right;">(72.2-6)×(25÷360)+3</span>	7.60
	(68.56)
<b>Net cash inflows</b>	<b>20.65</b>

**W-3: Purchases**

Raw material consumed <span style="float: right;">P &amp; L</span>	36.30
Opening raw material inventory <span style="float: right;">(30×30÷360)</span>	(2.50)
Closing raw material inventory <span style="float: right;">(36.3×30÷360)</span>	3.03
	<b>36.83</b>

**A.2 (a) Option**

An option gives the holder the right, but not the obligation to trade an item. The item might be shares, securities, foreign currencies, commodities etc.

- (b) **In the context of the given example the terms are briefly explained as under:**

(i) **Strike price**

The investor has a right to buy 500 shares for Rs. 20,000 i.e. at Rs. 40 per share. Therefore, **Rs. 40 is the strike price.**

(ii) **Call option or Put option**

In the given example, the investor has an option is to buy shares, therefore, it is a **call option.**

- (c) **'In the money' or 'Out the money'**

There would be a loss of Rs. 5 (40-35) per share, if the investor exercises the option to buy shares at a strike price of Rs. 40 per share as against the prevailing market price of Rs. 35 per share. Therefore, the option would be **termed as 'out the money'.**

**Cost and Management Accounting**  
Suggested Answers  
Certificate in Accounting and Finance – Spring 2016

- A.3 (a) Seema Enterprises  
Budgeted and actual profits for the month of December 2015  
Using marginal costing

		Rs. in million
<b>Budgeted profit:</b>		
Sales (9,800 units)		25.00
Variable costs	(9+3.6+4.4)	(17.00)
Closing finished goods inventory at standard cost	$17 \div 10,000 \times 200$	0.34
Contribution margin		8.34
Fixed cost		(3.80)
		<b>4.54</b>
<b>Actual profit:</b>		
Sales (11,000 units)		30.00
Variable costs	<b>(W-1)</b>	(19.74)
Closing finished goods inventory at standard cost	$17 \times 1,000 \div 10,000$	1.70
Contribution margin		11.96
Fixed cost	$1.6 + 1.2 + (3.8 - 1.6 - 1.2) \times 1.04$	(3.84)
		<b>8.12</b>

**W-1: Actual variable cost**

Material cost using FIFO	3,000	5.70
	2,700	(2,700 × 26.25 ÷ 15,000)
	<b>Kg 5,700</b>	10.43
Labour cost; Actual labour hours	$(24,000 \div 10,000 \times 12,000 \times 0.95)$	<b>27,360</b>
Actual hrs. at actual rate	$27,360 \times (3.6 \div 24,000 \times 1.1)$	4.51
Variable overheads:		
Actual machine hrs. at actual rate	$2,100 \times (4.4 \div 2,000 \times 1.04)$	4.80
		<b>19.74</b>

**Cost and Management Accounting**  
Suggested Answers  
Certificate in Accounting and Finance – Spring 2016

**(b) Reconciliation of budgeted profit with actual profit**

		Rs. in million
Budgeted profit	(As computed in (a) above)	4.54
<b>Favourable/(adverse) variances:</b>		
<b>Sales volume (contribution margin) variance:</b>		
Actual sale quantity at standard contribution margin	$8.34 \div 9,800 \times 11,000$	9.36
BU sale quantity at standard contribution margin		8.34
		<b>1.02</b>
<b>Sales price variance</b>		
Actual sale quantity at actual price		30.00
Actual sale quantity at standard price	$25 \div 9,800 \times 11,000$	28.06
		<b>1.94</b>
<b>Material price variance:</b>		
Actual usage at actual price	(W-1)	10.43
Actual usage at standard price	$5,700 \times (9 \div 5,000)$	10.26
		<b>(0.17)</b>
<b>Material usage variance</b>		
Actual usage at standard rate		10.26
Allowable usage at standard rate	$(5,000 \div 10,000 \times 12,000) \times (9 \div 5,000)$	10.80
		<b>0.54</b>
<b>Labour rate variance</b>		
Actual hours at actual rate	(W-1)	4.51
Actual hours at standard rate	$27,360(W-1) \times (3.6 \div 24,000)$	4.10
		<b>(0.41)</b>
<b>Labour efficiency variance</b>		
Actual hours at standard rate		4.10
Allowable hours at standard rate	$24,000 \div 10,000 \times 12,000 \times (3.6 \div 24,000)$	4.32
		<b>0.22</b>
<b>Variable overhead expenditure variance</b>		
Actual machine hours at actual rate	(W-1)	4.80
Actual machine hours at standard rate	$2,100(W-1) \times (4.4 \div 2,000)$	4.62
		<b>(0.18)</b>
<b>Variable overhead efficiency variance</b>		
Actual machine hours at standard rate		4.62
Allowable machine hours at standard rate	$2,000 \div 10,000 \times 12,000 \times (4.4 \div 2,000)$	5.28
		<b>0.66</b>
<b>Fixed overhead expenditure variance</b>		
Actual fixed overheads	(As computed in (a) above)	3.84
Standard fixed overheads		3.80
		<b>(0.04)</b>
<b>Fixed overhead volume variance</b>		
Under marginal costing, <b>there is no fixed overhead volume variance</b> as fixed costs are treated as period cost and not allocated to products.		-
Actual profit		<b>8.12</b>



**Cost and Management Accounting**  
Suggested Answers  
Certificate in Accounting and Finance – Spring 2016

**A.4 Digital Electronics**  
Evaluating acquisition of a plant on lease

Receipts and payments:

	1-Jan-16	31-Dec-16	31-Dec-17	31-Dec-18	31-Dec-19
	----- Rs. in million -----				
Net cash inflows	-	5.90	5.20	2.45	1.00
Disposal price	-	-	-	-	0.5
Payments	(2.00)	(3.90)	(3.90)	(3.90)	-
Amount payable on expiry of lease	-	-	-	(0.89)	-
<b>Net receipts</b>	<b>(2.00)</b>	<b>2.00</b>	<b>1.30</b>	<b>(2.34)</b>	<b>1.50</b>

<b>NPV at 10% (A%)</b>						<b>NPV<sub>A</sub></b>
PV factor	1.00	0.91	0.83	0.75	0.68	
<b>PV (Rs. in million)</b>	<b>(2.00)</b>	<b>1.82</b>	<b>1.08</b>	<b>(1.76)</b>	<b>1.02</b>	<b>0.16</b>
<b>NPV at 20% (B%)</b>						<b>NPV<sub>B</sub></b>
PV factor	1.00	0.83	0.69	0.58	0.48	
<b>PV (Rs. in million)</b>	<b>(2.00)</b>	<b>1.66</b>	<b>0.90</b>	<b>(1.36)</b>	<b>0.72</b>	<b>(0.08)</b>

**Internal rate of return (IRR):**  $A\% + \frac{NPV_A}{NPV_A - NPV_B} \times (B\% - A\%)$   
 $10\% + \frac{0.16}{0.16 - (-0.08)} \times (20\% - 10\%) = \underline{\underline{16.67\%}}$

**Conclusion:** As internal rate of return (IRR) is higher than the company's cost of capital, it is advisable to acquire the plant on lease.

**Cost and Management Accounting**  
Suggested Answers  
Certificate in Accounting and Finance – Spring 2016

**A.5 (a) Omega Industries**  
**Actual overheads for production of Alpha and Beta**

**Cost allocation to production department:**

Items	Allocation basis	Total	Production depts.		Service depts.	
			Fabrication	Finishing	Quality control	Logistics
----- Rs. in '000 -----						
Indirect labour	Given	3,600	1,500	1,200	500	400
Factory rent	Floor area	2,000	1,000	500	300	200
Power	KWH consumed	1,200	600	480	48	72
Depreciation	Plant cost	9,000	4,800	3,000	300	900
					1,148	1,572
<b>Service departments:</b>						
Logistics	60:35:5	1,572	943	550	79	(1,572)
					1,227	
Quality control	40:60	1,227	491	736	(1,227)	
			<b>9,334</b>	<b>6,466</b>	-	-

**Cost allocation to Alpha and Beta:**

	Alpha	Beta	Total
Actual no. of units produced	8,000	10,000	
----- Rs. in '000 -----			
Overheads allocation on the basis of hours worked:			
- Fabrication department in the ratio of 70:30	6,534	2,800	9,334
- Finishing department in the ratio of 60:40	3,880	2,586	6,466
	<b>10,414</b>	<b>5,386</b>	<b>15,800</b>

**(b) Accounting entries for absorption of overheads:**

		Debit	Credit
--- Rs. in '000 ---			
<b>1</b>	Work in process (8,000×1,300)+(10,000×500)	15,400	
	Factory overheads control account		15,400
	<i>(Overheads charged to production at pre-determined rate)</i>		
<b>2</b>	Cost of sales 15,800-15,400	400	
	Factory overheads control account		400
	<i>(Overheads under applied charged to cost of sales)</i>		

**Cost and Management Accounting**  
Suggested Answers  
Certificate in Accounting and Finance – Spring 2016

**A.6 (a) Quality Chemicals**  
**Process A - production and cost for the month of January 2016**

**Equivalent units under weighted average method:**

	Quantity schedule	Equivalent units	
		Material	Conv.
----- No. of units -----			
Opening WIP (40% to conversion)	5,000		
Input for the month	20,000		
<b>A</b>	<b>25,000</b>		
Transferred to process B	18,000	18,000	18,000
Closing WIP (60% to conversion)	6,000	6,000	3,600
Normal loss-5% of the inspected units (A×5%)	1,250	-	-
Abnormal gain (50% to conv.) (Bal.)	(250)	(250)	(125)
Normal equivalent units	<b>B</b>	<b>23,750</b>	<b>21,475</b>
<b>Cost per unit:</b>			
----- Rs. in '000 -----			
Opening WIP		2,713	1,499
Cost for the month		10,000	5,760
Scrapped units at sale price	1,250×100	(125)	-
<b>C</b>		<b>12,588</b>	<b>7,259</b>
<b>----- Rupees -----</b>			
Cost per unit	<b>C÷B</b>	530	338

**(b) Accounting entries**

Date	Description	Debit	Credit
		----- Rs. in '000 -----	
1	WIP - Process A	15,760	
	Raw material		10,000
	Labour and overheads		5,760
	<i>(Material, labour and overheads charged to Process A)</i>		
2	WIP - Process A		
	(250×530)+(125×338) <b>OR</b> (250×530)+(250×169)	175	
	Abnormal gain		175
	<i>(To record abnormal gain)</i>		
3	Scrapped units	1,250×100	
	WIP - Process A		125
	<i>(Sales value of rejected units credited to WIP)</i>		
4	WIP - Process B	18,000×(530+338)	
	WIP - Process A	15,624	
	<i>(Goods completed transferred to Process B)</i>		
5	Abnormal gain	(250×530)+(125×338)	
	Scrapped units	250×100	25
	Profit or loss account		150
	<i>(Abnormal gain adjusted to profit or loss account)</i>		



**Cost and Management Accounting**  
Suggested Answers  
Certificate in Accounting and Finance – Spring 2016

**A.7 Global (Pvt.) Limited**  
**Computation of bid price for Zeta**

		<b>Rupees</b>
Material A - at current purchase price	5,000×200	1,000,000
Material B - at current selling price	3,000×135	405,000
Material C - disposal cost saving	2,000×10	(20,000)
Skilled labour hours - after using idle hours	[800-(1440÷2)]×200	16,000
Unskilled labour hours	250×120	30,000
Machine hours	15 days×4000	60,000
Variable overheads (800+250)×[(400×50,000-6,000,000)÷50,000] OR (800+250)×[400 - (6,000,000÷50,000)]		294,000
Incremental fixed overheads		150,000
Increase in general administration costs		100,000
Feasibility cost incurred by planning department - sunk cost		-
<b>Total production cost</b>		<b>2,035,000</b>
<b>Bid price - to earn 20% profit on selling price</b>	2,035,000÷0.8	<b>2,543,750</b>

**A.8 Himalayan Rivers**  
**Break-even sales revenue and quantity**

		<b>Rs. in million</b>
Break even sales revenue	6.59(W-2)÷[(100-2)×40%]	16.81
Break even sales quantity	[16,810,000÷200(W.1)] Units	84,050

**W-1: Sales price per unit**

		<b>Rs. in million</b>
<b>Variable overheads (excluding 2% sales commission):</b>		
Direct material		6.00
Direct labour		5.00
Variable overheads	10.29-3.65 (W-2)	6.64
		17.64
Variable overheads % to sales	[100-(100-2)×40%]-2%	58.80%
<b>Sales price per unit</b>	(17.64÷58.8%)÷150,000	<b>Rs. 200.00</b>

**W-2: Fixed cost**

		<b>Rs. in million</b>
<b>Production overheads:</b>		
Rent - factory premises		1.80
Indirect labour	5×30%×50%	0.75
Depreciation of plant		0.50
Power and fuel	3×20%	0.60
		3.65
<b>Sales and marketing expenses:</b>		
Employees' salaries	25,000×2×12	0.60
Delivery van	70,000×12	0.84
Advertisement campaign		1.50
<b>Total fixed overheads</b>		<b>6.59</b>

**Cost and Management Accounting**  
Suggested Answers  
Certificate in Accounting and Finance – Spring 2016

**A.9 Internal benefits of sustainability reporting can include:**

- (i) It increases understanding of risks and opportunities
- (ii) It emphasize the link between financial and non-financial performance
- (iii) It provides supports in the development of long term management strategy and policy, and business plans
- (iv) It helps in streamlining processes, reducing costs and improving efficiency
- (v) It helps in benchmarking and assessing sustainability of performance with respect to laws, norms, codes, performance standards, and voluntary initiatives
- (vi) It helps in avoiding being implicated in publicized environmental, social and governance failures
- (vii) It helps in comparing performance internally, and between organizations and sectors

**External benefits of sustainability reporting can include:**

- (i) Mitigating – or reversing – negative environmental, social and governance impacts
- (ii) It improves reputation and brand loyalty
- (iii) It enables external stakeholders to understand the organization's true value, and tangible and intangible assets
- (iv) It demonstrates how the organization influences, and is influenced by, expectations about sustainable development

**(THE END)**

<b>THE INSTITUTE OF CHARTERED ACCOUNTANTS OF PAKISTAN</b>	
<b>EXAMINERS' COMMENTS</b>	
<b>SUBJECT</b> Cost and Management Accounting	<b>SESSION</b> Certificate in Accounting and Finance – Spring 2016

**General:**

The overall performance in this paper was good as the result was nearly 50%. Above average performances were witnessed in all the questions except questions 1 and 3.

Question wise comments are as under:

**Question 1**

This question required preparation of profit and loss account and cash flow statement. The overall response was poor as a number of mistakes were observed. Some of the common mistakes are discussed below:

- Majority of the students were unable to calculate sales revenue correctly. Most such students did not gross up the existing cash sales by adding back the discount and consequently ignored the discount in the calculation of budgeted sale also. Probably, they thought that both discounts would cancel each other, which was not the case.
- Many students applied 15% increase on existing sale instead of applying increase in sales volume and price separately. Similar errors were made in the calculation of other items as well.
- Impact of increase in prices was to be applied to budgeted fixed cost also. Many students ignored it altogether. Some of them applied the increase on all the expenses i.e. they did not exclude depreciation. Some of them separated the depreciation for the purpose of applying the price increase but forgot to add it back for calculating the final figure.
- Many students ignored the impact of price increase on raw material consumption, variable conversion cost and variable operating expenses.
- Most of the students failed to correctly compute the closing finished goods inventory which required breaking up the opening inventory into components i.e. raw material, fixed & variable conversion costs and depreciation and then applying the price increase on value of each component. Many students did not calculate it altogether whereas many of them took it as equal to opening finished goods stock.
- Though calculation of cash flow was quite straight forward, many students didn't attempt it altogether. Those who did attempt seemed to lack practice and made simple errors in the calculation of opening and closing balances of debtors, creditors and accrued expenses. Further, while adjusting the figures, they added the balances which should have been deducted and vice versa.
- Raw material consumed was used in the calculation of payments against purchases.
- Depreciation was not ignored while calculating payments for expenses.



**Question 2**

This was a theoretical question on the topic of option and tested the concepts of call option, put option and strike price. Most of the students seemed well prepared, especially in parts (a) and (b) and scored very high marks. The most common mistake was that they restricted the concept of option to share trading only. There was also some lack of clarity in many answers as to whether an option is just a right or carries an obligation also.

In part (c) the performance was average as many students did not seem to understand the concepts of “in the money” and “out the money”. Many candidates left it un-attempted also.

**Question 3**

This question required computation of budgeted and actual profits using marginal costing and reconciling them by using relevant variances. The overall performance was quite poor especially with regard to calculation of variances. The common mistakes were as follows:

- Many students computed the actual profit and budgeted profit to the extent of contribution margin only.
- Many students considered the closing inventory in computing the actual profit but ignored it in the calculation of budgeted profit.
- Many students used weighted average instead of FIFO method to compute material consumption.
- Most of the students made various types of errors while computing actual cost of labour and variable overheads.
- Sales volume variance could have been computed by multiplying the standard contribution margin with the difference between actual and standard sale quantity. However, most of the students multiplied the difference in quantity with the sale price.
- While computing material usage variance, most of the students compared the actual usage of material with the budgeted quantity without adjusting the budgeted quantity on the basis of actual units produced. Similar types of errors were observed in the computation of labour and overhead variances.
- Some of the students only stated the total variances e.g. total material variance was calculated which was not bifurcated into material rate variance and material usage variance.
- Some of the students stated the formulas for variances and did not provide any calculations.

**Question 4**

This question required calculation of IRR of a project and to assess whether it should be undertaken or not. It was one of the best attempted questions as 79% of the students were able to obtain passing marks.

However, some commonly observed errors are discussed below:

- Fair value of the plant was considered as an outflow.

- Amount payable on expiry of lease term was taken as an outflow at the end of year 2019 instead of 2018.
- Disposal price of Rs. 0.5 million was ignored.
- Some of the candidates could not compute the PV factor correctly.
- Some of the candidates were unable to determine the IRR correctly due to application of incorrect formula.
- Some students started inflows from December 2017 rather than December 2016.

**Question 5**

This question required allocation of departmental (production as well as service) overheads to the products and passing of necessary journal entries to record applied production overheads and under/over absorbed production overheads.

On an overall basis it was the best attempted question as more than 90% of the students secured passing marks. However, the response with regard to journal entries was very poor. Most of the students confused the recording of applied overheads with recording of actual overheads. Many students omitted it altogether whereas some of them prepared entries without amount.

**Question 6**

This question required calculation of equivalent production units under weighted average method and passing of journal entries to record the transactions through the entire process accounting system.

This question was also attempted well. However, the common mistakes were as follows:

- Most of the students failed to correctly compute the normal loss correctly. Most of them failed to realise that the opening work in process units were 40% complete and closing work in process units were 60% complete whereas inspection takes place when the units are 50% complete and hence normal loss of 5% had to be computed on opening units as well as units input during the period without deducting the closing units.
- Most of the students computed abnormal gain units at 100% whereas they should have been taken at 50% considering that inspection is conducted when the units are 50% complete.
- Some of the candidates included normal loss in the calculation of EPU whereas many candidates excluded abnormal gain from the calculation as well.
- Many students attempted to record journal entry for the opening WIP by crediting various types of accounts.
- Students who recorded abnormal gain failed to close the same in profit and loss account correctly. However, the same should have been closed by crediting the scrapped units at value of Rs.100 per unit being the notional sale value of abnormal gain units and the remaining balance should have been credited to profit and loss account.
- Many students did not recognise (journalise) the sale value of normal loss. Some of them credited it to P&L account instead of WIP account.
- Some of the students debited finished goods instead of debiting WIP – Process B.



**Question 7**

This question required calculation of bid price for a special order and tested the concept of relevant and irrelevant costs in decision making. Good performance was witnessed in this question also. Some of the common mistakes are described below:

- Original purchase price of Material B was used instead of the disposal price.
- Most of the students failed to recognise the saving of disposal cost that would be possible if Material C is used for this order. Some of them added the amount of savings instead of deducting it.
- Most of the students did not allocate any cost of skilled labour hours. They failed to recognise the fact that 1440 idle labour hours per month meant that only 720 idle hours can be utilised during the duration of the order which was 15 days.
- While computing variable overhead cost most of the students simply multiplied the labour hours with Rs.400 being the absorption overhead rate. However, the absorption rate should have been reduced by the fixed overhead portion thereof.
- A number of students included the feasibility costs in calculating the bid price for Zeta whereas it was a sunk cost.
- Majority of the students was unable to understand that 20% of selling price may be computed by taking 25% of the relevant costs.

**Question 8**

This question required calculation of breakeven sales in terms of amount of revenue as well as the quantity in a single product situation. Overall performance was good as most of the students were able to compute the fixed and the variable costs correctly. However, most of them were unable to correctly comprehend the treatment of sales commission. Some of them added it to variable cost to arrive at variable expenses of 62% of gross sales and thus arrived at a contribution margin of 38% of total sales. The contribution margin if computed on gross sales was 39.2%  $[(100-2)*40\%]$  resulting in a contribution margin of 40% of net sales  $(39.2/98*100)$  as was required in the question. Hence, the proper method to arrive at breakeven gross sales was to divide fixed expenses by 39.2% or to arrive at net sales (after commission) by dividing fixed expenses by 40% and then arriving at breakeven gross sales by dividing net sales by 98%.

**Question 9**

This question required the candidates to list down the internal and external benefits of sustainability reporting. The performance was at either extreme, i.e. those students (about 25% of the total) who had studied it secured full marks whereas the rest of them mostly scored zero or very low marks. Some of the students could not distinguish clearly between internal and external benefits.

*THE END*



**Cost and Management Accounting**  
Summary of Marking Key  
Certificate in Accounting and Finance – Spring 2016

**Note regarding marking scheme:**

The marking scheme is given as a guide. However, markers also award marks for alternative approaches to a question and relevant/well-reasoned comments/explanations.

		Mark(s)	
A.1	(a)	▪ Budgeted sales	2.0
		▪ Budgeted cost of sales	4.5
		▪ Budgeted operating expenses	1.5
	(b)	▪ Cash inflows	2.0
		▪ Cash outflows	
		– Payments for purchases	3.0
– Payments for expenses		3.0	
A.2	(a)	Explanation of the term 'option'	1.0
	(b)	Brief explanation of:	
		(i) Strike price	0.5
		(ii) Whether the given transaction is 'call option' or 'put option'	1.5
	(c)	Explanation whether the given option would be 'in the money' or 'out the money' when the market price is Rs. 35 per share	2.0
A.3	(a)	▪ Computation of budgeted profit	1.5
		▪ Computation of actual profit	4.5
	(b)	▪ 1.5 marks each for computing sales, material, labour and overhead variances	13.5
		▪ 0.5 mark for explaining that there would be no fixed overhead volume variance	0.5
A.4	▪ Year-wise preparation of cash flows	3.0	
	▪ Discounting of the cash flows	3.0	
	▪ Computation of IRR and to suggest whether it is feasible to acquire the plant	2.0	
A.5	(a)	▪ Allocation of overheads to production and service departments	6.5
		▪ Allocation of service departments' costs to production departments	2.5
		▪ Allocation of production departments' cost to products	1.0
	(b)	▪ Preparation of journal entries to record:	
		– applied production overheads	1.0
		– under/over absorbed production overheads	1.0
A.6	(a)	▪ Preparation of quantity schedule and computation of equivalent units	3.0
		▪ Calculation of cost per unit	2.0

**Cost and Management Accounting**  
 Summary of Marking Key  
 Certificate in Accounting and Finance – Spring 2016

		Mark(s)
(b)	▪ Accounting entries to:	
	– charge material, labour and overheads to process A	1.5
	– record abnormal gain	1.0
	– record sales value of rejected units	1.0
	– record transfer of completed goods to process B	1.0
	– adjust abnormal gain to profit and loss account	1.5
A.7	▪ 1.0 mark each for calculating relevant cost of materials A, B and C	3.0
	▪ 1.0 mark each for calculating skilled and unskilled labour cost	2.0
	▪ Relevant cost of machine	1.0
	▪ Relevant cost of variable overheads	2.0
	▪ Relevant cost of fixed overheads	2.0
	▪ Ignoring irrelevant/sunk cost	1.0
	▪ Calculation of bid price	1.0
A.8	▪ Computation of variable and fixed costs	5.0
	▪ Computation of sales price per unit	3.0
	▪ Determination of break-even sales revenue and quantity	2.0
A.9	▪ 1.0 mark each for listing any three internal benefits of Sustainability Reporting	3.0
	▪ 1.0 mark each for listing any three external benefits of Sustainability Reporting	3.0

**(THE END)**



The Institute of  
Chartered Accountants  
of Pakistan

## Certificate in Accounting and Finance Stage Examinations

8 September 2016  
3 hours – 100 marks  
Additional reading time – 15 minutes

### Cost and Management Accounting

Q.1 The following information has been extracted from the projected financial statements of Lotus Enterprises (LE) for the year ending 30 September 2016:

	<b>Rs. in million</b>
Sales (100% credit sales)	3,000
Raw material consumption	900
Raw material inventory (including imports of Rs. 98 million)	158
Conversion cost: Variable	570
Fixed (including depreciation of Rs. 16 million)	40
Operating cost: Variable	730
Fixed (including depreciation of Rs. 27 million)	120
Trade creditors (local purchases)	95
Advance to suppliers for import of raw material	30

LE is in the process of preparing its budget for the next year. The relevant information is as under:

- (i) Sale volume is projected to increase by 30%. In order to finance the additional working capital, the management has decided to adopt the following measures:
  - Introduce cash sales at a discount of 2%. It is estimated that 20% of the customers would avail the discount.
  - The present average collection period is 45 days. LE has decided to improve follow-ups which would ensure collection within 40 days.
  - 40% of the raw material consumed is imported which is paid in advance on placement of purchase order. The delivery is made within 30 days after the placement of order. LE has negotiated with the foreign suppliers and agreed that from the next year, payments would be made on receipt of the goods.
  - Local purchases would be paid in 50 days.
- (ii) As a result of increased production, economies of scale would reduce variable conversion cost per unit by 5%.
- (iii) Due to price increases, cost of raw material and all other costs (excluding depreciation) would increase by 10% and 8% respectively.
- (iv) Average days for payment of other costs would remain the same i.e. 25 days.
- (v) There is no opening and closing finished goods inventory.
- (vi) Quantity of closing local and imported raw material as a percentage of raw material consumption would remain the same.
- (vii) LE uses FIFO method of valuation of inventory.

**Required:**

Prepare cash budget for the next year. *(Assume that all transactions occur evenly throughout the year (360 days) unless otherwise specified)*

(15)



Q.2 Tropical Juices (TJ) is planning to expand its production capacity by installing a plant in a building which is owned by TJ but has been rented out at Rs. 6 million per annum. The relevant details are as under:

- (i) The cost of the building is Rs. 40 million and it is depreciated at 5% per annum.
- (ii) The rent is expected to increase by 5% per annum.
- (iii) Cost of the plant and its installation is estimated at Rs. 60 million. TJ depreciates plant and machinery at 25% per annum on a straight line basis. Residual value of the plant after four years is estimated at 10% of cost.
- (iv) Additional working capital of Rs. 25 million would be required on commencement of production.
- (v) Selling price of the juices would be Rs. 350 per litre. Sales quantity is projected as under:

	Year 1	Year 2	Year 3	Year 4
Litres	250,000	300,000	320,000	290,000

- (vi) Variable cost would be Rs. 180 per litre. Fixed cost is estimated at Rs. 100 per litre based on normal capacity of 280,000 litres. Fixed cost includes yearly depreciation amounting to Rs. 16 million.
- (vii) Rate of inflation is estimated at 5% per annum and would affect the revenues as well as expenses.
- (viii) TJ's cost of capital is 15%.

**Required:**

Compute net present value (NPV) of the project and advise whether it would be feasible to expand the production capacity. *(Assume that all cash flows other than acquisition of plant and additional working capital would arise at the end of the year)*

(11)

Q.3 Bela Enterprises (BE) produces a chemical that requires two separate processes for its completion. Following information pertains to process II for the month of August 2016:

	kg	Rs. in '000
Opening work in process (85% to conversion)	5,000	2,000
<b>Costs for the month:</b>		
Received from process I	30,000	18,000
Material added in process II	15,000	10,000
Conversion cost incurred in process II	-	11,000
Finished goods transferred to warehouse	40,000	-
Closing work in process (60% to conversion)	4,000	-

In process II, material is added at start of the process and conversion costs are incurred evenly throughout the process. Process losses are determined on inspection which is carried out on 80% completion of the process. Process loss is estimated at 10% of the inspected quantity and is sold for Rs. 100 per kg.

BE uses FIFO method for inventory valuation.

**Required:**

- (a) Prepare a statement of equivalent production units. (04)
- (b) Compute cost of:
  - (i) finished goods
  - (ii) closing WIP
  - (iii) abnormal loss/gain (09)
- (c) Prepare accounting entries to record production gain/loss for the month. (03)

Q.4 (a) What do you understand by 'safety stock'? Briefly discuss the reasons of maintaining the safety stock. (03)

(b) List any **four** costs that are associated with holding of inventory. (02)

Q.5 Ideal Chemicals (IC) blends and markets various cleaning chemicals. Presently, IC's plant is working at 70% capacity. To utilize its idle capacity, IC is planning to acquire rights to produce and market a new brand of chemical namely Z-13 on payment of fee of Rs. 160,000 per month.

In this respect, the relevant information is summarised as under:

- (i) Z-13 would be produced using the existing plant whose cost is Rs. 81 million. Processing would be carried out in batches of 2,000 litres of raw-materials. Production costs per batch are estimated as under:

Raw material: Imported	1,200 litres	@ Rs. 1,500 per litre
Local	800 litres	@ Rs. 900 per litre
Direct labour	4,000 hours	@ Rs. 165 per hour
Variable production overheads		@ Rs. 120 per direct labour hour

1,700 litres of Z-13 is produced from each batch. 100 litres are lost by way of evaporation whereas 200 litres of input is converted into solid waste. The approximate weight of the solid waste is 225 kg per batch.

- (ii) Net volume of each bottle of Z-13 would be 1.25 litres.  
 (iii) The solid waste would be refined to produce a by-product, polishing wax. Refining would cause an estimated loss of 2% of by-product output.  
 (iv) Cost of refining and sales price of wax would be Rs. 250 and Rs. 400 per kg respectively. Net sales revenue (sales less refining cost) from sale of wax is to be deducted from the cost of the main product.  
 (v) Variable selling overheads are estimated at Rs. 175 per unit.  
 (vi) The plant is depreciated at 10% per annum. It is estimated that production of Z-13 would utilise 20% capacity of the plant.  
 (vii) To introduce Z-13, IC plans to launch a sales campaign at an estimated cost of Rs. 3.5 million.  
 (viii) IC wishes to sell Z-13 at a contribution margin of 40% on sales.

**Required:**

Determine Z-13's sale price per unit and annual units to be sold, if IC intends to earn an incremental profit before tax of Rs. 10 million from its sale.

(11)

Q.6 Galaxy Engineers (GE) manufactures and sells a wide range of products. One of the raw materials XPI is in short supply and only 80,000 kg are available in GE's stores. Following information pertains to the products in which XPI is used:

		Product A	Product B	Product C
Budgeted local sales/requirement	Units	4,500	1,000	2,500
Committed export sales as per agreement	Units	-	800	-
		----- Per unit -----		
Sales price	Rs.	20,000	14,100	For internal use
Material XPI (Rs. 500 per kg)	kg	14	12	2
Other material (Rs. 300 per kg)	kg	5	3	1
Direct labour hours (Rs. 100 per hour)	hours	20	15	5
Variable overheads based on labour cost	%	80%	80%	80%
Fixed overheads per direct labour hour	Rs.	95	75	60

Product C is used in other products made by GE. If it could not be produced internally, it has to be purchased from market at Rs. 3,000 per unit.

**Required:**

Determine the number of units of each product that should be manufactured, to earn maximum profit.

(12)



- Q.7 Zamil Industries (ZI) produces and markets an industrial product Zeta. ZI uses standard **absorption** costing system. The break-up of Zeta's standard cost per unit is as under:

		Rupees
Materials:	Axe – 1 kg	160
	Zee – 2 kg	210
Direct labour	– 0.8 hours	200
Overheads	– 0.8 hours	180

Production of Zeta for the month of August 2016 was budgeted at 15,000 units. Information pertaining to production of Zeta for August 2016 is as under:

- (i) Raw material inventory is valued at lower of cost and net realizable value. Cost is determined under FIFO method. Stock cards of materials Axe and Zee are reproduced below:

Date	Description	Axe		Zee	
		kg	Cost per kg (Rs.)	kg	Cost per kg (Rs.)
1-Aug	Opening balance	9,000	150	4,000	120
				8,000	122
3-Aug	Purchase returns	-	-	(2,000)	122
4-Aug	Purchases	17,000	148	35,000	125
6-Aug	Issues to production	(16,000)	-	(29,000)	-

- (ii) Actual direct wages for the month were Rs. 3,298,400 consisting of 11,780 direct labour hours.  
 (iii) Fixed overheads were estimated at Rs. 540,000 based on budgeted direct labour hours.  
 (iv) The actual fixed overheads for the month were 583,000.

Actual sales of Zeta for the month of August 2016 was 12,000 units. Opening and closing finished goods inventory of Zeta was 5,000 and 8,500 units respectively.

**Required:**

- (a) Compute following variances:  
 (i) Material price, mix and yield variances (07)  
 (ii) Labour rate and efficiency variances (04)  
 (b) Compute applied fixed overheads and analyse 'under/over applied fixed factory overheads' into expenditure, efficiency and capacity variances. (08)

- Q.8 Explain 'sustainability reporting' and state any **four** internal benefits of sustainability reporting. (05)

- Q.9 Abid Foods Limited (AFL) has issued 8,000 convertible bonds of Rs. 100 each at par value. The bonds carry mark-up at the rate of 8% which is payable annually. Each bond may be converted into 10 ordinary shares of AFL in three years. Any bonds not converted will be redeemed at Rs. 115 per bond.

**Required:**

Calculate the current market price of the bonds, if the bondholders require a return of 10% and the expected value of AFL's ordinary shares on the conversion day is:

- (a) Rs. 12 per share (03)  
 (b) Rs. 10 per share (03)

(THE END)



**Cost and Management Accounting**  
Suggested Answers  
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**A.1 Lotus Enterprises**  
Cash budget for the next year

					Rs. in million
<b>Inflows:</b>					
Sale proceeds from:					
– Cash sales (net of cash discount)			$(3,000 \times 1.3) \times 20\% \times 98\%$		764.40
– Credit sales:					
Credit sales for the year			$(3,000 \times 1.3) \times 80\%$		3,120.00
Trade debtors – closing balance			$3,120 \times 40 \div 360$		(346.67)
					2,773.33
Trade debtors – opening balance			$3,000 \times 45 \div 360$		375.00
Collection from credit sales					3,148.33
			<b>(A)</b>		<b>3,912.73</b>
<b>Outflows:</b>					
<b>Payments for raw material imports and local purchases:</b>					
			<b>Imports</b>	<b>Local purchases</b>	
Imports and local purchases for the year	<b>W.1</b>		544.14	792.00	1,336.14
Trade creditors - closing balance	$792 \times 50 \div 360$		-	(110.00)	(110.00)
			544.14	682.00	1,226.14
Adjustment of advance for imports			(30.00)	-	(30.00)
Trade creditors - opening balance			-	95.00	95.00
			514.14	777.00	
			<b>(B)</b>		<b>1,291.14</b>
<b>Payments for expenses:</b>					
		<b>Conversion cost</b>		<b>Operating cost</b>	
		<b>Variable</b>	<b>Fixed</b>	<b>Variable</b>	<b>Fixed</b>
Cost for the year		760.27	25.92	1,024.92	100.44
		$570 \times 1.3 \times 95\% \times 1.08$	$(40 - 16) \times 1.08$	$730 \times 1.3 \times 1.08$	$(120 - 27) \times 1.08$
Closing payables		(52.80)	(1.80)	(71.18)	(6.97)
		$(760.27 \div 360 \times 25)$	$(25.92 \div 360 \times 25)$	$(1,024.92 \div 360 \times 25)$	$(100.44 \div 360 \times 25)$
Opening payables		707.47	24.12	953.74	93.47
		39.58	1.67	50.69	6.46
		$570 \div 360 \times 25$	$(40 - 16) \div 360 \times 25$	$730 \div 360 \times 25$	$(120 - 27) \div 360 \times 25$
Payments		747.05	25.79	1,004.43	99.93
					<b>(C)</b>
					<b>1,877.20</b>
<b>Net cash inflows</b>				<b>(A-B-C)</b>	<b>744.39</b>

<b>W-1: Imports/purchases for the next year:</b>			<b>Imports</b>	<b>Local purchases</b>
----- Rs. in million -----				
Raw material consumption using FIFO:				
- From current year's import : at old price				
			30.00	-
		$[(900 \times 1.3 \times 40\%) - (98 + 30)] \times 1.1$	374.00	-
- Current year's purchases: at revised price				
		$[(900 \times 1.3 \times 60\%) - 60] \times 1.1$	-	706.20
			404.00	706.20
Closing raw material inventory		$(98 \times 1.3 \times 1.1), (60 \times 1.3 \times 1.1)$	140.14	85.80
<b>Total imports/local purchases for the next year</b>			<b>544.14</b>	<b>792.00</b>

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**A.2 Tropical Juices**  
**Investment appraisal - Expansion of production facility**

	Year 0	Year 1	Year 2	Year 3	Year 4
Cash inflows/(outflows)					
----- Rs. in million -----					
Loss of opportunity (Bldg. rent)	-	(6.30)	(6.62)	(6.95)	(7.29)
Cost of plant and its installation	(60.00)				6.00
Working capital	(25.00)	-	-	-	25.00
Sales		87.50 (0.25×350)	110.25 (0.3×350×1.05)	123.48 (0.32×350×1.05 <sup>2</sup> )	117.50 (0.29×350×1.05 <sup>3</sup> )
Variable cost		(45.00) (0.25×180)	(56.70) (0.3×180×1.05)	(63.50) (0.32×180×1.05 <sup>2</sup> )	(60.43) (0.29×180×1.05 <sup>3</sup> )
Fixed cost		(12.00) (0.28×100)-16	(12.60) (12×1.05)	(13.23) (12×1.05 <sup>2</sup> )	(13.89) (12×1.05 <sup>3</sup> )
<b>Net cash flows</b>	<b>(85.00)</b>	<b>24.20</b>	<b>34.33</b>	<b>39.80</b>	<b>66.89</b>
Present value factor at 15%	1.000	0.870	0.756	0.658	0.572
Present value at 15%	(85.00)	21.05	25.95	26.19	38.26
<b>Net present value (NPV) at 15%</b>					<b>26.45</b>

**Conclusion:** The expansion of production facility is generating **positive NPV** at TJ's cost of capital of 15%. Therefore, it is feasible for TJ to expand the production facility.

**Cost and Management Accounting**  
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**A.3 Bela Enterprises**

**(a) Statement of equivalent units:**

	Equivalent units		Quantity schedule
	Material	Conversion	
----- kg -----			
Opening WIP (85% to conversion)	(5,000)	(4,250)	5,000
Received from process I			30,000
Material added in process II			15,000
			<b>50,000</b>
Transferred to finished goods	40,000	40,000	40,000
Goods started and completed during the month <b>A</b>	35,000	35,750	
Closing WIP (60% to conversion) <b>B</b>	4,000	2,400	4,000
Normal loss at 10% (50,000-5,000-4,000)×10%			4,100
Abnormal loss (80% conversion) <b>(Balancing) C</b>	1,900	1,520	1,900
<b>D</b>	<b>40,900</b>	<b>39,670</b>	<b>50,000</b>

**(b) Computation of costs:**

Cost per unit	Material	Conversion	Total
----- Rs. in '000 -----			
Opening WIP	-	-	2,000
Cost for the month: Process I	18,000	-	18,000
Process II	10,000	11,000	21,000
Normal loss quantity at sale price (4,100×100)	(410)	-	(410)
Total cost <b>E</b>	<b>27,590</b>	<b>11,000</b>	<b>40,590</b>
----- Rupees -----			
Cost per unit <b>F=(E÷D)</b>	<b>674.57</b>	<b>277.29</b>	

<b>(i) Cost of finished goods:</b>		----- Rs. in '000 -----		
Opening WIP				2,000
Cost for the month <b>A×F</b>	23,610	9,913		33,523
				<b>35,523</b>
<b>(ii) Cost of closing WIP <b>B×F</b></b>	2,698	666		3,364
<b>(iii) Cost of abnormal loss <b>C×F</b></b>	1,282	421		1,703

**(c) Accounting entries to account for production losses:**

Date	Description		Debit	Credit
			----- Rs. in '000 -----	
<b>1</b>	Scrap inventory (normal loss quantity)	4,100×100	410	
	WIP – II			410
	<i>(Normal loss quantity credited to WIP at sales value)</i>			
<b>2</b>	Scrap inventory (abnormal loss quantity)	1,900×100	190	
	Profit and loss account	(Balancing)	1,513	
	WIP – II	As (iii) above		1,703
	<i>(Loss on abnormal loss quantity debited to profit and loss account)</i>			



**Cost and Management Accounting**  
Suggested Answers  
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**A.4 (a) Safety stock:**

To minimize stock-outs on account of increased demand or delays in delivery etc., a buffer stock in excess of average requirements is often maintained. Such a buffer stock is called a safety stock.

Reasons of maintaining the safety stock:

- (i) Protect against unforeseen variation in supply and/or demand.
- (ii) Prevent disruption in manufacturing or deliveries.
- (iii) Avoid stock-outs to keep customer service and satisfaction levels high.

**(b) Costs associated with holding of inventory:**

- (i) Cost of capital tied up
- (ii) Insurance costs
- (iii) Cost of warehousing
- (iv) Obsolescence, deterioration and theft

**A.5 Ideal Chemicals**

		Units
Finished units per batch	1,700 ÷ 1.25 (A)	<b>1,360</b>
By-product units per batch	225 ÷ 1.02	<b>221</b>
<b>Variable production cost per unit:</b>		<b>Rupees</b>
Material: Imports	1,200 × 1,500	1,800,000
Local	800 × 900	720,000
Direct labour	4,000 × 165	660,000
Variable production overheads	4,000 × 120	480,000
Net sales revenue from sale of by-product	221 × (400 - 250)	(33,150)
	<b>(B)</b>	<b>3,626,850</b>
Variable production cost per unit	<b>(B ÷ A)</b>	2,666.80
Variable selling overheads per unit		175.00
Variable cost per unit	<b>(C)</b>	<b>2,841.80</b>
Sales price per unit to earn 40% contribution on sale	<b>D = (C ÷ 0.6)</b>	<b>4,736.33</b>
<b>No. of sale units to earn annual profit before tax of Rs. 10,000,000</b>		
Incremental fixed overheads and profit:		
- Fee for blending and marketing of Z-13	160,000 × 12	1,920,000
- Sales promotion expenses		3,500,000
- Required incremental profit before tax		10,000,000
	<b>(E)</b>	<b>15,420,000</b>
Required annual sales units	<b>No. of units E ÷ (D - C)</b>	<b>8,139</b>

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**A.6 Galaxy Engineers**  
Units to be manufactured to earn maximum profit

	Product A	Product B	Product C	Material XPI kg
	----- Units-----			
Budgeted sales/requirements	4,500	1,800	3,000	
	----- Rupees -----			
Sales price per unit	20,000	14,100	For internal use only	
Opportunity cost per unit (Purchase price)	-	-	3,000	
<b>Cost of production per unit:</b>				
Material XPI usage at Rs. 500 per kg	(7,000)	(6,000)	(1,000)	
Other material usage at Rs. 300 per kg	(1,500)	(900)	(300)	
Direct labour at Rs. 100 per hour	(2,000)	(1,500)	(500)	
Variable overheads at 80% of labour cost	(1,600)	(1,200)	(400)	
	(12,100)	(9,600)	(2,200)	
CM/savings from own manufacturing (A)	7,900	4,500	800	
Per unit usage of material XPI (B) kg	14	12	2	
CM per one kg of material XPI (A)÷(B) Rs.	564	375	400	
Ranking based on CM per XPI kg	1 <sup>st</sup>	3 <sup>rd</sup>	2 <sup>nd</sup>	
<b>Production from available material XPI:</b>				
Production of committed export sales	-	800	-	9,600
Production in ranking order	4,500	200	2,500	70,400
<b>Optimal production</b> Units	<b>4,500</b>	<b>1,000</b>	<b>2,500</b>	<b>80,000</b>

**A.7 Zamil Industries**

(a) (i) **Material variances**

**Material price variance:**  
Actual material usage at actual price using FIFO

Axe			Zee			Net adverse variance Rs.
Issues (kg)	Actual rate	Rs.	Issues (kg)	Actual rate	Rs.	
9,000	150	1,350,000	4,000	120	480,000	
7,000	148	1,036,000	6,000	122	732,000	
-	-	-	19,000	125	2,375,000	
<b>16,000</b>		<b>2,386,000</b>	<b>29,000</b>		<b>3,587,000</b>	
<b>Actual material usage at standard price:</b>						
16,000	160	2,560,000	29,000	(210÷2) 105	3,045,000	
<b>Fav./ (Adverse) variance</b>		<b>174,000</b>			<b>(542,000)</b>	<b>(368,000)</b>

**Material mix variance**

	Actual mix (kg)	Actual usage at std. mix ratio (kg)	Mix quantity variance (Adv.)/Fav.	Std. cost per (kg)	Rs.
Axe	16,000	15,000	(1,000)	160	(160,000)
Zee	29,000	30,000	1,000	105	105,000
	<b>45,000</b>	<b>45,000</b>			
<b>Material mix variance – adverse</b>					<b>(55,000)</b>

**Material yield variance**

	Yield (no. of units)	Per unit Std. raw material usage at Std. price	Rs.
Standard yield	(45,000÷3) 15,000	(160+210) 370	5,550,000
Actual yield	(12,000+8,500–5,000) 15,500	370	5,735,000
<b>Yield variance – favourable</b>			<b>185,000</b>

**Cost and Management Accounting**  
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	Rs.
<b>(ii) Labour variance</b>	
<b>Labour rate variance</b>	
Actual hours at standard rate	11,780×(200÷0.8)
Actual hours at actual	(3,298,400)
<b>Labour rate variance – adverse</b>	<b>(353,400)</b>
<b>Labour efficiency variance</b>	
Allowable hours at standard rate	(15,500×0.8)×(200÷0.8)
Actual hours at standard rate	11,780×(200÷0.8)
<b>Labour efficiency variance – favourable</b>	<b>155,000</b>
<b>(b) Analyses of under/over applied fixed overheads</b>	
Standard fixed overhead rate per hour	(540,000÷15,000×0.8)
<b>Applied fixed overheads</b>	<b>45</b>
Applied fixed overheads	(15,500×0.8×45)
Actual fixed overheads	(583,000)
<b>Under applied overheads</b>	<b>(25,000)</b>
<b>Fixed overhead expenditure variance</b>	
Budgeted fixed overheads	540,000
Actual fixed overheads	(583,000)
<b>Fixed overhead expenditure variance – adverse (A)</b>	<b>(43,000)</b>
<b>Fixed overhead efficiency variance</b>	
Allowable hrs. for actual production at standard cost	15,500×0.8×45
Actual hours worked at standard rate	11,780×45
<b>Fixed overhead efficiency variance – favourable (B)</b>	<b>27,900</b>
<b>Fixed overhead capacity variance</b>	
Actual hours worked at standard rate	11,780×45
BU hours at standard rate	12,000×45
<b>Fixed overhead capacity variance – adverse (C)</b>	<b>(9,900)</b>
<b>Under applied fixed overheads</b>	<b>(A)+(B)+(C)</b>
	<b>(25,000)</b>

**A.8 Sustainability Reporting**

According to the Global Reporting Initiative (GRI), sustainability report is published by a company or organisation about the economic, environmental and social impacts caused by its everyday activities. The report also presents the organisation's values and governance model. It demonstrates the link between its strategy and its commitment to a sustainable global economy.

**Internal benefits of sustainability reporting can include:**

- (i) It increases understanding of risk and opportunities.
- (ii) It emphasises the link between financial and non-financial performance.
- (iii) It provides supports in the development of long term management strategy and policy, and business plans.
- (iv) It helps in streamlining processes, reducing costs and improving efficiency.
- (v) It helps in benchmarking and assessing sustainability of performance with respect to laws, norms, codes, performance standards, and voluntary initiatives.
- (vi) It helps in avoiding being implicated in publicized environmental, social and governance failures.
- (vii) It helps in comparing performance internally, and between organisations and sectors.



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**A.9 Abid Foods Limited**

**Current market value for 8,000 convertible bonds**

Year	Description		Cash flows/value for 8,000 bonds	Discount factor at 10%	Current market value for 8,000 bonds, when price per share is	
					(a) Rs. 12	(b) Rs. 10
			<b>Rupees</b>		<b>----- Rupees -----</b>	
1	Annual interest	(8,000×100×8%)	64,000	0.909	58,176	58,176
2	Annual interest	(8,000×100×8%)	64,000	0.826	52,864	52,864
3	Annual interest	(8,000×100×8%)	64,000	0.751	48,064	48,064
					<b>159,104</b>	<b>159,104</b>
	<b>Bonds' value at higher of shares' expected value and bonds' redemption value:</b>					
	Expected value of 10 shares	Redemption value of one bond				
3	(a)	120.00	115.00	960,000 <sup>*1</sup>	0.751	720,960
3	(b)	100.00	115.00	920,000 <sup>*2</sup>	0.751	690,920
	<b>Current market value for 8,000 convertible bonds</b>				<b>880,064</b>	<b>850,024</b>

<sup>\*1</sup> (8,000 × 120)

<sup>\*2</sup> (8,000 × 115)

**(THE END)**

<b>THE INSTITUTE OF CHARTERED ACCOUNTANTS OF PAKISTAN</b>	
<b>EXAMINERS' COMMENTS</b>	
<b>SUBJECT</b> Cost and Management Accounting	<b>SESSION</b> Certificate in Accounting and Finance Autumn 2016

**General:**

The overall performance in this paper was good. The result was almost the same as in the last attempt i.e. 49.44% as compared to 49.01% for the last attempt. However, it was noted that areas where students performed poorly were same as last attempt i.e. cash budget (Q.1), cost variances (Q.7) and sustainability reporting (Q.8).

Major reason for failure of many students was lack of presentation skill as they framed their answers without any thoughtful process and workings were prepared in a haphazard manner. In some cases workings were given on the last page of the answer script without mentioning any question number.

**Question-wise comments****Question 1**

This question required preparation of cash budget. Overall performance in this question was below average. Marks were mostly scored in the easy part of the question i.e. sales. Most of the students were unable to compute budgeted import/local purchases correctly. Some of the common mistakes were as under:

- Instead of calculating cash and credit sales separately, many students calculated cash sales net of discount and total sales and took the difference between the two as the credit sales.
- Majority of the students did not know how to deal with the amount of advance against imports and made numerous types of errors.
- 30% growth in sales was ignored while computing closing inventory.
- Many students computed purchases and treated it as payment without adjusting opening and closing balances of trade creditors. Similarly, some students computed raw-material consumption and treated it as purchase without considering the opening and closing inventory balances.
- Sales growth of 30% was not considered for calculation of variable and operating costs whereas some students applied to the fixed cost also.
- Many students did not exclude depreciation while computing cash outflows on account of fixed costs.

**Question 2**

The requirement of this question was to assess feasibility for expansion of the production capacity by computing net present value (NPV) based on the given scenario. This was a very well attempted question as 78% students were able to secure passing marks. The errors observed were as under:

- Inflation rate of 5% was applied from year 1, instead of applying it from year 2.
- For calculation of NPV, given 15% cost of capital was adjusted to incorporate 5% inflation. As this adjusted rate of cost of capital was applied to all the costs, it ended up in incorrect NPV.
- Loss of the building rent is an opportunity cost, but most of the students ignored it altogether.
- Many students incorrectly treated cost of building as outflow in year 0 and written down value of the building at the end of year 4 as inflow.
- Many students computed increased fixed cost in proportion to the increase in production.
- Most of the students failed to consider the recoupment of working capital at the end of year 4.

**Question 3**

This question was on process costing, requiring the students to compute equivalent production units, cost of finished goods, closing WIP and abnormal loss/gain and accounting entries to record production gains/losses. The question was well attempted and 75% students were able to secure passing marks. However, the common mistakes were as under:

- Most of the students failed to correctly compute normal/abnormal loss units. It was not realized by most of the students that losses are determined on 80% completion of the process and hence both opening and closing WIP units would be excluded from the total input units as opening units were already subject to normal loss being 85% complete and closing units were not subject to inspection being 60% complete.
- While computing equivalent units of conversion, abnormal loss units were not reduced to 80%.
- Significant number of students included normal loss units in equivalent production.
- While computing cost per unit, realisable value of normal loss units was not deducted from the material cost.
- Cost of opening WIP was incorrectly added to the material cost. Since the company's policy was to use FIFO method, WIP should have been kept separately and added to cost of finished goods.
- While recording production losses, most of the students did not prepare any accounting entry for sale value of normal losses or prepared incorrect entry by crediting profit and loss account instead of WIP account.

**Question 4**

The question was well answered by most of the students and about 11% students secured full marks.



**Question 5**

In this question, the candidates were required to determine the sale price per unit and number of units to be sold for a new chemical which the company planned to produce, in order to earn incremental profit before tax of Rs. 10 million.

An average performance was witnessed in this question. Some of the common mistakes were as under:

- Many students were unable to understand the question correctly. Instead of computing cost per batch they misunderstood the given costs as cost per batch without taking into consideration the other relevant information.
- Depreciation on existing plant was not relevant for incremental analyses but it was taken as fixed cost by most of the students.
- Fee for acquiring the right to produce and market the new product was either not considered at all or only one month charges were taken as charge for the full year. Further, some students treated these as variable cost.

**Question 6**

This was a very well attempted question and 91% students were able to secure passing marks. The question required optimal production plan in a situation where availability of raw material was a limiting factor. The errors observed were as under:

- Since product C was to be used internally, some students did not take it into consideration altogether.
- Instead of ranking the products on the basis of contribution margin per unit of raw material, contribution margin per unit of production or profit per unit of raw material was used for ranking.
- Committed export sales quantity of Product B was required to be produced first irrespective of its ranking. Most of the students ignored this point.

**Question 7**

This question required computation of material and labour variances and computation of applied fixed overheads and analyses of under/over applied fixed overheads into expenditure, efficiency and capacity variances.

Average performance was witnessed in this question. Some of the common mistakes were as under:

- Many students were unable to correctly compute actual yield and ended up in wrong material yield variance, labour efficiency variance and fixed overhead efficiency variance.
- Many students computed the variance but did not mention whether it was a favourable or an adverse variance or mentioned it incorrectly.
- To compute cost of material issued, instead of using the required FIFO method, many students used weighted average or simple average method.
- While computing material price variance, many students used cost of material purchased instead of cost of material issued to production.

*Examiners' Comments on Cost and Management Accounting - Autumn 2016*

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- While computing material price and mix variances, many students mistakenly used per unit standard material cost of Zee instead of standard cost per kg. Whereas, while working material yield variance cost per kg was taken instead of cost per unit. Similar mistakes were also observed in the case of labour rate and efficiency variances.
- To compute fixed overhead efficiency variance, budgeted hours were taken as allowable hours instead of computing it by multiplying actual production units with standard direct labour hours per unit.

#### **Question 8**

In this question the candidates were required to explain 'sustainability reporting' and state its four internal benefits. The performance was below average. Only few students were able to fully explain sustainability reporting whereas most of the students mixed up internal and external benefits.

#### **Question 9**

This question required calculation of market value of 8% redeemable bonds when required rate of return of the bondholders was 10% and expected value of ordinary shares on the conversion date was (a) Rs. 12 per share (b) Rs. 10 per share.

The performance was very poor. 44% of the students left this question un-attempted, while most of those who attempted it had very little idea of the procedure to be followed. They are advised to refer to the suggested answer given on the Institute's website.

***THE END***

**Cost and Management Accounting**  
 Summary of Marking Key  
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**Note regarding marking scheme:**

The marking scheme is given as a guide. However, markers also award marks for alternative approaches to a question and relevant/well-reasoned comments/explanations.

		<b>Mark(s)</b>
A.1	▪ Collection from cash and credit sales	4.0
	▪ Budgeted imports and purchases of raw material	4.0
	▪ Payments of raw material imports and purchases	2.0
	▪ Payments for budgeted conversion and operating costs	5.0
A.2	▪ Up to 01 mark for each item reported in the year-wise cash flows	9.5
	▪ Computation of net present value and advice on feasibility of expansion of the production facility	1.5
A.3	(a) ▪ Computation of normal/abnormal loss units	1.0
	▪ Computation of equivalent units of material	1.0
	▪ Computation of equivalent units of conversion cost	2.0
	(b) Computation of:	
	▪ cost per unit of material	2.0
	▪ cost per unit of conversion cost	2.0
	(i) Computation of cost of finished goods	2.0
	(ii) Computation of cost of closing WIP	1.5
	(iii) Computation of cost of abnormal gain / loss	1.5
	(c) Preparing accounting entries to record:	
▪ normal process loss	1.0	
▪ abnormal process loss	2.0	
A.4	(a) ▪ Explanation of safety stock	1.0
	▪ Discussing the reasons for maintaining the safety stock	2.0
	(b) 0.5 mark each for listing any four costs associated with holding of inventory	2.0
A.5	▪ Calculation of finished and by-product units per batch	2.0
	▪ Computation of variable cost per unit	3.5
	▪ Computation of fixed overhead for the year	3.0
	▪ Determination of number of units to be sold to earn the required incremental profit	2.5
A.6	▪ Product-wise contribution margin	7.0
	▪ Product-wise contribution margin per kg usage of material XPI	3.0
	▪ Computation of number of units of each product to earn maximum profit	2.0



**Cost and Management Accounting**  
 Summary of Marking Key  
 Certificate in Accounting and Finance – Autumn 2016

			Mark(s)
A.7	(a)	(i) ▪ 0.75 marks for determination of each material actually issued to production using FIFO	1.5
		▪ Calculation of actual yield	1.0
		▪ 1.5 marks each for computing material price, mix and yield variances	4.5
	(ii)	02 marks each for computing labour rate and efficiency variances	4.0
	(b)	▪ Computation of under applied overheads	2.0
▪ 02 marks each for computing fixed overhead expenditure, efficiency and capacity variances		6.0	
A.8	▪ Explanation of sustainability reporting	3.0	
	▪ 0.5 mark for stating each internal benefit of sustainability reporting	2.0	
A.9	▪ Discounting of cash flows	4.0	
	▪ Determination of bonds value at higher of shares' expected value and bonds' redemption value	2.0	

(THE END)



The Institute of  
Chartered Accountants  
of Pakistan

**Certificate in Accounting and Finance Stage Examinations**

9 March 2017  
3 hours – 100 marks  
Additional reading time – 15 minutes

**Cost and Management Accounting**

- Q.1 Smart Processing Limited (SPL) is considering to sign a contract for manufacturing 10,000 auto parts for a large automobile assembler. The parts would be produced in batches of 500 units each. The estimated cost of the first batch is as under:

	Rupees
Direct material (500 kg)	135,000
Direct labour (1,500 hours)	225,000
Variable overheads (Rs. 120 per direct labour hour)	180,000
Set-up cost per batch	40,000
Fixed costs:	
– Depreciation of equipment purchased for the project	45,000
– Allocation of existing overheads @ Rs. 16 per hour	24,000
<b>Cost of first batch</b>	<b>649,000</b>

**Additional information:**

- (i) The set-up cost per batch would be reduced by 5% for each subsequent batch. However, there would be no further reduction in the set-up cost from the 5<sup>th</sup> batch onward.
- (ii) Learning curve effect is estimated at 90% but would remain effective for the first eight batches only.
- (iii) The index of 90% learning curve is -0.152.

**Required:**

Compute the contract price that would enable SPL to earn an incremental profit of 30% of the contract price. (10)

- Q.2 Aroma Herbs (AH) deals in a herbal tea. The tea is imported on a six monthly basis. The management is considering to adopt a stock management system based on Economic Order Quantity (EOQ) model. In this respect, the following information has been gathered:

- (i) Annual sale of the tea is estimated at 60,000 kg at Rs. 1,260 per kg. Sales are evenly distributed throughout the year.
- (ii) C&F value of the tea after 10% discount is Rs. 900 per kg. Custom duty and sales tax are paid at the rates of 20% and 15% respectively. Sales tax paid at import stage is refundable in the same month.
- (iii) Use of EOQ model would reduce the quantity per order. As a result, bulk purchase discount would be reduced from 10% to 8%.
- (iv) Cost of financing the stock is 1% per month.
- (v) Annual storage cost is estimated at Rs. 320 per kg.
- (vi) Administrative cost of processing an order is Rs. 90,000. Increase in number of purchase orders would reduce this cost by 10%.
- (vii) AH maintains a buffer stock equal to fifteen days' sales.

**Required:**

- (a) Compute EOQ. (04)
- (b) Determine the amount of savings (if any) which can be achieved by AH by adopting the stock management system based on EOQ model. (06)

Q.3 Ravi Limited (RL) is engaged in production of industrial goods. It receives orders from steel manufactures and follows job order costing. The following information pertains to an order received on 1 December 2016 for 6,000 units of a product:

(i) Production details for the month of December 2016:

	Units
Produced and transferred to finished goods	3,200
Delivered to the buyer from the finished goods	3,000
Units rejected during inspection	120
Closing work in process (100% material and 80% conversion)	680

(ii) Actual expenses for the month of December 2016:

	Rupees
Direct material	1,140,000
Direct labour (6,320 hours)	948,000
Factory overheads	800,000

**Additional information:**

- Factory overheads are applied at Rs. 120 per hour. Under/over applied factory overheads are charged to profit and loss account.
- Units completed are inspected and transferred to finished goods. Normal rejection is estimated at 10% of the units transferred to finished goods. The rejected units are sold as scrap at Rs. 150 per unit.
- RL uses weighted average method for inventory valuation.

**Required:**

- (a) Prepare work in process account for the month of December 2016. (08)
- (b) Prepare accounting entries to record:
- over/under applied overheads
  - production losses and gains (05)

Q.4 Double Crown Limited (DCL) is engaged in manufacturing of a product Zee. Sales projections according to DCL's business plan for the year ending 31 December 2017, are as follows:

	May	June	July	August
	----- Rs. in million -----			
Sales	60	55	70	68

**Additional information:**

- (i) Goods are sold at a gross margin of 40% on sales.
- (ii) Ratio of direct material, direct wages and overheads is 6:3:1 respectively.
- (iii) Normal loss is 5% of the units completed.
- (iv) Inventory levels maintained by DCL are as under:

Direct materials	Next month's budgeted consumption
Finished goods	50% of next month's budgeted sales

- (v) 10% of all purchases are in cash. Remaining purchases are paid in the following month.
- (vi) Direct wages include DCL's contribution at 5% of the direct wages, towards canteen expenses. An equal amount is deducted from the employees' wages. Direct wages are paid on the last day of each month. Both contributions are paid to the canteen contractor in the following month.
- (vii) Overheads for each month include depreciation on plant and machinery and factory building rent, amounting to Rs. 0.2 million and Rs. 0.1 million respectively. The rent is paid on half yearly basis in advance on 30 June and 31 December each year.



**Required:**

- (a) Prepare budget for material purchases, direct wages and overheads, for the month of June 2017. (10)  
 (b) Prepare cash payment budget for the month of June 2017. (03)

Q.5 Unity Limited (UL) has obtained a loan of Rs. 250 million from Eastern Investment Limited (EIL) for 5 years. The loan carries a floating (variable) rate of interest which is paid annually. The existing rate is 10%.

To avoid losses on account of any extra-ordinary increase in interest rate, UL bought an interest rate cap at 12% from Sawera Bank Limited (SBL). In addition, they also agreed to a floor at 8%.

**Required:**

Compute the interest which UL would pay to EIL and the amounts which UL and SBL would pay to settle their obligations towards each other, if the interest rate on the due date is:

- (a) 13% per annum (02)  
 (b) 6% per annum (02)

Q.6 Hexa Limited is using a standard absorption costing system to monitor its costs. The management is considering to adopt a marginal costing system. In this respect, following information has been extracted from the records for the month of December 2016:

- (i) Actual as well as budgeted sale was 10,500 units at Rs. 2,000 per unit.  
 (ii) Standard cost per unit is as follows:

		Rupees
Direct material	5 kg @ Rs. 158	790
Direct labour	3 hours @ Rs. 150	450
Production overheads (fixed & variable)	Rs. 120 per labour hour	360
		<b>1,600</b>

- (iii) Budgeted fixed overheads were Rs. 1,650,000.  
 (iv) Production and actual costs were as under:

		Units
Production: Budgeted		11,000
Actual		12,000
		<b>Rupees</b>
Actual variable costs:		
Direct material (58,000 kg @ Rs. 160)		9,280,000
Direct labour (35,000 hours @ Rs. 155)		5,425,000
Variable overheads		2,975,000

- (v) Applied fixed overheads exceeded actual overheads by Rs. 200,000.  
 (vi) There was no opening finished goods inventory. Closing finished goods inventory was 1,500 units.

**Required:**

- (a) Compute the profit for the month of December 2016, using **standard marginal costing**. (03)  
 (b) Reconcile the profit computed above with actual profit under marginal costing, by incorporating the related variances. (08)  
 (c) Reconcile the actual profit under marginal and absorption costing. (02)

Q.7 Modern Transport Limited (MTL) is considering an investment proposal from Burraq Cab Services (BCS). As per the proposal, MTL would provide branded cars to BCS under the following terms and conditions:

- (i) BCS would pay rent of Rs. 1.8 million per annum per car to MTL. The cars would operate on a 24-hour basis. The payment would be made at the end of year.
- (ii) Cost of the drivers and maintenance cost of the car would initially be paid by BCS but would be adjusted against car rentals payable to MTL at the end of each year.
- (iii) MTL would provide a smart mobile to each driver.

MTL has estimated the following costs for deployment of a car with BCS:

Description	Rupees	Remarks
Car purchase price	2,000,000	Estimated useful life and residual value of the car is 4 years and Rs. 0.75 million respectively.
Car registration fee	35,000	One-time payment on registration of the car.
Mobile phone price per set	15,000	To be charged-off in the year of purchase.
Insurance premium	50,000	To be paid at the beginning of each year. It would reduce by Rs. 5,000 each year due to decrease in WDV of the car.
Annual salaries per driver	300,000	Would work in 8-hour shifts.
Annual maintenance cost	60,000	Due to ageing of cars, cost would increase by 10% each year.

**Additional information:**

- The car would be depreciated at the rate of 25% under the reducing balance method. Tax depreciation is to be calculated on the same basis.
- Applicable tax rate is 30% and tax is payable in the year in which the liability arises.
- Inflation is estimated at 5% per annum.
- MTL's cost of capital is 12% per annum.

**Required:**

Advise whether MTL should accept BCS's proposal.

(16)

Q.8 NK Enterprises produces various components for telecom companies. The demand of these components is increasing. However, NK's production facility is restricted to 50,000 machine hours only. Therefore, NK is considering to buy certain components externally. In this respect, the following information has been gathered:

Description	Components			
	X-1	X-2	X-3	X-4
Estimated demand in units	6,500	2,000	7,100	4,500
Machine hours required per unit	8	4	5	2
<b>In-house cost per unit:</b>	----- Rupees -----			
Direct material	20.0	28.0	23.0	22.0
Direct labour	9.0	5.0	9.0	8.0
Factory overheads	16.0	8.0	8.5	5.0
Allocated administrative overheads	5.0	4.0	3.0	2.0
	<b>50.0</b>	<b>45.0</b>	<b>43.5</b>	<b>37.0</b>
External price of the component per unit	35.0	40	34.0	33.0

Factory overheads include fixed overheads estimated at Rs. 1.50 per machine hour.

**Required:**

Determine the number of units to be produced in-house and bought externally.

(13)

Q.9 Sword Leather Limited (SLL) produces and sells shoes. The following information pertains to its latest financial year:

	<b>Rs. in million</b>
Sales (62,500 pairs)	187.5
Fixed production overheads	35.0
Fixed selling and distribution overheads	10.0
Variable production cost (in proportion of 40:35:25 for material, labour and overheads respectively)	60% of sale
Variable selling and distribution cost	15% of sale

To increase profitability, SLL has decided to introduce new design shoes and discontinue the existing designs. In this regard it has carried out a study whose recommendations are as follows:

- (i) Replace the existing fully depreciated plant with a new plant at an estimated cost of Rs. 50 million. The new plant would:
  - reduce material wastage from 10% to 5%;
  - decrease direct wages by 5%; and
  - increase variable overheads by 6% and fixed overheads by Rs. 15 million (including depreciation on the new plant).
- (ii) Improve efficiency of the staff by paying 1% commission to marketing staff and annual bonus amounting to Rs. 1.5 million to other staff.
- (iii) Introduction of new designs would require an increase in variable selling and distribution cost by 2%.
- (iv) Sell the newly designed shoes at 10% higher price.
- (v) Maintain finished goods inventory equal to one month's sale.

**Required:**

Compute the budgeted production for the first year if the budgeted sale has been determined with the objective of maintaining 25% margin of safety on sale.

**(08)**

**(THE END)**



**Cost and Management Accounting**  
Suggested Answer  
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**Ans.1 Smart processing Limited**  
**Computation of contract price**

		Rupees
Cost of material	135,000×20	2,700,000
<b>Direct labour cost:</b>		
- For the first 8 batches	(W-1) 8,748	
- For the last 12 batches	(W-1) 937×12	
	11,244	
	19,992 ×150	2,998,800
Variable overheads	19,992 ×120	2,399,040
<b>Batch set-up cost:</b>		
- For the first 4 batches	40,000+[40,000×(0.95) <sup>1</sup> ]+[40,000×(0.95) <sup>2</sup> ]+[40,000×(0.95) <sup>3</sup> ]	148,395
- For the last 16 batches	[(40,000×(0.95) <sup>3</sup> )]×16	548,720
<b>Fixed costs:</b>		
- Depreciation on equipment purchased for the project	45,000×20	900,000
- Allocation of existing fixed overheads	Irrelevant cost	-
<b>Total incremental cost of the contract</b>	<b>A</b>	<b>9,694,955</b>
<b>Contract price</b>	<b>(A+70%)</b>	<b>13,849,936</b>

		Hours
<b>W-1: Direct labour hrs. per batch for batch 9 onward:</b>		
Direct labour hours for the first 8 batches	8×1,500×(8) <sup>-0.152</sup>	8,748
Direct labour hours for the first 7 batches	7×1,500×(7) <sup>-0.152</sup>	(7,811)
Hours per batch for 8th and onward batches		937

**Ans.2 Aroma Herbs**

**(a) Economic order quantity (EOQ):**

Annual demand of herbal tea	(A) kg	60,000.00
		<b>Rupees</b>
Purchase cost per kg (C&F+Import duty)	[(900+0.9)×0.92 ×1.2]	
	(B)	1,104.00
Ordering cost per purchase order	90,000×90%	
	(C)	81,000.00
Annual holding cost per kg		
- Finance cost	B×1%×12	132.48
- Storage cost		320.00
	(D)	<b>452.48</b>
<b>EOQ =</b>		
SQRT [(2×annual demand × ordering cost) ÷ Holding cost per kg]		
SQRT [(2×60,000×81,000)÷452.48]	(E) kg	<b>4,635.00</b>

**Cost and Management Accounting**  
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(b) Savings on adopting EOQ:

		EOQ	Existing
No. of purchase orders	(A+E) (F)	13	2
<b>Holding of inventory:</b>			
- Average inventory	(E+2); (A+F ÷2)	2,318	15,000
- Buffer stock		2,500	2,500
	<b>(G)</b>	<b>4,818</b>	<b>17,500</b>
----- Rupees -----			
Ordering costs	(C×F); (90,000×F)	1,053,000	180,000
Holding costs of inventory	(G×D); (G×*449.6)	2,180,049	7,868,000
Purchasing cost of tea	(A×B); (60,000×900×1.2)	66,240,000	64,800,000
Cost of 60,000 kg of tea		<b>69,473,049</b>	<b>72,848,000</b>
<b>Savings on using EOQ model</b>	(72,848,000 – 69,473,049)	<b>3,374,951</b>	
<b>*Existing holding cost per unit (900×1.2×0.12)+320=449.6</b>			

Ans.3 Ravi Limited

(a) Work in process for the month of December 2016

Description	Units	Rupees	Description	Units	Rupees
Raw material	W.1 (A) 4,000	1,140,000	Finished goods		
			[3,200×778.23 (W-2)]	3,200	2,490,336
Direct labour		948,000	Normal loss (320×150)	320	48,000
Applied overheads (6,320×120)		758,400	Closing WIP *(Bal.)	680	463,710
Abnormal gain [200×(778.23)]	200	155,646			
	<b>4,200</b>	<b>3,002,046</b>		<b>4,200</b>	<b>3,002,046</b>
<b>*(680×296.74)+(544×481.49)</b>					

**W-1: Equivalent units and costs applied to the job**

	Quantity schedule	Equivalent units	
		Material	Conversion
Transferred to finished goods	3,200	3,200	3,200
Closing WIP	680×80%	680	544
Normal loss at 10% of the units completed	3,200×10%	320	-
	<b>4,200</b>		
Abnormal gain	120–320	(200)	(200)
Normal production	<b>A</b>	<b>4,000</b>	<b>3,544</b>

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W-2: Cost per unit		----- Rupees -----	
		----	
Raw material		1,140,000	
Direct labour		-	948,000
Applied overheads	6,320×120	-	758,400
Normal loss - sales price	320×150	(48,000)	-
	<b>B</b>	1,092,000	1,706,400
	<b>(B+A)</b>	296.74	481.49
		778.23	

(b) Accounting entries to record over/under applied overheads and production loss/gains

Date	Description	Debit	Credit
		----- Rupee -----	
31-Dec-2016	Factory overhead applied (6,320×120)	758,400	
	P&L account—overheads under applied	41,600	
	Factory overheads control <i>(Transfer of applied factory overheads to control a/c and under applied overheads charged to P&amp;L account)</i>		800,000
31-Dec-2016	WIP (200×778.23)	155,646	
	Abnormal gain <i>(To record abnormal gain)</i>		155,646
31-Dec-2016	Scrap inventory (320×150)	48,000	
	WIP <i>(Sales value of rejected units credited to WIP)</i>		48,000
31-Dec-2016	Abnormal gain (200×778.23)	155,646	
	Scrap inventory (320-120)×150		30,000
	P&L account <i>(Abnormal gain adjusted to P&amp;L account)</i>		125,646



Cost and Management Accounting  
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**Ans.4 Double Crown Limited**

**Budget for material purchases, direct wages and overheads for the month**

**(a) June 2017**

		May	Jun	Jul	Aug
		----- Rs. in million -----			
Sales	(A)	60.00	55.00	70.00	68.00
Cost of sales	A×60% (B)	36.00	33.00	42.00	40.80
Finished goods:					
Opening stock	B÷2	(18.00)	(16.50)	(21.00)	
Closing stock		16.50	21.00	20.40	
Cost of goods manufactured		34.50	37.50	41.40	
5% Normal loss - no effect, as being normal loss it is already included in cost of goods produced		-	-	-	
Cost of goods produced	(C)	34.50	37.50	41.40	
Budgeted direct material purchases - (as opening inventory is equal to current month consumption, purchases would be equal to the next month consumption)					
(37.5×60%),(41.4×60%)	(D)	22.50	24.84		
Budgeted direct wages	C×3÷10 (E)		11.25		
Budgeted overheads	C×1÷10 (F)		*3.75		
<b>* (Including fixed overheads – Depreciation and Rent amounted to Rs. 0.2 million and Rs. 0.1 million respectively)</b>					

**(b) Cash payment budget for the month of June 2017**

		Rs. in million
<b>Material purchases:</b>		
10% Cash purchases for current month	(D) 24.84×10%	2.48
Last month's balance of 90%	(D) 22.5×90%	20.25
	(G)	<b>22.73</b>
<b>Direct wages:</b>		
Payment to employees after deduction of their contribution towards canteen expenses at 5%	11.25+1.05×0.95	10.18
Payments to canteen contractor for the month of May 2017	(34.5×30%)+1.05×0.10	0.99
	(H)	<b>11.17</b>
<b>Overheads:</b>		
As computed above in (a)	(F)	3.75
Depreciation		(0.20)

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Factory rent for the month of June 2017 paid in advance		(0.10)
<b>Variable overheads</b>		<b>3.45</b>
Payment of half yearly rent in advance for Jul-Dec 2017	0.1×6	0.60
	<b>(I)</b>	<b>4.05</b>
	<b>G+H+I</b>	<b>37.95</b>

**Ans.5 Unity Limited**

<b>Amounts payable by UL to EIL:</b>		<b>Rs. in million</b>
Interest rate is 13%	250×13%	32.50
Interest rate is 6%	250×6%	15.00

**Settlement between UL and SBL:**

Interest rate is 13%	Payable by SBL to UL	(13%-12%)×250	2.50
Interest rate is 6%	Payable by UL to SBL	(8%-6%)×250	5.00

**Ans.6 Hexa Limited**

**(a) Profit for the month of December 2016 - Standard marginal costing**

		<b>Rupees</b>
Sales	10,500×2,000	21,000,000
Production cost	12,000×(790+450+(W.1) 210)	(17,400,000)
Closing stock	1,500×(790+450+(W.1) 210)	2,175,000
Variable cost of sales at standard rate		(15,225,000)
Contribution margin		5,775,000
Budgeted fixed overheads		(1,650,000)
<b>Profit at standard rate</b>		<b>4,125,000</b>

**W-1: Production overhead rate:**

	<b>Per unit</b>	<b>Per hour</b>
	----- Rupees -----	
Standard overhead rate (fixed & variable)	360	(360÷3) 120
Less: Standard fixed overhead rate (1,650,000÷11,000)	150	(150÷3) 50
<b>Standard variable overhead rate per hour</b>	<b>210</b>	<b>70</b>

**(b) Reconciliation of standard and actual profit under marginal costing:**

		<b>Rupees</b>
Standard profit as above		4,125,000
<b>(A)</b>		
<b>(Adverse)/favourable cost variances:</b>		
Direct material price	(SR-AR)×AQ=(158-160)×58,000	(116,000)
Direct material usage	(Allowable Qty.-AQ)×SR=[(5×12,000)-58,000]×158	316,000
Direct labor rate	(SR-AR)×AH=(150-155)×35,000	(175,000)

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		Rupees
Direct labour efficiency	(Allowable Hrs. –AH)×SR= [(3×12,000)–35,000]×150	150,000
Variable overheads expenditure	Actual cost – (SR×AH)=2,975,000–(70×35,000)	(525,000)
Variable overheads efficiency	(Allowable Hrs.–AH)×SR=(36,000–35,000)×70	70,000
Fixed overheads expenditure variance (BU overheads – Actual overheads)	[1,650,000 – (12,000 ×150 – 200,000)]	50,000
<b>Net adverse variance (B)</b>		<b>(230,000)</b>
Closing stock (Difference of standard and actual variable costs) [(9,280,000+5,425,000+2,975,000)÷12,000×1,500]–[(1,600–150)×1,500] (C)		35,000
<b>Actual profit under marginal costing A+B+C</b>		<b>3,930,000</b>

		Rupees
(c) Actual profit under absorption costing:		
Actual profit under marginal costing – as above		3,930,000
Fixed cost carried forward to the next year with closing inventory under absorption costing whereas under marginal costing fixed costs are charged in the year of incurrence (1,800,000–200,000)÷12,000)×1,500		200,000
<b>Actual profit under absorption costing</b>		<b>4,130,000</b>

**Ans.7 Modern Transport Limited**  
**Evaluation of BRC's proposal**

	Year 0	Year 1	Year 2	Year 3	Year 4
	[Cash inflows/(outflows)]				
	Rupees				
Car's cost	(2,000,000)	-	-	-	-
Registration charges	(35,000)	-	-	-	-
Initial investment (A)	(2,035,000)	-	-	-	-
Cost of three mobile phones (15,000×3)	(45,000)	-	-	-	-
Revenue (1,800,000×1.05)	-	1,800,000	1,890,000	1,984,500	2,083,725
Salaries/meals of drivers (3×300,000×1.05)	-	(900,000)	(945,000)	(992,250)	(1,041,863)
Maintenance cost (60,000×1.05×1.10)	-	(60,000)	(69,300)	(80,042)	(92,448)
Insurance premium (50,000–5,000)	(50,000)	(45,000)	(40,000)	(35,000)	-
<b>(B)</b>		795,000	835,700	877,208	949,414
Taxation 30% (B- W.1)× 30%	-	(70,875)	(134,741)	(175,811)	(241,769)
Residual value of car					750,000
<b>Net cash flows</b>	(2,130,000)	724,125	700,959	701,397	1,457,644
Discount factor @ 12%	1.0000	0.8929	0.7972	0.7118	0.6355
<b>Present value</b>	(2,130,000)	646,571	558,805	499,254	926,333
<b>Net present value</b>		500,963			



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**Conclusion:** The net present value is positive; therefore, the proposal should be accepted.

	Year 0	Year 1	Year 2	Year 3	Year 4
	[Cash inflows/(outflows)]				
	Rupees				
<b>W.1: Adjustment for tax liability</b>					
Accounting/tax depreciation (A×25%) (C)	-	(508,750)	(381,563)	(286,172)	(214,629)*
Profit on disposal of 750 – (A – car C)	-	-	-	-	106,114*
Mobiles' cost charged off	-	(45,000)	-	-	-
Insurance premium allowable for tax-next year	-	45,000	40,000	35,000	-
Insurance premium allowable for tax this year	-	(50,000)	(45,000)	(40,000)	(35,000)
	-	(558,750)	(386,563)	(291,172)	(143,515)

**Ans.8 NK Enterprises**  
Number of units to be produced in-house and bought externally

		X-1	X-2	X-3	X-4
Demand in units (A)		6,500	2,000	7,100	4,500
Machine hours per unit (B)		8	4	5	2
		----- Rupees -----			
In-house cost		50.00	45.00	43.50	37.00
<b>Irrelevant cost for decision making</b>					
- Fixed overheads					
1.5×B		(12.00)	(6.00)	(7.50)	(3.00)
- Allocated administrative overheads		(5.00)	(4.00)	(3.00)	(2.00)
Relevant production cost (C)		33.00	35.00	33.00	32.00
Per unit cost of buying externally (D)		35.00	40.00	34.00	33.00
<b>Incremental cost in case of external buying:</b>					
- Per unit (C-D) (E)		2.00	5.00	1.00	1.00
- Per machine hour (E÷B)		0.25	1.25	0.20	0.50
<b>Ranking for in-house production</b>		3rd.	1st.	4th.	2nd.
<b>No. of units for in-house production:</b>					
*[50,000 – (2,000×4) – (4,500×2)]/8 (F)		*4,125	2,000	-	4,500
Machine hours consumed		33,000	8,000		9,000
<b>No. of units to be bought externally A-F</b>		2,375	-	7,100	-

Cost and Management Accounting  
Suggested Answer  
Certificate in Accounting and Finance – Spring 2017

**Ans.9 Sword Leather Limited**  
**Budgeted production of the new design shoes for the first year**

		Rs. per unit
<b>Sales</b>	187,500,000+62,500×1.1 (A)	3,300.00
<b>Variable costs:</b>		
Direct material	(3,000×0.6×0.4)+1.1×1.05	(687.27)
Direct wages	3,000×0.6×0.35×0.95	(598.50)
Production overheads	3,000×0.6×0.25×1.06	(477.00)
Selling and distribution	3,000×0.15×1.02	(459.00)
Sales commission to marketing staff	3,300×1%	(33.00)
	<b>(B)</b>	<b>(2,254.77)</b>
Contribution margin	<b>(C)</b>	<b>1,045.23</b>
Total fixed cost (Rs.)	(35+10+15+1.5) (D)	61,500,000
<b>Budgeted production:</b>		
Break-even sales	D÷C (E)	58,839
Margin of safety on sales at 25%	E÷0.75×0.25	19,613
Budgeted sales	<b>(F)</b>	78,452
Inventory - average one month's sales	F ÷12	6,538
Budgeted production		<b>84,990</b>

**(THE END)**

**THE INSTITUTE OF CHARTERED ACCOUNTANTS OF PAKISTAN****EXAMINERS' COMMENTS**

<b>SUBJECT</b>	<b>SESSION</b>
Cost and Management Accounting	Certificate in Accounting and Finance – Spring 2017

**General:**

Overall result of this attempt was much below as compared to the performances in the last two attempts. Majority of the students seemed unable to complete the questions and solved the easier parts of the questions only. This type of situation is usually attributed to lack of practice i.e. where the candidates try to understand the concepts without actually practicing them. As a result, they are unable to understand the finer points. The candidates are advised to note that good practice is essential if one is to perform well in subjects involving mathematical problems.

Besides the above, it was noted that about 26% of the candidates were totally unprepared for the examination as they scored less than 30 marks. The performances were particularly poor in question # 1, 4, 5 and 9 as in each case between 27% to 64% of the students could not secure any mark as they were unaware of even the very basic concepts.

Question-wise comments.

**Question 1**

The overall performance was average as 33% students secured passing marks. However, very few of them could score high marks. On the other hand, about 37% of the students had no idea whatsoever and could not secure any mark. The common mistakes were as follows:

- Instead of applying the learning curve effect on direct labour hours, some candidates applied it on direct labour cost.
- Fixed cost was not ignored in calculating the contract price.
- Instead of computing the labour hours required by the eighth batch and then applying them on the remaining 12 batches, many candidates used average labour hours for the first eight batches. Similar type of errors were observed in the calculation of set-up costs also.
- Cost of direct material and variable overheads were ignored.
- Contract price was calculated as 130% of cost instead of by computing profit at 30% of the contract price.



**Question 2**

This question was based on a simple situation according to which a company wanted to adopt stock management system based on Economic Order Quantity (EOQ) model in place of its existing practice. The requirement was to compute the Economic Order Quantity (EOQ) and the saving which could be achieved by adopting the EOQ model.

The performance was average and around 40% of the students secured passing marks. Many students restricted their answer to requirement (a) of the question. Other common mistakes were as follows:

- Cost of financing the inventory was ignored in the calculation of holding costs. Some students applied the total holding costs in the formula, instead of applying the holding cost per kg.
- Many candidates did not know how the new purchase price was to be calculated i.e. by dividing the existing cost by 0.9 (90%) and multiplying it by 0.92 i.e. 92%.
- Sales tax was included in the cost of purchase although it was refundable.
- Financing cost was computed on the existing price instead of the revised price. Many students computed the financing cost on monthly basis i.e. at 1% instead of 12% on an annualised basis.
- A number of students couldn't understand that the number of purchase orders under the existing situation was 2 per annum.

**Question 3**

In this question, the candidates were required to prepare work in progress account in a job order system and to pass accounting entries related to over/under applied overheads and production losses/gains.

The overall performance was average as 42% students scored passing marks. However, most of the students did well in preparing the work in progress account but displayed poor understanding of the accounting entries.

The common mistakes were as follows:

- Equivalent units were computed incorrectly as abnormal gain was added rather than being deducted. Some students included normal loss in the calculation.
- While calculating per unit cost of raw material, proceeds from sale of normal loss units was ignored.
- Actual factory overheads were debited to the work in process account instead of applied overheads.
- Accounting entry for closing the under/over applied factory overheads was ignored by many students.
- A number of students who had posted the abnormal gain correctly into the WIP account could not pass the complete accounting entry which showed lack of conceptual understanding.

**Question 4**

The performance in this question on budgeting was poor as only 13% candidates could secure passing marks. The requirement was to prepare budget for material purchases, direct wages and overheads and cash payment budget for a month (June) which required some calculations involving previous as well as future months.

Majority of the students made some apparent errors. On the other hand, many knowledgeable candidates seemed to suffer from lack of practice and presentation skills, as a result of which they indulged in long and repetitious computations instead of developing a proper format which would have made the calculations much easier.

Other common mistakes were as follows:

- Normal loss was added to cost of sales although it is already included in cost of goods produced.
- Cost of sales was taken as the cost of goods manufactured i.e. opening and closing stock of finished goods were ignored. Consequently, raw material purchases were computed incorrectly.
- Majority of the candidates were unable to calculate payment to canteen contractor correctly as they failed to realise that since 5% contribution to canteen contractor was included in wages, amount excluding the contribution could be calculated by dividing the gross amount by 1.05 i.e. multiplying by 100 and dividing by 105.
- While computing payment of overheads, depreciation was not excluded.

**Question 5**

This 4 mark question pertained to interest rate hedging and was quite simple. However, the overall performance was quite poor. Though 27% candidates secured passing marks, about 40% students did not attempt it altogether and 26% could not secure any mark. It seemed that majority of the students had not covered this part of the syllabus in their studies which has been included in the syllabus recently. However, even if they had tried using common sense, they could have scored marks. The candidates are advised to avoid selective studies.

**Question 6**

The overall performance in this question pertaining to standard marginal costing was average and about 40% of the candidates secured passing marks. The common errors were as follows:

- Majority of the candidate were unable to segregate the Standard Overhead Rate between fixed and variable rates. Most of them didn't try and are advised to seek guidance from the suggested answer in this regard.
- In part (a) many students prepared incomplete P&L i.e. discontinued after computation of contribution margin.
- Many candidates presented the net variances i.e. did not bifurcate the variances between price & usage variances, rate & efficiency variances, etc.
- In part (b), many candidates ignored the difference between closing stock under standard and actual costs.
- Production cost was calculated on the basis of 10500 units instead of 12000 units.



**Question 7**

In this 16 mark question, the candidates were required to evaluate an investment proposal. Average response was observed in this question as compared to previous attempts in which students were scoring high marks in NPV based questions, as only 36% candidates secured passing marks. In many cases, simple mistakes were witnessed merely because of not reading the question carefully. The common errors were as follows:

- Many students ignored the fact that the cars would operate on a 24 hour basis and hence the number of drivers and number of mobiles, etc. would be three per car.
- Many students ignored inflation altogether whereas many students applied it even on the first year.
- Residual value of car was taxed instead of profit on disposal of car. Many students ignored it altogether.
- Some students wasted precious time in computing the IRR which was not required.
- Majority of the students did not understand that insurance premium would be paid from Year 0 to 3 but for tax purposes, it would be charged in Year 1 to 4.
- Many candidates increased the car maintenance cost by 15% instead of 15.5% ( $1.05 \times 1.1 - 1$ ).

**Question 8**

According to the scenario in this question a company's production capacity was limited to 50,000 machine hours. The candidates were required to identify the type of components and their quantity, which the company should acquire externally, based on the given information.

This was the best attempted question and 77% candidates secured passing marks and 39% students secured full marks. However, some candidates made simple mistakes as are discussed below:

- For the purpose of ranking, the difference between cost of buying and variable cost of production should have been divided by the number of machine hours. Instead, the production cost was divided by the machine hours.
- Many candidates ranked the components on the basis of machine hours only.
- Total factory overheads were included in the cost of production instead of variable overheads. Some students included allocated administrative overheads in the cost as well.

**Question 9**

In this 08 mark question, the candidates were required to compute the budgeted sale which would give a company 25% margin of safety on sale and to compute the budgeted production based on the budgeted sale as computed above. The overall performance was below average as only 25% candidates secured passing marks.

In this question also, the candidates seemed to suffer from lack of practice as they carried out unnecessary calculations where simple alternatives were available. For example, contribution margin per unit could have been computed by taking the sale price per unit



*Examiners' Comments on Cost and Management Accounting - Spring 2017*

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and the cost per unit. Instead, many candidates calculated it by first calculating the total contribution margin. Another major issue was that the candidates' lack of understanding about margin of safety and how it had to be calculated. Other common errors were as follows:

- Sales commission to marketing agents was ignored.
- In computing the fixed costs, annual bonus was ignored.
- Revised variable costs were computed on the basis of revised selling price of Rs. 3,300 instead of existing sales price of Rs. 3,000 whereas sales commission to marketing staff was computed on existing sales price of Rs. 3,000 instead of revised sales price.

*THE END*

**Cost and Management Accounting**  
 Summary of Marking Key  
 Certificate in Accounting and Finance – Spring 2017

**Note regarding marking scheme:**

The marking scheme is given as a guide. However, markers also award marks for alternative approaches to a question and relevant/well-reasoned comments/explanations. Moreover, the available marks in a question may exceed the total marks.

		Mark(s)		
A.1	▪	Determination of direct labor hours with learning curve effect	4.0	
	▪	Computation of:		
	–	cost of material	0.5	
	–	direct labor cost	1.0	
	–	variable overheads	0.5	
	–	batch set-up cost	2.0	
	–	relevant fixed cost	1.5	
▪	Determination of contract price	0.5		
A.2	(a)	Computation of:		
		▪ purchase cost per kg with revised discount and custom duty	1.0	
		▪ ordering cost per purchase order	0.5	
		▪ annual holding cost per kg	1.0	
		▪ Economic Order Quantity (EOQ)	1.5	
	(b)	▪ Computation of cost of importing tea using EOQ	2.75	
		▪ Computation of existing cost of importing tea	2.75	
		▪ Determination of net savings using EOQ	0.5	
	A.3	(a)	▪ Preparation of 'quantity schedule' and 'equivalent production units'	3.0
			▪ Computation of cost per unit	1.5
▪ Preparation of WIP account			3.5	
(b)		Preparing accounting entries to record:		
		▪ over/under applied overheads	1.5	
		▪ abnormal gain and normal loss	3.5	
A.4		(a)	Preparation of budget for material:	
	– determination of cost of sales		2.0	
	– determination of cost of goods manufactured		4.0	
	– determination of direct material purchases		2.0	
	Preparation of budget for direct wages		1.0	
	Preparation of budget for overheads	1.0		
	(b)	Cash payment budget for:		
		▪ material purchases	1.0	
		▪ direct wages	1.0	
		▪ overheads	1.0	
	A.5	(a)	Calculation of interest payable and settlement amount if interest rate cap is 13%	2.0
(b)		Calculation of interest payable and settlement amount if interest rate cap is 6%	2.0	

**Cost and Management Accounting**  
 Summary of Marking Key  
 Certificate in Accounting and Finance – Spring 2017

		Mark(s)	
A.6	(a) ■	Determination of standard fixed overhead rate per unit	1.0
	■	Computation of profit using standard marginal costing	2.0
	(b) ■	01 mark for computation of each cost variance	7.0
	■	Computation of difference of standard and actual variable cost in closing stock	1.0
(c)		Reconciliation of actual profit under marginal and absorption costing	2.0
A.7	■	Determination of cash flows relating to:	
	–	initial investment including cost of cars, their residual values, registration charges and mobile phones	2.0
	–	rental revenues	1.0
	–	salaries/meals of drivers	1.0
	–	maintenance cost	1.0
	–	insurance premium	1.0
	–	tax liability including tax depreciation, gain on disposal and adjustment of insurance premium in current year and next year	7.5
	■	Determination of present values of cash flows	2.0
	■	Recommendation	0.5
A.8	■	Computation of product wise relevant cost of in-house manufacturing	4.0
	■	Computation of product wise incremental cost per unit / machine hour in case of external buying	5.0
	■	Ranking for in-house production / external buying	2.0
	■	Determination of number of units to be manufactured and bought externally according to ranking	2.0
A.9	■	Computation of:	
	–	revised selling price per unit	0.5
	–	revised variable costs per unit	4.5
	–	total fixed cost	1.0
	■	Determination of:	
	–	break-even number of units to be sold	0.75
	–	budgeted annual sales by incorporating 25% margin of safety	0.75
–	budgeted production	0.5	

(THE END)





The Institute of  
Chartered Accountants  
of Pakistan

**Certificate in Accounting and Finance Stage Examination**

9 September 2017  
3 hours – 100 marks  
Additional reading time – 15 minutes

**Cost and Management Accounting**

Q.1 Production at Platinum Chemicals (PC) involves two processes I and II. Following information pertains to the month of August 2017:

(i) Actual cost:

		Process I	Process II
		----- Rupees -----	
Direct material	(12,000 liters)	5,748,000	-
Conversion		2,610,000	1,542,000

(ii) Production and sales

Description	Process I	Process II	Remarks
	----- Liters -----		
<b>Products:</b>			
Joint product – J101	5,000	-	Sold for Rs. 1,200 per liter after incurring packing cost of Rs. 120 per liter
Joint product – J202	4,500	-	Transferred to process II for conversion into a new product J-plus
By-product – BP01	1,000	-	Sold at the split-off point for Rs. 500 per liter
J-plus	-	3,400	Sold for Rs. 1,400 per liter
<b>Work-in-process:</b>			
Opening	-	-	
Closing	-	650	70% complete as to conversion

- (iii) Materials are introduced at the beginning of process I and PC uses 'weighted average method' for inventory valuation.
- (iv) Proceeds from sale of by-product are treated as reduction in joint costs. Joint costs are allocated on the basis of net realisable values of the joint products at split-off point.
- (v) Normal production losses in both processes are estimated at 10% of the input and are incurred at beginning of the process. Loss of each liter in process I results in a solid waste of 0.8 kg which is sold for Rs. 100 per kg. Loss of process II has no sale value.

**Required:**

- (a) Compute the cost of sales of J101 and J-plus for the month of August 2017. (12)
  - (b) Prepare accounting entries to record production gains/losses and their ultimate disposal. (03)
- Q.2 (a) Describe briefly the concept of 'integrated reporting'. (02)
- (b) In the context of integrated reporting, the term 'capitals' refers to the stocks of value that are increased, decreased or transformed through the activities of an organisation.
- List the different categories of capitals, in the context of integrated reporting. (03)

- Q.3 Opal Industries Limited (OIL) produces various products which pass through Processing and Finishing departments. Logistics and Maintenance departments provide necessary support for the production. Following information is available from OIL's records for the month of June 2017:

(i)

Departments	Overhead costs		Direct labour hours	
	*Budgeted	Actual	Budgeted	Actual
	----- Rupees -----		----- Hours -----	
Processing	560,000	536,000	14,000	14,350
Finishing	320,000	258,000	10,000	9,800
Logistics	-	56,700	-	-
Maintenance	-	45,000	-	-

*\*including apportionment of overhead costs of support departments*

- (ii) Costs of support departments are apportioned as under:

	Processing	Finishing	Logistics	Maintenance
Logistics	50%	40%	-	10%
Maintenance	35%	45%	20%	-

**Required:**

- (a) Allocate actual overhead costs of support departments to production departments using repeated distribution method. (05)
- (b) Compute under/over applied overheads for the month of June 2017. (03)

- Q.4 Cloudy Company Limited (CCL) manufactures and sells specialized machine X85. A newer version of the machine is gaining popularity in the market and CCL is therefore considering to introduce a similar version i.e. D44. Detailed research in this respect has been carried out during the last six months at a cost of Rs. 3.25 million.

The related information is as under:

- (i) Initial investment in the new plant for manufacturing D44 would be Rs. 450 million including installation and commissioning of the plant.
- (ii) Projected production and sales of D44 are as follows:

Year 1	Year 2	Year 3	Year 4
----- No. of units -----			
20,000	25,000	27,000	29,000

Sales volume of X85 in the latest year was 30,000 units. It is estimated that introduction of D44 would reduce the sale of X85 by 2,000 units every year.

- (iii) Estimated selling price and variable cost per unit of D44 in year 1 is estimated at Rs. 40,000 and Rs. 32,000 respectively. The contribution margin on X85 in year 1 is estimated at Rs. 5,500 per unit.
- (iv) Fixed costs in year 1 are estimated at Rs. 45 million. However, if the new plant is installed these costs would increase to Rs. 75 million.
- (v) Impact of inflation on selling price, variable cost and fixed cost would be 10% for both the machines/plants.
- (vi) The new plant would be depreciated at the rate of 25% under the reducing balance method. Tax depreciation is to be calculated on the same basis. The residual value of the plant at the end of its useful life of four years is expected to be equal to its carrying value.
- (vii) Applicable tax rate is 30% and tax is paid in the year in which the liability arises.
- (viii) CCL's cost of capital is 12%.



**Required:**

Compute internal rate of return (IRR) of the new plant and advise whether CCL should introduce D44. *(Assume that all cash flows would arise at the end of the year unless stated otherwise)*

(15)

Q.5 Falcon (Private) Limited (FPL) is in the process of preparing its annual budget for the next year. The available information is as follows:

(i) **Budgeted and actual production and sales for the current year:**

	Budgeted	Actual
	----- Units -----	
Production	25,000	23,760
Sales	24,000	22,800

(ii) **Current year's actual production cost per unit:**

		Rupees
Raw material input	(49 kg)	980
Direct labour		800
Variable production overheads		500
Fixed production overheads		400
		<b>2,680</b>

(iii) **Inventory balances:**

FPL maintains the following inventory levels:

Raw material	Average two months' consumption based on budgeted production
Finished goods	Average one month's budgeted sales
Work in process (opening as well as closing)	1,500 units (100% complete as to material and 60% as to conversion cost)

FPL follows absorption costing and uses FIFO method for valuation of inventory.

(iv) **Impact of inflation:**

	Inflation %
Raw material and variable overheads	8
Direct labour	10
Fixed overheads (excluding depreciation)	5

(v) Sales volume would increase by 10%.

(vi) Balancing and modernisation of plant would be carried out at a cost of Rs. 20 million which would:

- increase depreciation from Rs. 5,800,000 to Rs. 7,016,800;
- reduce raw material wastages from 5% to 2% of input; and
- increase labour efficiency by 7%.

**Required:**

Prepare budgeted statement of cost of sales for the next year.

(16)



- Q.6 DEL Limited manufactures radiators for car manufacturers. In normal operations, about 200,000 units are sold per annum at an average selling price of Rs. 15,000 per unit. Manufacturing process is carried out by 500 highly skilled labours who work an average of 180 hours per month at Rs. 250 per hour. Raw material cost is Rs. 3,000 per unit. Annual factory overheads are estimated at Rs. 540 million. Variable overheads are 150% of labour cost.

DEL had received an offer from TRU Limited to manufacture 4,000 units of radiators of trucks, at Rs. 50,000 per unit. DEL had expected to earn significantly high margin on this order and had planned to stop normal production for this purpose. It had already procured the raw material for Rs. 60 million but before the start of manufacturing it came to know that TRU has gone into liquidation.

To deal with the situation, DEL's marketing department has negotiated with another truck manufacturer, NTR Limited. NTR's specifications are slightly different and the price offered by NTR is Rs. 40,000 per unit.

The costs to be incurred on the new order and other relevant details are as follows:

- (i) Additional raw material of Rs. 12 million would have to be purchased for NTR's order.
- (ii) DEL expects that first unit would take 10 hours. The labour time would be subject to a 95% learning rate upto 1,000 units. Thereafter, the learning rate would stop. The index of 95% learning curve is -0.074.
- (iii) Variable overheads would be 240% of the cost of labour.
- (iv) Fixed overheads are to be applied at Rs. 400 per labour hour.
- (v) Total cost of preparing the plant for NTR's order and resetting it to the normal production would be Rs. 4 million.

If the order from NTR is not accepted, raw materials of Rs. 60 million already procured would have to be sold at 70% of their cost. However, raw material worth Rs. 10 million can be utilized in the car's radiators after slight alteration at a cost of Rs. 1 million. The altered raw material can produce 30% components of 10,000 car radiators.

**Required:**

Determine whether DEL may accept the order from NTR.

(12)

- Q.7 (a) Following information has been extracted from the records of Silver Industries Limited (SIL) for the month of June 2017:

	Production units	Direct labour hours	Variable & fixed overheads (Rs.)
Available capacity	10,000	30,000	-
Budget	8,000	24,000	3,600,000
Actual	8,600	25,000	3,900,000

Fixed overheads were budgeted at Rs. 1,200,000. Applied fixed overheads exceeded actual fixed overheads by Rs. 20,000.

SIL uses standard **absorption** costing. Over/under applied factory overheads are charged to profit and loss account.

**Required:**

- (i) Prepare accounting entries to record the factory overheads. (03)
  - (ii) Analyse under/over applied overheads into expenditure, efficiency and capacity variances. (11)
- (b) Comment on the difference between overhead variances under marginal and absorption costing. (03)

- Q.8 Digital Industries Limited (DIL) incurred a loss for the year ended 30 June 2017 as it could not achieve sales amounting to Rs. 89.6 million which was 80% of the break-even sales. Contribution margin on the sales was 25%. Variable costs comprised of 45% direct material, 35% direct labour and 20% overheads.

During a discussion on the situation, the Marketing Director was of the view that no increase in sales price was possible due to severe competition. However, sales volume can be increased by reducing prices. The Production Director was of the view that since the plant is quite old, the production capacity cannot be increased beyond the current level of 70%.

Accordingly, the management has developed the following plan:

- (i) A new plant would be installed whose capacity would be 20% more than installed capacity of the existing plant. The cost and useful life of the plant is estimated at Rs. 30 million and 10 years respectively. The funds for the new plant would be arranged through a long-term bank loan at a cost of 10% per annum. Capacity utilization of 85% is planned for the first year of the operation.

The new plant would eliminate existing material wastage which is 5% of the input and reduce direct labour hours by 8%.

The existing plant was installed fifteen years ago at a cost of Rs. 27 million. It has a remaining useful life of three years and would be traded in for Rs. 2 million.

DIL depreciates its fixed assets on straight line basis over their estimated useful lives.

- (ii) To sell the entire production, selling price would be reduced by 2%.  
(iii) Material would be purchased in bulk quantity which would reduce direct material cost by 10%.  
(iv) Direct wages would be increased by 8% which would increase production efficiency by 10%.  
(v) Impact of inflation on overheads would be 4%.

**Required:**

Compute the projected sales for the next year and the margin of safety percentage after incorporating the effect of the above measures.

(12)

(THE END)

**Cost and Management Accounting**  
Suggested Answers  
Certificate in Accounting and Finance – Autumn 2017

Ans.1 Platinum Chemicals

(a) Cost of sales for the month of August 2017 - Product J101 and J-plus

Quantity sold	Ltrs.	J101 5,000	J-plus 3,400
----- Rupees -----			
Allocated joint costs from process I	(W-1)	4,147,792	-
	$3,456,494(W-1) \div (3,400+650) \times 3,400$	-	2,901,748
Process II – Conversion cost	$(3,400 \times 400)$	-	1,360,000
Packing cost	$(5,000 \times 120)$	600,000	-
		<b>4,747,792</b>	<b>4,261,748</b>

W-1: Allocation of joint cost - Process I (on the basis of NRV)

Joint product	NRV per unit at split-off		Units produced	Total NRV	Joint cost allocation
	----- Rs. -----				
J101	$(1,200-120)$	1,080	5,000	5,400,000	4,147,792
J202	$[1,400-400(W-3)]$	1,000	4,500	4,500,000	3,456,494
				<b>9,900,000</b>	<b>(W-2) 7,604,286</b>

W-2: Joint costs - Process I

	Rupees
Direct material	5,748,000
Proceeds from sale of solid waste - normal loss	$1,200(W-4) \times 80\% \times 100$
Proceeds from sale of by-product BP01	$1,000(W-4) \times 500$
	5,152,000
Cost of abnormal loss	$5,152,000 \times 300 \div 9,800$
Conversion cost	2,610,000
Cost allocation between joint products J101 and J202	<b>7,604,286</b>

W-3: Conversion cost per unit - Process II

	Rupees
Conversion cost of process II	A 1,542,000
Equivalent units	$3,400(W-4) + (650 \times 0.7)$ B 3,855
Cost per unit	$(A \div B)$ C 400

W-4: Normal and abnormal losses quantity

	Process I	Process II
	----- Liters -----	
Input quantity	12,000	4,500
Less: J101	(5,000)	-
J202 – Transfer to process II	(4,500)	-
By-product BP01	(1,000)	-
J-plus	-	(3,400)
Closing work in process (70% conversion)	-	(650)
Normal loss - 10% of input	$(12,000 \times 10\%)$ ; $(4,500 \times 10\%)$	(450)
Abnormal loss	<b>300</b>	-

(b) Journal entries to record production and disposal of solid waste

Date	Description	Debit	Credit
		----- Rupees -----	
30-Jun-2017	Solid waste inventory (normal loss at sale price)	(W-2) 96,000	
	Solid waste inventory (abnormal loss at cost)	(W-2) 157,714	
	WIP - Process I		253,714
	<i>(Normal losses at sale price and abnormal losses at cost credited to WIP)</i>		
30-Jun-2017	Bank	$(1,200+300) \times 0.8 \times 100$	120,000
	Profit and loss account	Balancing	133,714
	Solid waste inventory		253,714
	<i>(Sale of normal and abnormal solid waste)</i>		



**Cost and Management Accounting**  
Suggested Answers  
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**Ans.2** (a) Integrated reporting is a method of presentation about how the organization interacts with the external environment and how an organization's strategy, governance, performance and prospects, in the context of its external environment, lead to the creation of value over the short, medium and long term.

(b) Different categories of 'capitals' in the context of integrated reporting:

(i) Financial	(ii) Human
(iii) Manufactured	(iv) Social and relationship
(v) Intellectual	(vi) Natural

**Ans.3** **Opal Industries Limited**

(a) Allocation of support departments' actual overheads:

	Production departments		Support departments	
	Processing	Finishing	Logistics	Maintenance
	----- Rupees -----			
Cost incurred	536,000	258,000	56,700	45,000
<b>Allocation of support departments' costs:</b>				
Logistics 50%:40%:0%:10%	28,350	22,680	(56,700)	5,670
Maintenance 35%:45%:20%:0%	17,734	22,802	10,134	(50,670)
Logistics	5,067	4,054	(10,134)	1,013
Maintenance	354	456	203	(1,013)
Logistics (Being immaterial amount, allocated to production dept. only) 50:40	113	90	(203)	-
<b>Total - Actual overhead costs A</b>	<b>587,618</b>	<b>308,082</b>	<b>-</b>	<b>-</b>

(b) Under/over applied overheads:

<b>Predetermined overhead rate:</b>			
Budgeted direct labour hours	B	14,000	10,000
Budgeted overhead costs	C	560,000	320,000
Budgeted overhead rate (C÷B)	D	<b>40.00</b>	<b>32.00</b>
<b>Overheads applied:</b>			
Actual direct labour hours	E	14,350	9,800
Overheads applied (D×E)	F	<b>574,000</b>	<b>313,600</b>
<b>Overheads under/(over) applied (A-F)</b>		<b>13,618</b>	<b>(5,518)</b>

**Cost and Management Accounting**  
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**Ans.4 Cloudy Company Limited**  
**Introduction of new version D44**

Projected production and sales of D44	Units (A)	Year 0	Year 1	Year 2	Year 3	Year 4
		-	20,000	25,000	27,000	29,000
		----- Rs. in million -----				
Contribution margin of D44	(40,000-32,000)×1.1×A	-	160.00	220.00	261.36	308.79
Research cost	<b>To be ignored</b>	-	-	-	-	-
Loss of CM of X85	(5,500×2,000×1.1)	-	(11.00)	(24.20)	(39.93)	(58.56)
Existing fixed cost	<b>To be ignored</b>	-	-	-	-	-
Incremental fixed cost	(75-45)×1.1	-	(30.00)	(33.00)	(36.30)	(39.93)
Tax/Accounting depreciation	450×0.25	-	(112.50)	(84.38)	(63.29)	(47.47)
Net profit before tax		-	6.50	78.42	121.84	162.83
Tax liability @ 30%		-	(1.95)	(23.53)	(36.55)	(48.85)
Net (loss)/profit after tax		-	4.55	54.89	85.29	113.98
Add back non-cash item of depreciation		-	112.50	84.38	63.29	47.47
Plant cost/residual value at the end of useful life		(450.00)	-	-	-	142.36
Total cash (outflows) / inflows		<b>(450.00)</b>	<b>117.05</b>	<b>139.27</b>	<b>148.58</b>	<b>303.81</b>

<b>Net cash inflows</b>	<b>258.71</b>					
Discount factor at 15%	1.0000	0.8696	0.7561	0.6575	0.5718	
Present value	(450.00)	101.79	105.30	97.69	173.72	
<b>Net present value at 15%</b>	<b>NPV<sub>a</sub></b>	<b>28.50</b>				
Discount factor at 20%	1.0000	0.8333	0.6944	0.5787	0.4823	
Present value	(450.00)	97.54	96.71	85.98	146.53	
<b>Net present value at 20%</b>	<b>NPV<sub>b</sub></b>	<b>(23.24)</b>				

$$\text{IRR} = A\% + [\text{NPV}_a \div (\text{NPV}_a - \text{NPV}_b) \times (\text{B}\% - \text{A}\%)] \quad 15\% + [28.50 \div \{28.50 - (-23.24)\} \times (20\% - 15\%)] \quad \underline{\underline{17.75\%}}$$

**Conclusion:**

IRR 17.75% is higher than CCL's cost of capital (12%), therefore, CCL should introduce D44.

**Cost and Management Accounting**  
Suggested Answers  
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**Ans.5 Falcon (Private) Limited**  
**Budgeted statement of cost of sales for the next year**

		Rupees
<b>Opening work in process:</b>		
Raw material cost	1,500×980	1,470,000
Conversion cost	1,500×60%×(800+500+400)	1,530,000
	<b>A</b>	<b>3,000,000</b>
<b>Manufacturing expenses:</b>		
Raw material cost	<b>(W-4)</b>	<b>25,497,753</b>
Conversion cost	25,170(W-1)×1,791(W-2)	45,079,470
	<b>B</b>	<b>70,577,223</b>
<b>Closing work in process:</b>		
Raw material cost	1,500×1,026(W-2)	(1,539,000)
Conversion cost	1,500×60%×1,791(W-2)	(1,611,900)
	<b>C</b>	<b>(3,150,900)</b>
<b>Finished goods:</b>		
Opening stock	2,000(W-1)×2,680	<b>D</b> 5,360,000
Closing stock	2,090(W-1) ×2,817(W-2)	<b>E</b> (5,887,530)
<b>Cost of sales</b>	<b>(A+B+C+D+E)</b>	<b>69,898,793</b>

<b>W-1: Budgeted production for the next year</b>		Units
Sales for the next year	22,800×1.1	25,080
Finished goods inventory: Closing	25,080÷12	2,090
Opening	24,000÷12	(2,000)
Work in progress: Closing (100% to material and 60% to conversion)		1,500
Opening (100% to material and 60% to conversion)		(1,500)
		<b>25,170</b>

<b>W-2: Budgeted cost per unit for the next year</b>		Rupees
Raw material	980×0.95÷0.98×1.08	1,026
Direct labour	800×93%×1.1	818
Variable overheads	500×1.08	540
Fixed overheads	10,906,000(W-3)÷25,170(W-1)	433
		1,791
		<b>2,817</b>

<b>W-3: Budgeted fixed overheads for the next year</b>		Rupees
Current year's fixed overheads (excluding depreciation)	(400×23,760)-5,800,000	3,704,000
5% increase for next year's fixed overheads (excluding depreciation)	3,704,000×1.05	3,889,200
Depreciation for the next year		7,016,800
		<b>10,906,000</b>

<b>W-4: Budgeted raw material consumption for the next year</b>		Kg
Required raw material including 2% wastage	25,170(W-1)×(49×0.95÷0.98)	1,195,575
Opening raw material inventory	(25,000×49×2÷12)	204,167
<b>Raw material issues on FIFO basis from:</b>		<b>Rupees</b>
- Opening raw material inventory	204,167×(980÷49)	4,083,340
- Current purchases at revised price	(1,195,575-204,167)×(980÷49)×1.08	21,414,413
		<b>25,497,753</b>



Cost and Management Accounting  
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**Ans.6 DEL Limited**  
**Acceptance of order from NTR Limited for truck radiators**

		<b>Rs. in million</b>
Revenue from NTR Limited	40,000×4,000	160.00
Additional raw material		(12.00)
Raw material already procured – sales value	(60-10)×70%	(35.00)
– use value for truck radiators (10,000×3,000×30%)÷1		(8.00)
Labour cost	[22,647.91 (W-1)×250]	(5.66)
Variable overheads	(5.66×240%)	(13.58)
Preparation and resetting cost of the plant		(4.00)
Fixed overheads applied	<b>To be ignored</b>	-
		81.76
Loss of CM for not producing car radiators	4,194 (W-2) ×8,625 (W-3)	(36.17)
<b>Profit on acceptance of the order from NTR</b>		<b>45.59</b>

**Conclusion:**  
DEL should accept the order from NTR Limited

**W-1: Direct labour hours for production of truck radiators**

		<b>Hours</b>
Direct labour hours for 1,000 units	[1,000×10×(1,000) <sup>-0.074</sup> ]	5,997.91
Direct labour hours for 999 units	[999×10×(999) <sup>-0.074</sup> ]	(5,992.36)
Hours per unit for 1,001 and onward		<b>5.55</b>
Direct labour hours for first 1,000 units		5,997.91
Direct labour hours for next 3,000 units	(5.55×3,000)	16,650.00
		<b>22,647.91</b>

**W-2: No. of Car radiators to be produced if NTR's order is not accepted**

Labour hours per unit of car radiator	(500×180×12)÷200,000	<b>Hrs.</b>	5.40
No. of car radiators to be produced	22,647.91 (W-1) ÷ 5.40	<b>Nos.</b>	<b>4,194</b>

**W-3: Contribution margin per unit/hour for car radiators**

		<b>Rupees</b>
Selling price		15,000
Raw material cost		(3,000)
Labour cost	(500×180×250×12)÷200,000	(1,350)
Variable overheads	150%×1,350	(2,025)
<b>Contribution margin per unit</b>		<b>8,625</b>

**Ans.7 Silver Industries Limited**

(a) (i) **Accounting entries to record cost of production:**

Date	Description	Debit	Credit
		----- Rupees -----	
30-Jun-17	Work in process/Finished goods		
	[8,600×(24,000÷8,000)×150(W-1)]	3,870,000	
	PL account (Under absorbed overheads) (Bal.)	30,000	
	Overhead control account		3,900,000
	<i>(Under-absorbed overheads charged to profit &amp; loss account)</i>		

**Cost and Management Accounting**  
Suggested Answers  
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(ii)	Analysis of under absorbed overheads amounted to Rs. 30,000	Rupees
	<b>Variable overhead expenditure variance</b>	
	Actual hours at standard variable rate <span style="float: right;">25,000×100</span>	2,500,000
	Actual variable overheads <span style="float: right;">(W-2)</span>	2,630,000
	Adverse variance <span style="float: right;">A</span>	<b>(130,000)</b>
	<b>Variable overhead efficiency variance</b>	
	Allowable hours at standard rate <span style="float: right;">8,600×3×100</span>	2,580,000
	Actual hours at standard variable rate <span style="float: right;">25,000×100</span>	2,500,000
	Favourable variance <span style="float: right;">B</span>	<b>80,000</b>
	<b>Fixed overhead expenditure variance</b>	
	Budgeted fixed overheads	1,200,000
	Actual fixed overheads <span style="float: right;">(W.2)</span>	1,270,000
	Adverse variance <span style="float: right;">C</span>	<b>(70,000)</b>
	<b>Fixed overhead efficiency variance</b>	
	Allowable hours at standard rate <span style="float: right;">8,600×3×50</span>	1,290,000
	Actual hours at standard rate <span style="float: right;">25,000×50</span>	1,250,000
	Favourable variance <span style="float: right;">D</span>	<b>40,000</b>
	<b>Fixed overhead capacity variance</b>	
	Budgeted hours at standard rate <span style="float: right;">24,000×50</span>	1,200,000
	Actual hours at standard rate <span style="float: right;">25,000×50</span>	1,250,000
	Favourable variance <span style="float: right;">E</span>	<b>50,000</b>
	<b>(A+B+C+D+E)</b>	<b>(30,000)</b>

**W-1: Standard fixed and variable overhead rate per hour**

Standard fixed and variable overhead rate per hour	$3,600,000 \div 24,000$	150
<b>Less:</b> Standard fixed overhead rate per hour	$1,200,000 \div 24,000$	50
Standard variable overhead rate per hour		<b>100</b>

**W-2: Actual fixed overheads**

Applied fixed overheads	$8,600 \times (24,000 - 8,000) \times 50$	1,290,000
Applied overheads exceeded actual overheads		(20,000)
Actual fixed overheads		1,270,000
Actual variable overheads (Balancing)		2,630,000
Total variable overheads		<b>3,900,000</b>

**(b) Comments on the difference between overhead variances under marginal and absorption costing:**

All variable and fixed overhead variances under marginal and absorption costing are same, except for the fixed overhead volume (efficiency and capacity) variances which can be calculated only under absorption costing.

In **absorption costing**, fixed overheads are allocated to the products and these are included in the inventory valuations. Therefore, fixed overhead volume variances can be computed under absorption costing only.

In **marginal costing**, only variable overheads are assigned to the product; fixed overheads are regarded as period costs and written off as a lump sum to the profit and loss account. Therefore, fixed overhead volume variances cannot be computed under marginal costing.

**Cost and Management Accounting**  
Suggested Answers  
Certificate in Accounting and Finance – Autumn 2017

**Ans.8 Digital Industries Limited**  
Projected sales and margin of safety % for the next year

		Rs. in million
<b>Projected sales for the next year</b>	$(89.6 \div 0.7) \times 1.2 \times 0.85 \times 0.98$ (A)	127.95
<b>Margin of safety % to projected sales</b>	$(A-B) \div A \times 100$	15%
<b>Break-even sales</b>	$[A \div (A-C) \times D]$ (B)	<b>108.72</b>
<b>Variable cost:</b>		
Variable cost – 2017 level of 75%	$[127.95(A) \div 0.98] \times 0.75$	97.92
Variable cost on incorporating impact of changes:		
Direct material	$(97.92 \times 0.45) \times 0.95 \times 0.9$	37.67
Direct labour	$(97.92 \times 0.35) \times 0.92 \times 0.9 \times 1.08$	30.65
Overheads	$(97.92 \times 0.20) \times 1.04$	20.37
Variable cost – projected	(C)	<b>88.69</b>
<b>Fixed cost - projected:</b>		
Fixed cost – 2017 (equal to CM for break-even sales)	$(89.6 \div 0.8) \times 0.25$	28.00
Depreciation - old plant	$27 \div (15+3)$	(1.50)
		26.50
Impact of 4% inflation	$26.5 \times 4\%$	1.06
Depreciation - new plant	$30 \div 10$	3.00
Long-term loan interest at 10%	$(30-2) \times 10\%$	2.80
	(D)	<b>33.36</b>

(THE END)



**THE INSTITUTE OF CHARTERED ACCOUNTANTS OF PAKISTAN**

**Examiners' comments  
Cost and Management Accounting  
Certificate in Accounting and Finance  
Autumn 2017 Examinations**

**General:**

22.73% candidates passed as compared to 29.27% in the previous attempt. The overall performance was below par although most of the questions were quite simple. Only questions 3 and 4 were well responded. The response in questions 1, 6 and 8 was average while remaining questions were responded quite poorly.

Many students made simple mistakes which could have been avoided easily. For example, in question 1, joint cost was allocated on the basis of number of units produced whereas it was specifically mentioned in the question that it has to be allocated on the basis of NRV.

**Question-wise Comments:**

**Question 1**

37.15% candidates secured passing marks in this question. Common errors are discussed below:

**Question 1(a)**

- Cost of abnormal loss was computed on the basis of cost of direct material only i.e. without deducting sale proceeds of solid waste and by product.
- Cost of abnormal loss was not deducted while computing the joint costs.
- Joint cost was allocated on the basis of number of units instead of their NRV.
- Sale price of J-plus was considered as the NRV of J202 i.e. cost of converting J202 into J-plus was ignored.
- While computing cost of sale of J101, packing cost was ignored.
- The entire joint cost of J202 was included in the cost of sale of J-plus instead of allocating the joint cost between work-in-process and cost of sales.

**Question 1(b)**

- Cost was allocated to normal loss also.
- Inventory account was credited without showing how the balance arose i.e. the entry to debit the normal and abnormal losses to solid waste inventory account and credit to WIP account was not passed.

**Question 2**

07.86% candidates secured passing marks in this question. 42% candidates did not attempt this question. This area i.e. integrated reporting was tested for the first time and as is usually the case, the performance was very poor. Mostly, the candidates used guesswork and remained totally out of context.

**Question 3**

90.28% candidates secured passing marks in this question. Common errors are discussed below:

- Over/under applied overheads were computed by comparing actual overheads with budgeted overheads instead of applied overheads.
- Underapplied overheads were termed as overapplied and vice versa.

**Question 4**

80.51% candidates secured passing marks in this question. Common errors are discussed below:

- The figures for year 1 were given in the question. Hence, impact of inflation was to be applied from year 2 but was incorrectly applied from year 1.
- The increase in fixed costs was ignored.
- Loss of contribution margin due to decrease in the sale of X85 was ignored.

**Question 5**

05.99% candidates secured passing marks in this question. Common errors are discussed below:

- Opening and closing balances of raw material, WIP and finished goods were ignored.
- Change in material and labour due to the change in wastage and efficiency respectively, was not understood correctly and various types of erroneous calculations were produced.
- 100% conversion cost was included in cost of WIP units instead of 60% conversion costs.
- Budgeted production was computed as 10% above the current year's production instead of increasing current year's sale by 10% and computing production by considering the opening and closing inventory of finished goods as equivalent to one months projected sale.
- Fixed overheads were increased by 5% (inflation) without excluding depreciation and adding the increase in depreciation.

**Question 6**

47.40% candidates secured passing marks in this question. Common errors are discussed below:

- Loss of contribution margin because of not producing car radiators was ignored. The fact that number of car radiators that could have been produced would depend upon the labour hours involved in production of truck radiators was generally misunderstood.

Examiners' comments on Cost and Management Accounting,  
CAF Examination Autumn 2017

- Raw material which had already been acquired should have been considered at its opportunity cost which was 70% of the cost. This aspect was ignored.
- Cost of preparing the plant for truck production and resetting it for car production was ignored.

**Question 7**

11.01% candidates secured passing marks in this question. Common errors are discussed below:

**Question 7(a)**

- Fixed overhead variances were analysed but variable overheads were ignored.
- Budgeted overheads were considered as applied overheads.
- Applied overheads were used in the calculation of expenditure variance instead of actual overheads.
- Instead of debiting work-in-process or finished goods, applied overheads were debited.
- The difference between actual and applied overheads was closed into over applied or under applied account rather than the P&L account.

**Question 7 (b)**

This part was not attempted in most of the cases. Those who did attempt mostly produced totally irrelevant material.

**Question 8**

26.19% candidates secured passing marks in this question. Common errors are discussed below:

- Various types of errors were made in computing the projected sale as the students ignored the impact of one or more of the following:
  - Capacity of the new plant would be 20% more than the existing plant
  - Existing plant was running at 70% capacity
  - Price reduction of 2%.
- Variable costs (Direct Material, Labour and variable overheads) were computed by taking the costs for 2017 and applying the impact of changes in the costs, wastage, efficiency etc. but ignoring the increase in sales.
- Only the interest on loan and depreciation on the new plant were considered in determining the projected fixed costs whereas existing fixed costs were ignored.
- Impact of inflation was applied on depreciation also. / Depreciation of existing plant was not separated from existing fixed overheads, for arriving at the projected fixed overheads.
- Margin of safety was not computed.

**(THE END)**



**Cost and Management Accounting**  
 Summary of Marking Key  
 Certificate in Accounting and Finance – Autumn 2017

**Note regarding marking scheme:**

The marking scheme is given as a guide. However, markers also award marks for alternative approaches to a question and relevant/well-reasoned comments/explanations. Moreover, the available marks in answer may exceed the total marks of a question.

		Mark(s)	
A.1	(a)		
	▪	01 mark for preparation of quantity schedule for each process	2.0
	▪	Computation of joint cost of process I	4.0
	▪	Computation of conversion cost per unit of process II	1.0
	▪	Allocation of joint cost of process I based on NRV of the joint products	3.0
	▪	Cost of sales for the month of August 2017 for product J101 and J-plus	2.0
(b)	Preparation of accounting entries to record:		
	▪	production normal/abnormal loss credited to WIP – Process I	1.5
	▪	proceeds from sale of solid waste and loss thereon	1.5
A.2	(a)	Brief description of the concept of 'Integrated reporting'	2.0
	(b)	0.5 mark for listing each category of capitals, in the context of integrated reporting	3.0
A.3	(a)	01 mark for allocation of each support departments' costs to production departments	5.0
	(b)	Computation of production departments':	
	▪	budgeted overhead rate per hour	1.0
	▪	applied overheads	1.0
	▪	under/over applied overheads	1.0
A.4	▪	Determination of:	
	–	contribution margin of new product D44	2.0
	–	reduction in contribution margin of existing product X85	2.0
	–	incremental fixed cost	1.0
	–	cash flows relating to tax liability including accounting/tax depreciation	3.0
	–	cash flows relating to initial investment and carrying value of the plant at the end of its useful life	2.0
	▪	Ignoring irrelevant costs	1.0
	▪	Computation of Internal Rate of Return (IRR)	3.5
	▪	Conclusion	0.5
A.5	▪	Determination of:	
	–	production units	1.5
	–	budgeted cost per unit	3.5
	–	budgeted fixed overheads	2.0
	–	budgeted raw material consumption	3.5
	▪	Computation of opening work in process, manufacturing expenses and closing work in process	4.0
	▪	Computation of opening and closing finished goods stock	1.5

**Cost and Management Accounting**  
 Summary of Marking Key  
 Certificate in Accounting and Finance – Autumn 2017

		Mark(s)			
<b>A.6</b>	▪	Determination of revenue from NTR Limited	0.5		
	▪	Determination of incremental cost of:			
	–	raw material	2.5		
	–	labour	3.5		
	–	variable overheads	1.0		
	▪	Consideration of preparation and resetting cost of the plant	0.5		
	▪	Loss of contribution for not producing car radiators	3.0		
	▪	Ignoring applied fixed overheads	0.5		
	▪	Conclusion	0.5		
<b>A.7</b>	(a)	(i)	Accounting entry to record:		
			▪	overheads charged to production	1.5
			▪	under absorbed overheads charged to profit & loss account	1.5
	(ii)	▪	Computation of standard and variable overhead rate per hour	1.0	
		▪	Computation of actual fixed overheads	1.25	
		▪	1.75 marks for calculation of each cost variance	8.75	
	(b)	Comments on the differences of overhead variances computed under marginal and absorption costings		3.0	
	<b>A.8</b>	Computation of:			
▪		Variable cost	5.0		
▪		Fixed cost	3.0		
▪		Projected production and sales	2.0		
▪		Break-even sales	1.0		
▪		Margin of safety % to projected sales	1.0		

(THE END)



The Institute of  
Chartered Accountants  
of Pakistan

## Certificate in Accounting and Finance Stage Examination

8 March 2018  
3 hours – 100 marks  
Additional reading time – 15 minutes

### Cost and Management Accounting

Q.1 Sarwar Limited (SL) manufactures two industrial products i.e. K2 and K9. It also manufactures other products in accordance with the specification of customers. SL's products require specialised skilled labour. Maximum labour hours available with the company are 300,000 per month.

Following information has been extracted from SL's budget:

	K2	K9
	---- Rs. per unit ----	
Selling price	16,500	26,000
Direct material	6,000	8,000
Direct labour (Rs. 300 per hour)	4,500	7,500
Variable production overheads (based on labour hours)	1,875	3,125
Applied fixed production overheads (based on labour hours)	1,500	2,500
Monthly demand (Units)	5,000	8,000

An overseas customer has offered to purchase 3,000 units of a customized industrial product 'A-1' at a price of Rs. 35,000 each. The duration of contract would be one month. The cost department has ascertained the following facts in respect of the contract:

- (i) Each unit of A-1 would require 3 units of raw material B-1 and 2 units of raw material C-3. B-1 is available in the local market at Rs. 2,500 per unit. However, the required quantity of C-3 is not available in the local market and would be imported from Srilanka at a landed cost of Rs. 2.4 million.
- (ii) Each unit of A-1 would require 35 labour hours.
- (iii) A specialised machinery would be hired for five days. However, due to certain production scheduling issues, it is difficult for SL to exactly predict when the machine would be required. As a result of negotiations, SL has received the following offers:
  - Falah Modarba has quoted a rent of Rs. 0.9 million for the entire month. If accepted, SL would be able to sublet the machine at Rs. 20,000 per day.
  - Tech Rentals has quoted a rent of Rs. 57,000 per day and guaranteed availability of machinery when required.

The management believes that it can increase/decrease the production of K2 and K9, if required.

**Required:**

Determine the maximum profit that can be earned by SL, in the above situation.

(10)



- Q.2 (a) Briefly describe any **three** differences between investment and speculation. (03)
- (b) Valika Limited (VL) plans to introduce a new product AX which would be used in hybrid cars. Following information is available in this regard:
- (i) Initial investment in the new plant including installation and commissioning is estimated at Rs. 50 million. The plant is expected to have a useful life of four years and would have annual capacity of 200,000 units.
  - (ii) The demand of AX for the first year is expected to be 180,000 units which would increase by 10% per annum in year 2 and 3. However, in year 4 the demand is expected to decline by 10%.
  - (iii) The contribution margin for the first year is estimated at Rs. 100 per unit which is expected to increase by 5% each year.
  - (iv) The new plant would be installed at VL's premises which are presently rented out at Rs. 1.8 million per annum. As per the terms of rent agreement, the rent is received in advance and is subject to 7% increase per annum.
  - (v) Working capital of Rs. 10 million would be required at the commencement of the project. Working capital is expected to increase by 10% each year.
  - (vi) The new plant would be depreciated at the rate of 25% under the reducing balance method. Tax depreciation is to be calculated on the same basis. The residual value of the plant at the end of useful life is expected to be equal to its carrying value.
  - (vii) VL's cost of capital is 10%.
  - (viii) Tax rate is 30% and is paid in the year in which the tax liability arises.

**Required:**

On the basis of net present value, advise whether VL should invest in the above project. *(Assume that except stated otherwise, all cash flows would arise at the end of year)* (17)

- Q.3 Washington Limited (WL) is a listed company having paid-up capital of Rs. 140 million. WL deals in the manufacturing of washing machines. Following are the extracts from the budgeted statement of profit or loss for the year ending 31 December 2018:

	<b>Rs. in '000</b>
Sales revenue (Rs. 10,000 per unit)	168,000
Cost of goods sold (including fixed cost of Rs. 21.2 million)	(127,000)
Gross profit	41,000
Operating expenses (including fixed cost of Rs. 4.5 million)	(16,000)
Profit before taxation	25,000
Taxation @ 30%	(7,500)
Profit after taxation	<b>17,500</b>

**Additional information:**

- (i) An analysis of actual results for the first two months of the year 2018 shows that:
  - Due to change in import duty structure, imported products have become available in the market at much cheaper prices. Consequently, it was decided to reduce the selling price to Rs. 9,500 per unit with effect from 1 January 2018.
  - 1,500 washing machines were sold during the period.
  - Due to increase in raw material prices with effect from 1 January 2018, variable cost of sales has increased by 5%.
- (ii) To boost the sales, WL has decided to launch a promotion campaign at an estimated cost of Rs. 5 million.
- (iii) The directors of WL wish to pay 5% dividend to its ordinary shareholders. However, according to the agreement with the bank, WL cannot pay dividend exceeding 80% of its profit after taxation.

**Required:**

Calculate the minimum number of units to be sold in remaining 10 months to enable WL to pay the desired dividend. (10)

Q.4 RI Limited (RIL) is engaged in the manufacturing of spare parts for industrial machines. RIL receives bulk orders from its customers and follows job order costing. Following data pertains to two of the jobs which were started in the month of February 2018:

	Job F01	Job F02
Size of job order (Units)	5,400	3,600
Labour hours used	27,500	21,600
Labour rate per hour	Rs. 360	Rs. 400

- (ii) Each unit of both jobs require 24 kg of raw material S40. Purchase price of S40 was Rs. 30 per kg.
- (iii) The inventory of S40 at beginning and end of the month was Rs. 2,940,000 and Rs. 1,740,000 respectively.
- (iv) Wages were paid on 28 February 2018. Income tax withheld from the wages amounted to Rs. 500,000 which would be deposited in government treasury in the following month.
- (v) Job F01 was in process at month-end. However, Job F02 was completed during the month of February and finished goods were sent to warehouse. During the delivery to the customer, 500 units were damaged badly and their realisable value is 50% of the cost.

Total labour hours utilized during the month were 100,000. Factory overheads are applied at Rs. 120 per direct labour hour. Under/over applied factory overheads are charged to cost of sales at month-end. Total actual factory overheads amounted to Rs. 11,000,000, out of which 40% were fixed.

**Required:**

Prepare journal entries to record the transactions for the month of February 2018. (13)

Q.5 MZ Limited (MZL) manufactures a single product X and uses standard marginal costing system. The standard cost card of product X is as follows:

	Rupees
Raw material (13 kg @ Rs. 135 per kg)	1,755
Labour (14 hours @ Rs. 100 per hour)	1,400
Variable production overheads (Rs. 75 per labour hour)	1,050

Following data is available in respect of operations for the month of February 2018:

- (i) 55,000 units were put into process. 1,500 units were lost in process which were considered to be normal loss. Process losses occur at the end of the process.
- (ii) 698,000 kg of material was purchased at Rs. 145 per kg. Material is added at the start of the process and conversion costs are incurred evenly throughout the process.
- (iii) 755,000 labour hours were worked during the month. However, due to certain labour related issues, wages were paid at Rs. 115 per hour.
- (iv) Fixed production overheads are budgeted at Rs. 40 million for the month of February 2018. Total actual production overheads amounted to Rs. 95 million. Actual fixed production overheads exceeded budgeted fixed overheads by Rs. 1.1 million.
- (v) Inventory balances were as under:

	01 February 2018	28 February 2018
Raw material (kg)	15,000	17,000
Work in process (units)	5,000 (60% converted)	6,000 (80% converted)
Finished goods (units)	10,000	12,000

- (vi) MZL uses FIFO method for valuing the inventories.

**Required:**

Compute material, labour and overhead variances. (14)



- Q.6 Khan Limited (KL) imports and sells a product 'AA'. KL is faced with a situation where lead time is mostly predictable i.e. 1 month but lead time usage varies quite significantly. Data collected for past three years shows that probability for lead time usage is as follows:

No. of units demanded during lead time	Probability of demand during lead time (%)
1,000	30
660	50
450	20

Other relevant information is as follows:

- (i) Annual demand is 8,640 units.
- (ii) Contribution margin is Rs. 40 per unit.
- (iii) Purchase orders are raised on the basis of economic order quantity model. Annual holding cost is Rs. 100 per unit whereas average cost of placing an order is Rs. 6,750.

**Required:**

Determine at which of the following re-order levels, KL's profit would be maximised:

- 1,000 units
- 450 units
- Expected demand during lead time

(17)

- Q.7 Sadiq Limited (SL) is in the process of preparation of budget for the year ending 31 December 2018. Following are the extracts from the statement of profit or loss for the year ended 31 December 2017:

	Rs. in million
Sales (30% cash sales)	7,500
Cost of goods sold	(4,000)
Gross profit	3,500
Operating expenses	(1,250)
<b>Net profit before tax</b>	<b>2,250</b>

Raw material inventory as on 1 January 2017 amounted to Rs. 152 million. There were no opening and closing inventories of work in process and finished goods. SL follows FIFO method for valuation of inventories.

Following are the projections to be used in the preparation of the budget:

- (i) Selling price would be reduced by 5%. Further, credit period offered to customers would be reduced from 45 days to 30 days. As a result, volumes of cash and credit sales are expected to increase by 10% and 5% respectively.
- (ii) Ratio of manufacturing cost was 5:3:2 for raw material, direct labour and factory overheads respectively.
- (iii) All operating expenses and 20% of factory overheads are fixed. Total depreciation for the year 2017 amounted to Rs. 100 million and was apportioned between manufacturing cost and operating expenses in the ratio of 7:3. Depreciation for the next year would remain the same.
- (iv) Raw material inventory would be maintained at 30 days of consumption. Up to 31 December 2017, it was maintained at 45 days of consumption.
- (v) Raw material prices and direct labour rate would increase by 10% and 6% respectively.
- (vi) Impact of inflation on all other costs would be 5%.
- (vii) The existing policy of payment to raw material suppliers in 30 days is to be changed to 15 days. Other costs are to be paid in the month of incurrence.

**Required:**

Compute the budgeted net cash inflows/(outflows) for the year ending 31 December 2018. *(Assume there are 360 days in a year)*

(16)

(THE END)



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**Ans.1 Sarwar Limited**

		K2	K9	A-1
		----- Rs. per unit -----		
Selling price	<i>Given</i>	16,500.00	26,000.00	35,000.00
Variable cost		12,375.00 (6,000+4,500+1,875)	18,625.00 (8,000+7,500+3,125)	23,270.00 (W-1)
Contribution per unit	<b>A</b>	<b>4,125.00</b>	<b>7,375.00</b>	<b>11,730.00</b>
Labour hours required per unit	<b>B</b>	<b>15</b> (4,500/300)	<b>25</b> (7,500/300)	<b>35</b> <i>Given</i>
CM per labour hour (Rs.)	<b>A/B</b>	<b>275.00</b>	<b>295.00</b>	<b>335.14</b>
Ranking		<b>3</b>	<b>2</b>	<b>1</b>
Allocation of 300,000 hours	<b>C</b>	-	<b>195,000</b> (300,000-105,000)	<b>105,000</b> (35×3,000)
Units to be produced	<b>C/B</b>	-	<b>7,800.00</b>	<b>3,000.00</b>
<b>Contribution margin for the month after accepting special contract</b>				<b>Rs. in million</b>
A-1			(3,000×11,730)	35.19
K-9			(7,800×7,375)	57.53
Contribution margin				92.72
Fixed cost			(1,500/15)×300,000	30.00
<b>Maximum profit</b>				<b>62.72</b>

<b>W-1: Relevant cost for A-1</b>	<b>Rs. per unit</b>
Material cost - B1	(3×2,500) 7,500.00
Material cost - C3	(2,400,000/3,000) 800.00
Labour cost	(35×300) 10,500.00
Variable overheads	[(1875÷(4,500-300))×35] 4,375.00
Machine hire cost	[Lower of (57,000×5) and {900,000- (20,000×25)}] / 3,000 95.00
<b>Variable cost per unit of A-1</b>	<b>23,270.00</b>

**Ans.2 (a)** Investment and speculation are similar in that they both involve an investor to take risk in the expectation of making a profit. However, following are the main differences between investment and speculation:

	<b>Investment</b>	<b>Speculation</b>
(i)	Normally investments are made for long-term period.	Speculation is often made on short term basis.
(ii)	Attitude of investor in investment is usually risk neutral.	Speculation always involves high risk.
(iii)	Investment usually involves putting money into an asset that isn't typically marketable in the short term. The objective is to yield a series of returns over the life of the investment.	Speculators often invest in more marketable assets as they do not plan to own them for long time.
(iv)	Investors build their strategy based on the expectation that a certain price movement or income stream will occur.	Speculators normally expect some kind of change without necessarily knowing what.
(v)	There is a low to moderate risk involved in investment.	Risk is usually moderate to high in speculation.
(vi)	Investment involves moderate returns due to low to moderate risk.	Speculation involves high returns in exchange for high risks.

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(b) Valika Limited  
Introduction of new product - AX

	Year 0	Year 1	Year 2	Year 3	Year 4
	----- Rs. in million -----				
Contribution margin (W-1)	-	18.00	20.79	22.05	22.69
Tax/Accounting depreciation (50×0.25, 0.75)	-	(12.50)	(9.38)	(7.04)	(5.28)
Net profit before tax	-	5.50	11.41	15.01	17.41
Tax liability @ 30%	-	(1.65)	(3.42)	(4.50)	(5.22)
Net profit after tax	-	3.85	7.99	10.51	12.19
Add back depreciation	-	12.50	9.38	7.04	5.28
Rent income lost 1.8×1.07	(1.93)	(2.07)	(2.21)	(2.36)	-
Tax saved on rent income 1.93×30%		0.58	0.62	0.66	0.71
Residual value receipts (50–34.2 Total dep.)					15.80
Initial investment	(50.00)	-	-	-	-
Working capital (W-2)	(10.00)	(1.00)	(1.10)	(1.21)	13.31
Net cash (outflows)/inflows	(61.93)	13.86	14.68	14.64	47.29
Discount rate @ 10%	1.0000	0.9091	0.8264	0.7513	0.6830
Present value	(61.93)	12.60	12.13	10.99	32.29
Net present value					<b>6.08</b>

Opinion: VL's should start production of AX.

W-1: Annual contribution margin	Year 1	Year 2	Year 3	Year 4
Contribution margin per unit (Rs.) A	100.00 100	105.00 100×1.05	110.25 105×1.05	115.76 110.25×1.05
Annual demand (Units)	180,000	198,000 180,000×1.10	217,800 198,000×1.10	196,020 217,800×90%
Production - Restricted to capacity (Units) (Up to 200,000 units p.a)B	180,000	198,000	200,000	196,020
Annual CM (Rs. in million) (A×B)	18.00	20.79	22.05	22.69

W-2: Working capital requirement	Year 1	Year 2	Year 3	
Working capital current year	11.00 10×1.1	12.10 11×1.1	13.31 12.10×1.1	
Working capital last year	10.00	11.00	12.10	
(Increase)/Decrease	(1.00)	(1.10)	(1.21)	13.31

Ans.3 Washington Limited

		Rupees
Dividend needs to pay	140,000,000×5%	7,000,000
Profit after tax (required)	(7,000,000÷0.8)	8,750,000
<b>Required contribution margin in remaining 10 months</b>		
Profit before tax (required)	8,750,000 /70%	12,500,000
Add: Fixed cost (Jan - Dec)	(21,200,000+4,500,000)	25,700,000
Add: Promotion campaign	Given	5,000,000
Contribution margin required		43,200,000
Contribution margin recovered in 1st two months	(W-1)	(3,304,464)
<b>Required contribution in remaining 10 months</b>		<b>39,895,536</b>
Forecasted sales revenue to earn in next 10 months	39,895,536/23.19%(W-1)	Rs. 172,037,670
Number of units to be sold	172,037,670/9,500	18,109
<b>W-1: Actual results of first two months of 2018</b>		
Sales	1,500×9,500	14,250,000.00
Variable manufacturing cost	(127,000,000–21,200,000)/ *16,800×1.05×1,500	9,918,750.00
Variable operating cost	(16,000,000–4,500,000)/16,800×1,500	1,026,785.71
Contribution margin		<b>3,304,464.29</b>
Contribution margin %		<b>23.19%</b>
*Budgeted number of units to be sold	168,000,000/10,000	16,800

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**Ans.4 RI Limited**  
**Journal entries**

Date	Particulars	Debit	Credit
		----- Rs. in '000 -----	
1	Purchases - Raw material (W-1)	5,280	
	Supplier/cash <i>(Purchased raw material)</i>		5,280
2	Work in process (F01) (W-1)	3,888	
	Work in process (F02) (W-1)	2,592	
	Raw material <i>(Allocated raw material consumed to the jobs)</i>		6,480
3	Work in process (F01) (27,500×360)	9,900	
	Work in process (F02) (21,600×400)	8,640	
	Payroll <i>(Allocated direct labour to the jobs)</i>		18,540
4	Payroll	18,540	
	Accrued payroll tax		500
	Bank/Cash <i>(Paid of payroll)</i>		18,040
5	Work in process (F01) (27,500×120)	3,300	
	Work in process (F02) (21,600×120)	2,592	
	Factory overheads applied <i>(Applied factory overheads to the jobs @ Rs. 120 per direct labour hour)</i>		5,892
6	Finished goods (2,592+8,640+2,592)	13,824	
	Work in process (F02) <i>(Transferred WIP of job F02 to finished goods)</i>		13,824
7	Damaged goods (at NRV) (13,824/3,600×500×50%)	960	
	Abnormal loss - P&L (13,824/3,600×500×50%)	960	
	Finished goods <i>(Recorded 500 damaged units)</i>		1,920
8	Cost of sales (13,824-1,920)	11,904	
	Finished goods <i>(Transferred total finished goods to cost of sales)</i>		11,904
9	Factory overheads applied (100,000×120)	12,000	
	Cost of sales (overhead over applied)		1,000
	Factory overheads control <i>(Transferred applied factory overheads to control a/c and charged under applied overheads to cost of sales)</i>		11,000
10	Factory overheads control	11,000	
	Cash/suppliers <i>(Recorded actual factory overheads incurred)</i>		11,000

W-1:		Rs. in '000
Material consumption - F01	(5,400×24×30)	3,888.00
Material consumption - F02	(3,600×24×30)	2,592.00
Add: Closing stock of raw material	<i>Given</i>	1,740.00
Less: Opening stock of raw material	<i>Given</i>	(2,940.00)
Purchases - Raw material		<b>5,280.00</b>

**Ans.5 MZ Limited**

Material, labour, overhead variances		Rs. in '000
<b>Cost variances under marginal costing</b>		
Material price variance	[(135-145)×698,000]	Adv. (6,980.00)
Material usage variance	{(53,500(W.3)×13)- 696,000(W.1)}×135	Adv. (67.50)
Labour rate variance	(100-115)×755,000	Adv. (11,325.00)
Labour efficiency variance	{(14×54,300)(W.3)-755,000}×100	Fav. 520.00
Variable overheads expenditure variance	(755,000×75)-Rs. 53,900,000(W.4)	Fav. 2,725.00
Variable overheads efficiency variance	{(54,300(W.3)×14)-755,000}×75	Fav. 390.00
Fixed overhead expenditure variance	(40,000-41,100) (W.4)	Adv. (1,100.00)



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**W-1:**

Actual material usage (kg)	(698,000+15,000-17,000)	696,000.00
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<b>W-2: Quantity schedule</b>	<b>Units</b>
WIP (opening)	5,000.00
Units started	55,000.00
Total units in production	60,000.00
Normal loss	(1,500.00)
WIP (End)	(6,000.00)
<b>Finished goods/Transferred out</b>	<b>52,500.00</b>

**W-3: Equivalent production units**

	<b>Material</b>	<b>Conversion cost</b>
	----- Units -----	
Finished goods/Transferred out (W-2)	52,500.00	52,500.00
Less: WIP (Opening)	(5,000.00)	(5,000.00)
<b>Started and finished in this period</b>	<b>47,500.00</b>	<b>47,500.00</b>
Add: WIP (Opening)	(5,000×40%)	-
Add: WIP (Closing)	(6,000×80%)	6,000.00
<b>Equivalent production units</b>	<b>53,500.00</b>	<b>54,300.00</b>

**W-4: Actual variable and fixed overheads**

		<b>Rs. in '000</b>
Budgeted fixed overheads	<i>Given</i>	40,000.00
Actual fixed overheads exceeded applied overheads	<i>Given</i>	1,100.00
Actual fixed overheads		41,100.00
Less: Total actual variable and fixed overheads	<i>Given</i>	95,000.00
Actual variable overheads		<b>53,900.00</b>

Ans.6

Reorder level (Units)	Demand level (Units)	Stock out per order (Units)	Stock out per year (Units)	Stock out cost (Rs.)	Average inventory (Units)	Holding cost (Rs.)	Probability	Expected total cost (Rs.)
a	b	c	d= c×8(W-2)	e=d×40	$g = \frac{a-b+EOQ(W-1)}{2}$	h=g×100	i	j=(h+e)×i
1,000	1,000	-	-	-	540	54,000	30%	16,200
	660	-	-	-	880	88,000	50%	44,000
	450	-	-	-	1,090	109,000	20%	21,800
								<b>82,000</b>
450	1,000	550	4,400	176,000	540	54,000	30%	69,000
	660	210	1,680	67,200	540	54,000	50%	60,600
	450	-	-	-	540	54,000	20%	10,800
								<b>140,400</b>
720 (W-3)	1,000	280	2,240	89,600	540	54,000	30%	43,080
	660	-	-	-	600	60,000	50%	30,000
	450	-	-	-	810	81,000	20%	16,200
								<b>89,280</b>

**Conclusion:** Profit would be maximised at re-order level of 1,000 units.

	<b>Rupees</b>
W-1: $EOQ (Units) = \sqrt{2 \times 8,640 \times 6,750 / 100}$	1,080.00
W-2: No. of orders (8,640/1,080)	8.00
W-3: Expected value	(1,000×30%)+(660×50%)+(450×20%)
	720.00

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Ans.7 SL

Budgeted cash inflows / (outflows) for the next year

Inflows		Rs. in million
Cash sales	$(7,500 \times 30\%) \times 1.1 \times 95\% - A$	2,351.25
Budgeted credit sales 2018	$(7,500 \times 70\%) \times 95\% \times 1.05$	5,236.88
Trade debtor (Opening)	$(7,500 \times 70\%) \times (45/360)$	656.25
Trade debtor (Closing)	$5,236.88 \times 30/360$	(436.41)
Collections from debtors	B	5,456.72
<b>Total inflows</b>	A+B	<b>7,807.97</b>

Outflows		
Payment to suppliers	(W-1)	2,343.78
Direct labour	$4,000 \times \{(70\% \times 1.05) + (30\% \times 1.1)\} \times 30\% \times 1.06$	1,354.68
Variable factory overheads	$4,000 \times \{(70\% \times 1.05) + (30\% \times 1.1)\} \times \{(20\% - (20\% \times 20\%))\} \times 1.05$	715.68
Fixed factory overheads	$[\{4,000 \times (20\% \times 20\%)\} - \{(100 \times 70\%)\}] \times 1.05$	94.50
Operating expenses	$\{1,250 - (100 \times 30\%)\} \times 1.05$	1,281.00
<b>Total outflows</b>		<b>5,789.64</b>
<b>Net cash inflows</b>		<b>2,018.33</b>

**W-1: Payments to material suppliers**

Consumption of raw material 2018 at 2017 price	$(4,000 \times 50\%) \times \{(70\% \times 1.05) + (30\% \times 1.1)\}$	2,130.00
Opening raw material at 2017 price	$(4,000 \times 50\%) \times (45/360)$	(250.00)
Closing raw material at 2017 price	$2,130 \times 30/360$	177.50
<b>Purchases of 2018 at 2017 price</b>		<b>2,057.50</b>
Purchases of 2018 – at increased price	$2,057.50 \times 1.1$	2,263.25
Trade creditor (Opening)	$2,098(W-2) \times 30/360$	174.83
Trade creditor (Closing)	$2,263.25 \times 15/360$	(94.30)
<b>Payment to suppliers</b>		<b>2,343.78</b>

**W-2: Purchases 2017**

Consumption of raw material 2017	$4,000 \times 50\%$	2,000.00
Opening raw material	Given	(152.00)
Closing raw material	(W-1)	250.00
<b>Purchases 2017</b>		<b>2,098.00</b>

(THE END)

<b>THE INSTITUTE OF CHARTERED ACCOUNTANTS OF PAKISTAN</b>	
<b>EXAMINERS' COMMENTS</b>	
<b>SUBJECT</b> Cost and Management Accounting	<b>SESSION</b> Certificate in Accounting and Finance – Spring 2018

**General:**

The overall performance was good as 54% of the candidates secured passing marks. However, performance in the question on inventory management was very poor. An area of concern was the students' presentation as in many cases the calculations were performed without any description and it was left to the examiner to understand what is being done. In many cases, this results in loss of marks. Moreover, probably due to lack of practice, many students used lengthy steps to perform simple calculations where shorter alternate methods were available.

**Question-wise comments:****Question 1**

Very good performance was witnessed in this question as 76% candidates secured passing marks and about 40% of the candidates secured full marks. However, some students didn't calculate correct contribution margin as they took fixed cost into consideration. Moreover, many students were confused in calculation of machine hire cost. Further, some students lost easy marks by leaving the question after calculating the units to be produced and did not compute the amount of maximum profit

**Question 2(a)**

Below average response was observed on this part of the question as students were not generally aware of the difference between speculation and investment and applied guesswork. They are advised to seek guidance from ICAP's suggested answer.

**Question 2(b)**

This part was very well attempted and nearly all students secured passing marks and a large number of candidates obtained full marks. Only few mistakes were observed which are listed below:

- In year 3, production should have been restricted to 200,000. This instruction was ignored.
- Impact of rent was taken from year 1 instead of Year 0.
- Tax on rent was ignored.
- Total working capital was included in outflows in year1 to 4 instead of increase in working capital.



**Question 3**

Performance in this question remained below average as only 32% of the candidates secured passing marks. The common mistakes were as under:

- The required profit was calculated as 20% above the required dividend of Rs. 7 million instead of Rs. 7 million / 80%. Many students didn't compute profit after tax by grossing up the dividend and instead, simply added dividend to the required contribution margin.
- The required profit before tax was calculated as 30% above the required profit after tax instead of dividing profit after tax by 0.7 or 70%.
- Only the fixed cost relating to cost of goods sold was considered in the computation of required contribution margin. Fixed costs included in operating expenses and cost of promotion campaign was ignored.
- Contribution margin percentage was computed on the basis of budgeted statement of profit or loss i.e. the impact of revision in sale price and/or 5% increase in variable cost was ignored.
- About 26% of the candidates did not have any clue and scored one or less marks.

**Question 4**

Below average response was observed in this question as well, as students were not very well prepared for this type of questions which required passing of journal entries under job order costing. As a result, about 18% of the candidates secured one or less mark. The common mistakes were as under:

- Raw material purchased was considered equal to raw material consumed.
- Raw material consumed account was debited instead of work-in-process / job accounts.
- Entry to record payroll was ignored.
- Factory overheads were debited to the jobs on the basis of actual factory overheads instead of applied factory overheads, using labour hours for the purpose of allocation thereof. Majority of the candidates were unaware of the Factory Overhead Control account.
- Entry to record transfer of finished goods to cost of sales was missed.
- Entry to record damaged goods / abnormal loss was either ignored or passed incorrectly.
- Realisable value of damaged goods was ignored or credited to other income.

**Question 5**

The performance in this question was good as 63% of the candidates secured passing marks. However, about 16% of the candidates obtained 2 or less marks. These students were even unable to determine the equivalent production units and actual fixed and variable overheads. The other most common mistakes were as follows:

- Finished goods produced were taken in the calculation of variances instead of equivalent units produced.
- Material purchase was used for calculating material usage variance.
- One combined overhead variance was calculated and further bifurcation was not done.
- It was not stated whether the calculated variance was favourable or unfavourable.

**Question 6**

The requirement in this question was to calculate the expected total cost of holding the inventory and stock out costs at different levels to determine the best re-ordering level. The performance in this question was very pathetic as only 3% of the candidates secured passing marks. About 21% of the candidates were totally clueless and obtained on or less mark. A further 69% of the candidates remained restricted to the calculation of EOQ, number of orders, holding costs and and expected demand during lead time and did not have any understanding of the concept of re-order level and stock out cost.

**Question 7**

The overall performance in this question on cash flows was average as 42% of the candidates obtained passing marks. but due to length of the question, many students couldn't attempt completely, but those who did achieved passing marks. Following mistakes were observed in this question were:

- Majority of the candidates failed to understand how to compute the impact of increase in sales volume on cost of raw material, labour and variable factory overheads or followed very lengthy methods which resulted in loss of time resulting in time pressure on questions attempted afterwards.
- Factory overheads were 20% of cost of sales and fixed overheads were 20% of the total overheads. Hence, variable overheads were 16% of cost of sales. Most of the candidates did not seem to understand this point.
- Fixed cost was deducted from variable cost before bifurcating into Material Labour and Variable overhead which was not required.
- Depreciation was not excluded for computing payment of fixed overheads and consequently failed to complete failure. Few of the students were unable to calculate Raw material purchase of 2017.

*THE END*



**Cost and Management Accounting**  
 Summary of Marking Key  
 Certificate in Accounting and Finance – Spring 2018

**Note regarding marking scheme:**

The marking scheme is given as a guide. Markers also award marks for alternative approaches to a question and relevant/well-reasoned comments/explanations. Moreover, the available marks in answer may exceed the total marks of a question.

		Mark(s)
A.1	▪ Computation of:	
	– contribution margin of each product	3.5
	– ranking on the basis of limiting factor i.e. labour hours	3.5
	– labour hours to be utilised and units to be produced	2.0
▪ Determination of maximum profit		1.0
A.2	(a) 01 mark for discussing each difference between investment and speculation	3.0
(b)	▪ Computation of:	
	– contribution margin	4.0
	– depreciation and its impact	2.5
	– taxation	2.0
	– initial investment and residual value receipts	1.0
	– incremental working capital and its recovery	2.5
	– rent income lost	2.0
	– net present value of cash flows	2.5
▪ Conclusion		0.5
A.3	Computation of:	
▪	required dividend	0.5
▪	required profit after tax and before tax	2.5
▪	contribution margin required	1.0
▪	actual contribution margin earned in first two months and required contribution margin in remaining 10 months	4.5
▪	required sales revenue to be earned in next 10 months and number of units required to be sold	1.5
A.4	Prepare accounting entries to record:	
▪	purchase of raw material and issuance to production	3.5
▪	charging of payroll to production and payment of payroll	2.5
▪	charging of overheads to production and payment of actual overheads	1.5
▪	under/over applied overheads	1.5
▪	transferring of goods from work in process to finished goods	1.5
▪	damaged goods	1.5
▪	transferring of goods from finished goods to cost of sales	1.0
A.5	▪ Preparation of quantity schedule and equivalent production units	2.5
	▪ Computation of actual material usage	1.0
	▪ Computation of actual fixed and variable overheads	1.5
	▪ Up to 1.5 marks for each relevant material, labour and overheads variance	9.0



**Cost and Management Accounting**  
 Summary of Marking Key  
 Certificate in Accounting and Finance – Spring 2018

		Mark(s)
A.6	▪ Computation of economic order quantity, number of orders and expected value of demand	3.5
	▪ Comparison of each re-order level with demand levels during lead time	1.5
	▪ Computation of:	
	– stock out and its cost	3.5
	– average inventory	4.0
	– holding cost	2.0
	– expected total cost	2.0
	▪ Conclusion	0.5
A.7	Computation of:	
	▪ cash sales	1.0
	▪ credit sales and collection from debtors	3.0
	▪ purchases	4.5
	▪ payment to suppliers	2.0
	▪ payment to labour, factory overheads and operating expenses	5.5

(THE END)



The Institute of  
Chartered Accountants  
of Pakistan

**Certificate in Accounting and Finance Stage Examination**

6 September 2018  
3 hours – 100 marks  
Additional reading time – 15 minutes

**Cost and Management Accounting**

- Q.1 Cricket Chemicals Limited (CCL) is a manufacturing concern and has two production processes. Process I produces two joint products i.e. X-1 and X-2. Incidental to the production of joint products, it produces a by-product known as Zee. X-1 is further processed in process II and converted into 'X1-Plus'.

Following information has been extracted from the budget for the year ending 31 August 2019:

- (i) Process wise budgeted cost:

	Process I	Process II
	----- Rupees -----	
Direct material (500,000 liters)	98,750,000	-
Conversion cost	72,610,000	19,100,000

- (ii) Expected output ratio from process I and budgeted selling prices:

Products	Output ratio in process I	Selling price (Rs. per liter)
Joint product – X-1	55%	-
Joint product – X-2	40%	532
By-product – Zee	5%	120
X1-Plus	-	768

**Additional information:**

- (i) Material is added at the beginning of the process and CCL uses 'weighted average method' for inventory valuation.
- (ii) Joint costs are allocated on the basis of net realizable value of the joint products at the split-off point. Proceeds from the sale of by-product are treated as reduction in joint costs.
- (iii) Joint product X-2 is sold after incurring packing cost of Rs. 75 per liter.
- (iv) Normal production loss in process I is estimated at 5% of the input which occurs at beginning of the process. Loss of each liter results in a solid waste of 0.7 kg which is sold for Rs. 10 per kg. No loss occurs during process II.
- (v) Budgeted conversion cost of process I and process II include fixed factory overheads amounting to Rs. 7,261,000 and Rs. 3,820,000 respectively.

**Required:**

- (a) Prepare product wise budgeted income statement for the year ending 31 August 2019, under marginal costing. (14)
- (b) CCL has recently received an offer from Football Industries Limited (FIL) to purchase the entire expected output of X-1 during the year ending 31 August 2019 at Rs. 670 per liter. It is estimated that if process II is not carried out, fixed costs associated with it would reduce by Rs. 2,500,000. Advise whether FIL's offer may be accepted. (02)

- Q.2 Basketball (Private) Limited (BPL) is in the process of planning for the next year. BPL is currently operating at 70% of the production capacity. The management wants to achieve an increase of Rs. 36 million in profit after tax of the latest year.

The summarized statement of profit or loss for the latest year is as follows:

	Rs. in million
Sales	567
Cost of sales (60% variable)	(400)
Gross profit	167
Operating expenses (40% variable)	(47)
Profit before tax	120
Tax (25%)	(30)
Profit after tax	90

Following are the major assumptions/projections for the next year's budget:

- (i) Selling price of all products would be increased by 8%. However, to avoid any adverse impact of price increase, 10% discount would be offered to the large customers who purchase about 30% of the total sales. Additionally, distributor commission would be increased from 2% to 3% of net selling price.
- (ii) Average variable costs other than distributor commission are projected to increase by 4% while fixed costs other than depreciation are projected to increase by 5%.
- (iii) Depreciation for the latest year was Rs. 90 million and would remain constant.

**Required:**

- (a) Compute the amount of sales required to achieve the target profit. (09)
- (b) Determine the production capacity that would be utilized to achieve the sales as computed in (a) above. (02)

- Q.3 Snooker (Private) Limited (SNPL) manufactures a component 'Beta' which is used as input for many products. The current requirement of Beta is 18,000 units per annum. Current production cost of Beta is as follows:

	Rs. per unit
Direct material	3,670
Direct labour	1,040
Variable manufacturing overheads	770
Fixed manufacturing overheads	870
Total cost	<b>6,350</b>

A supplier has recently offered SNPL to supply Beta at Rs. 7,000 per unit. The management has nominated a team to evaluate the offer which has gathered the following information:

- (i) There is a shortage of labour. However, some of the labour would become available due to outsourcing of Beta, which would be utilized for production of a product 'Zee'. The estimated selling price of Zee is Rs. 5,800 per unit whereas production cost would be as follows:
  - Direct material would cost Rs. 2,600 per unit.
  - Each unit of Zee would require 20% more labour as compared to each unit of Beta.
  - Estimated variable manufacturing overheads would be Rs. 480 per unit.
- (ii) Outsourcing of Beta and production of Zee would result in net reduction in fixed manufacturing overheads by Rs. 1,900,000 per annum.

**Required:**

- Advise SNPL whether it should outsource component Beta or not. (09)



- Q.4 Hockey Pakistan Limited (HPL) is engaged in the manufacturing of a single product 'H-2' which requires a chemical 'AT'. Presently, HPL follows a policy of placing bulk order of 60,000 kg of AT. However, HPL's management is presently considering to adopt economic order quantity model (EOQ) for determining the size of purchase order of AT.

Following information is available in this regard:

- (i) Average annual production of H-2 is 45,600 units. Production is evenly distributed throughout the year.
- (ii) Each unit of H-2 requires 10 kg of AT. Cost of AT is Rs. 200 per kg. 5% of the quantity purchased is lost during storage.
- (iii) Annual cost of procurement department is Rs. 2,688,000. 65% of the cost is variable.
- (iv) AT is stored in a third party warehouse at a cost of Rs. 6.25 per kg per month.
- (v) HPL's cost of financing is 8% per annum.

**Required:**

- (a) Calculate economic order quantity. (06)
  - (b) Supplier of AT has offered a discount of 5% quantity per order is increased to 120,000 kg. Advise whether HPL should accept the offer. (06)
  - (c) Discuss any **three** practical limitations of using the EOQ model. (03)
- Q.5 (a) Discuss any **three** advantages and **three** disadvantages if a project is financed through debt as against when it is financed through equity. (03)
- (b) Golf Limited (GL) is engaged in the manufacturing and sale of a single product 'Smart-X'. The existing manufacturing plant is being operated at full capacity but the production is not sufficient to meet the growing demand of Smart-X. GL is considering to replace it with a new Japanese plant. The production capacity of new plant would be 50% more than the existing capacity.

To assess the viability of this decision, the following information has been gathered:

- (i) The purchase and installation cost of new plant would be Rs. 500 million and Rs. 25 million respectively. The supplier would send a team of engineers to Pakistan for final inspection of the plant before it is commissioned. 50% of the total cost of Rs. 12 million to be incurred on the visit, would be borne by GL.
- (ii) As a result of installation of the new plant, fixed costs other than depreciation would increase by Rs. 30 million.
- (iii) The existing plant has an estimated life of 10 years and is in use for the last 6 years. Plant's tax carrying value is Rs. 50 million. A machine supplier has offered to purchase the existing plant immediately at Rs. 45 million.
- (iv) During the latest year, 6 million units were sold at an average selling price of Rs. 550 per unit. Variable manufacturing cost was Rs. 450 per unit. GL expects that it can increase the sales volume by 25% in the first year after the plant's installation. Thereafter, the sales volume would increase by 4% per annum.
- (v) The new plant would be depreciated under the straight line method. Tax depreciation is calculated on the same basis. The residual value of the plant at the end of its useful life of 4 years is estimated at Rs. 60 million.
- (vi) Applicable tax rate is 30% and tax is paid in the year in which the liability arises.
- (vii) Rate of inflation is estimated at 5% per annum and would affect the revenues as well as expenses.
- (viii) GL's cost of capital is 12%.
- (ix) All receipts and payments would arise at the end of the year except cost of setting up the plant which would arise at the beginning of the year. It may be assumed that the new plant would commence operations at the start of year 1.

**Required:**

On the basis of internal rate of return (IRR), advise whether GL should acquire the new plant. (17)

Q.6 Rugby Limited (RL) is engaged in manufacturing of a product 'B1'. Presently, RL is considering to launch a new product B1-Extra which has a demand of 10,000 units per month. The estimated selling price of B1-Extra is Rs. 2,000 per unit. Other relevant information is as follows:

- (i) Each unit of B1-Extra would require 2 kg of material X and 1.5 labour hours. Material X is available in the market at Rs. 520 per kg. Alternatively, instead of material X, RL can use 2.5 kg of a substitute material Y which can be produced internally. Production of each kg of Y would require raw material costing Rs. 300 and 0.5 labour hour.
- (ii) Presently, about 14,000 labour hours remain idle each month and are paid at the rate of 50% of the normal wage rate of Rs. 250 per hour and such payments are charged to administration expenses.
- (iii) Any shortfall in required labour hours can be met through overtime at the rate of 40% above the normal wage rate.
- (iv) Records of last 4 months show the following factory overheads (variable and fixed) at different levels of direct labour hours:

	Month 1	Month 2	Month 3	Month 4
<b>Direct labour (Hours)</b>	174,000	172,000	170,000	168,000
<b>Factory overheads (Rs. in '000)</b>	58,280	57,840	57,400	56,960

**Required:**

Calculate the expected relevant cost per unit of B1-Extra and determine the cost gap (if any) if RL requires a margin of 30%. (11)

Q.7 Tennis Trading Limited (TTL) was incorporated on 1 September 2018 and would start trading from the month of October 2018. As part of planning and budgeting process, the management has developed the following estimates:

- (i) During the month of September 2018, TTL would pay Rs. 5 million, Rs. 2 million and Rs. 1.2 million for purchase of a property, equipment and a motor vehicle respectively.
- (ii) Projected sales for October is Rs. 12 million. The sales would increase by Rs. 2.5 million per month till January 2019. From February 2019 and onwards, sales would be Rs. 25 million per month.
- (iii) Cash sales is estimated at 30% of the total sales.
- (iv) Credit customers are expected to pay within one month of the sales.
- (v) 80% of the credit sales would be generated by salesmen who would receive 5% commission on sales. The commission is payable in the following month after sales.
- (vi) Gross profit margin would be 30%.
- (vii) TTL would maintain inventory at 80% of the projected sale of the following month, up to December 2018 and thereafter, 85% of the projected sale of the following month. All purchases of inventories would be on two months' credit.
- (viii) Salaries would be Rs. 1.5 million in September and Rs. 2 million per month, thereafter. Other administrative expenses would be Rs. 1 million per month from September till January 2019 and Rs. 1.3 million per month thereafter. Both types of expenses would be paid in the same month in which they are incurred.
- (ix) An aggressive marketing scheme would be launched in September 2018. The related expenses are estimated at Rs. 7 million. 50% of the amount would be payable in September and 50% in October 2018.
- (x) Marketing expenses from October 2018 would consist of 65% variable and 35% fixed expenses. Total expenses in October 2018 would be Rs. 2 million. All expenses would be paid in the month in which they occur.
- (xi) Bank balance as of 1 September 2018 is Rs. 12 million. TTL has arranged a running finance facility from a local bank at a mark-up of 10% per annum. The mark-up is payable at the end of each month on the closing balance.

**Required:**

Prepare a cash forecast (month-wise) from September 2018 to February 2019. (18)

(THE END)



**Cost and Management Accounting**  
Suggested Answers  
Certificate in Accounting and Finance – Autumn 2018

**Note:**

The suggested answers are provided for the guidance of the students. However, there are alternative solution(s) to the questions which are also considered by the Examination Department while marking the answer scripts.

**A.1 Cricket Chemicals Limited**

**(a) Product wise budgeted income statement - (Marginal costing)**

		X1 - Plus	X2
		---- Rs. in million ----	
Sales	[768×261,250 (W-4)], [532×190,000(W-4)]	200.64	101.08
<b>Variable production cost:</b>			
Joint cost	(W-1)	(108.96)	(52.11)
Process II Conversion cost	(19.10m-3.82m)	(15.28)	-
Packing cost	(75×190,000)	-	(14.25)
<b>Budgeted contribution margin</b>		<b>76.40</b>	<b>34.72</b>
<b>Fixed cost:</b>			
Joint cost	(W-1)	(4.91)	(2.35)
Process II conversion cost		(3.82)	-
<b>Budgeted profit</b>		<b>67.67</b>	<b>32.37</b>
<b>Total budgeted profit</b>		<b>100.04</b>	

**W-1: Allocation of joint cost on the basis of NRV**

Joint products	NRV at split-off point (Rs. per unit) (A)	Production (Units) (B)	Total NRV (A×B)	Joint cost allocation on NRV basis (C)	Fixed cost (D)	Variable joint cost (C-D)
X1	694.89 768-73.11 (W-3)	261,250 (W-4)	181.54	113.87 (168.33×181.54 / 268.37)	4.91 (7.26×181.54 / 268.37)	108.96
X2	457.00 (532-75)	190,000 (W-4)	86.83	54.46 (168.33×86.83 / 268.37)	2.35 (7.26×86.83 / 268.37) (W-1)	52.11
			<b>268.37</b>	<b>(W-2)168.33</b>	<b>7.26</b>	<b>161.07</b>

**W-2: Joint cost - Process I**

	Rs. in million
Direct material	98.75
Conversion cost	72.61
Proceeds from By product - Zee	(23,750 (W-4)×120)
Proceeds from sale of normal loss	(25,000(W-4)×0.7kg×10)
<b>Total joint cost</b>	<b>168.33</b>

**W-3: Conversion cost - Process II (Rs. per unit)**

[19,100,000 / 261,250 (W-4)]

**73.11**

**W-4: Quantity schedule**

	Process I --- Liters ---
Input quantity	500,000
Joint product - X-1	(500,000-25,000)×55%
Joint product - X-2	(500,000-25,000)×40%
By product - Zee	(500,000-25,000)×5%
Normal loss	(500,000×5%)

**(b) Evaluation of offer from FIL**

	Rs. in million
Loss of revenue if offer is accepted {261,250 (W-4) ×(768-670)}	(25.60)
Variable cost saved in process-II (19.10m - 3.82m)	15.28
Fixed cost saved	2.50
<b>(Decrease)/Increase in budgeted profits</b>	<b>(7.82)</b>

**Conclusion:** Offer should not be accepted



**Cost and Management Accounting**  
Suggested Answers  
Certificate in Accounting and Finance – Autumn 2018

**A.2 Basketball Private Limited**

(a) **Budgeted sales to achieve target profit** [361.11m (W-1)/53.7%(W-2)] **Rs. in million**  
**672.46**

**W-1: Contribution margin required in next year**

Total existing fixed cost including depreciation	(400m×40%)+(47m×60%)	188.20
Add: Increase in fixed costs in next year	(188.2m-90m)×5%	4.91
Add: Target profit for the next year	(90m+36m)÷75%	168.00
<b>Total contribution margin required in next year</b>		<b>361.11</b>

**W-2: Budgeted Contribution margin (next year)**

Budgeted sales	[567m×1.08]	612.36
Less: Discount @ 10% on 30% of sales	[612.36m×10%×30%]	(18.37)
Net average sales		593.99
Less: Distributor commission on net average sales	[593.99m×3%]	(17.82)
Less: Variable cost	[247.46m (W-3)×1.04]	(257.36)
<b>Budgeted contribution margin</b>		<b>318.81</b>
<b>Budgeted contribution margin ratio</b>	(318.81m/593.99m)	<b>53.7%</b>

**W-3: Variable cost (existing)**

Distributor commission	(567m×2%)	11.34
Variable cost	[(400m×60%)+(47m×40%)]-11.34m	247.46

(b) Average increase in selling price  
(1.08×30%×90%)+(1.08×70%) OR [1.08-(1.08×10%×30%)] **A** **1.0476**

Capacity to be utilized during next year  
[(672.46m (part a)÷A) ÷ (567m÷70%)] **79.25%**

**A.3 Snooker Private Limited**

		<b>Rupees</b>
Additional cost of outsourcing of component Beta	<b>W-1</b>	(27,360,000)
Additional contribution from utilizing spare capacity by producing Zee	<b>W-2</b>	22,080,000
Net savings of fixed factory overheads		1,900,000
<b>Loss due to outsourcing</b>		<b>(3,380,000)</b>

**Opinion:** SNPL should not outsource the production of component X.

**W-1: Difference between cost of production and cost of outsourcing of component Beta**

		<b>Rupees</b>
Purchase cost	(18,000×7,000)	126,000,000
Variable production costs saved	[18,000×(3,670+1,040+770)]	98,640,000
Allocation of shared cost (irrelevant)	Ignore	-
<b>Additional cost of outsourcing component Beta</b>		<b>27,360,000</b>

**W-2: Profit from spare capacity - Production of Zee**

		<b>Rupees</b>
Sales revenue of Zee	[5,800×15,000 (W-3)]	87,000,000
Material	[(2,600×15,000 (W-3)]	(39,000,000)
Labour	(1,040×15,000 (W-3)×1.2)	(18,720,000)
Variable manufacturing overheads	(480×15,000)	(7,200,000)
<b>Profit from Zee</b>		<b>22,080,000</b>

**W-3: Production of Zee** (18,000÷1.2) **15,000**

**Cost and Management Accounting**  
Suggested Answers  
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**A.4 Hockey Limited - Economic Order Quantity**

**(a) Economic Order Quantity (Units to order)**

SQRT $[(2 \times \text{annual demand} \times \text{ordering cost}) \div \text{Holding cost per kg}]$		
SQRT $[(2 \times 480,000 \text{ (W-4)} \times 218,400 \text{ (W-1)} \div 91 \text{ (W.5)})]$		48,000.00
<b>W-1:</b> Ordering cost per order (Rs.)	$(1,747,200 \text{ (W-2)} \div 8 \text{ (W-3)})$	218,400
<b>W-2:</b> Purchase department cost - Variable cost (Rs.)	$2,688,000 \times 65\%$	1,747,200
<b>W-3:</b> Number of orders	$480,000 \text{ (W-4)} \div 60,000$	8
<b>W-4:</b> Annual Requirement of AT (kg)	$45,600 \times 10 / 95\%$	480,000

<b>W-5: Holding cost (Rs. per unit)</b>	<b>Rs. per unit</b>
Storage cost $(6.25 \text{ per kg per month} \times 12)$	75
Finance cost $200 \times 8\%$	16
<b>Total holding cost (Rs. per unit)</b>	<b>91</b>

**(b) Evaluation of discount offer from supplier of AT**

<b>Comparison of cost</b>		<b>EOQ</b>	<b>As per offer</b>
Annual Requirement of AT (kg)	A (W-4)	480,000	480,000
Order quantity (kg)	B (EOQ, Given)	48,000	120,000
Number of orders	C=A/B	10	4
Average inventory (kg)	D=B/2	24,000	60,000

		----- Rupees -----	
Ordering cost	$C \times 218,400 \text{ (W-1)}$	2,184,000	873,600
Holding cost	$D \times 91 \text{ (W-5)}; [D \times \{75 \text{ (W-5)} + (16 \text{ (W-5)} \times 95\%)\}]$	2,184,000	5,412,000
Purchase cost	$(200 \times 480,000); (200 \times 480,000 \times 95\%)$	96,000,000	91,200,000
<b>Total cost</b>		<b>100,368,000</b>	<b>97,485,600</b>

**Opinion:**

Offer from AT's supplier should be accepted as it would reduce the purchase cost.

**(c) The practical limitations/assumptions of EOQ are:**

- (i) The formula assumes that demand/usage is constant throughout the period. In practice, actual demand/usage may be uncertain and subject to seasonal variations.
- (ii) Holding cost per unit are assumed to be constant. Further, many holding costs are fixed throughout the period and not relevant to the model whereas some costs (e.g. store keepers' salaries) are fixed but change in steps.
- (iii) Purchasing cost per unit is assumed to be constant for all purchase quantities and is ignored while calculating order size in EOQ. In practice, quantity discounts can be available in case of bulk purchasing.
- (iv) The ordering costs are assumed to be constant per order placed. In practice, most of the ordering costs are fixed or subject to stepwise variation. It is therefore, difficult to estimate the incremental cost per order.



**Cost and Management Accounting**  
Suggested Answers  
Certificate in Accounting and Finance – Autumn 2018

**A.5 Golf Pakistan Limited**

**(a) Advantages of debt finance:**

- (i) Debt is a cheaper source of finance than equity because, unlike dividends, cost of debt attracts tax savings.
- (ii) Debt holders do not have any voting rights and therefore are not able to participate in the decision making process.
- (iii) Despite high profits, company only has to pay a fixed interest.
- (v) Low issuance cost as compared to equity.

**Disadvantages of debt finance:**

- (i) Company has to provide security against the debt.
- (ii) Even when there are losses or very low profits, fixed interest still has to be paid.
- (iii) In the case of non-payment of interest, the company may be placed on the defaulters list which may seriously affect the reputation of the company.
- (iv) The future borrowing capacity of the company would be reduced as there would be fewer assets to provide security for future loans.
- (v) Issuance of debt affects the risk profile of the company. Hence, as debt increases, incremental cost of borrowing also increases.

**(b) Golf Limited**

Descriptions	Year 0	Year 1	Year 2	Year 3	Year 4
	----- Rs. in million -----				
Incremental contribution margin (W-1)	-	157.50	198.45	244.25	295.37
Incremental fixed cost (30×1.05)	-	(30.00)	(31.50)	(33.08)	(34.73)
Tax depreciation [500+25+(12×50%)-60]×25%	-	(117.75)	(117.75)	(117.75)	(117.75)
Net profit / (loss) before tax	-	9.75	49.20	93.42	142.89
Tax @ 30%	-	(2.93)	(14.76)	(28.03)	(42.87)
Tax savings on loss of disposal of old plant (50m-45m)×30%	-	1.50	-	-	-
Net profit / (loss) after tax	-	8.32	34.44	65.39	100.02
Adding back depreciation (Non-cash item)	-	117.75	117.75	117.75	117.75
Initial investment [500m+25m+(12m×50%)-45m]	(486.00)	-	-	-	-
Receipts from residual value	-	-	-	-	60.00
Total cash (outflows) / inflows (A)	(486.00)	126.07	152.19	183.14	277.77
Discount factor at 12% (B)	1.0000	0.8929	0.7972	0.7118	0.6355
Present value (A×B)	(486.00)	112.57	121.33	130.36	176.52
Net present value at 12% NPVb	54.78				
Discount factor @ 18% (C)	1.0000	0.8475	0.7182	0.6086	0.5158
Present value (A×C)	(486.00)	106.84	109.30	111.46	143.27
Net present value at 18% NPVc	(15.13)				

$$IRR = B\% + [NPVb / (NPVb - NPVc) \times C\% - B\%] = 12\% + [54.78 / (54.78 - 15.13) \times \{18\% - 12\%}] = 17\%$$

**Conclusion:** Since IRR is higher than the GL's cost of capital existing plant should be replaced.

**W-1:**

Year 1	Year 2	Year 3	Year 4	
----- Units in million -----				
Production with new plant (6×1.25), (LY×1.04)	7.50	7.80	8.11	8.43
Production with old plant	6.00	6.00	6.00	6.00
Incremental production (A)	1.50	1.80	2.11	2.43
Contribution margin per unit (550-450)×1.05(B)	105.00	110.25	115.76	121.55
Incremental contribution margin (A×B)	157.50	198.45	244.25	295.37



**Cost and Management Accounting**  
Suggested Answers  
Certificate in Accounting and Finance – Autumn 2018

**A.6 Rugby Limited**

Cost gap per unit		Rs. per unit
Expected relevant cost per unit	(15,800,000/10,000)	1,580.00
Less: Target cost per unit	(2,000×70%)	1,400.00
<b>Cost gap</b>	<b>(1,580–1,400)</b>	<b>180.00</b>

**Relevant costs of producing B1-Extra**

		Rupees
Material cost	10,000×1,040(W-1)	10,400,000
Direct labour cost	(W-2)	2,100,000
Variable overheads	10,000×1.5×220(W-4)	3,300,000
<b>Total relevant cost</b>		<b>15,800,000</b>

**W-1: Decision to use X or Y**

		Rs. per unit of B1-Extra
<b>Cost of Y for each unit of B1-Extra</b>		
Material cost	(300×2.5)	750.00
Labour cost (Without overtime)	(250×50%)×(0.5×2.5)	156.25
Variable factory overheads	[(220(W-4)×0.5)×2.5]	275.00
Fixed (existing)	(Not relevant)	-
Cost of Y for each unit of B1-Extra		1,181.25
Cost of material X for each unit of B1-Extra	(520×2.0)(Given)	1,040.00
Extra cost on producing Y internally (Not feasible)		<b>141.25</b>

**W-2: Direct labour cost for B1-Extra**

		Rupees
Labour cost – hours	(14,000×250×50%)	1,750,000
Labour cost – overtime	(1,000(W-3)×1.4×250)	350,000
<b>Total direct labour cost</b>		<b>2,100,000</b>

**W-3: Overtime hours required**

		Labour hours
Available labour hours		14,000
Labour hours required	(10,000×1.5)	15,000
Excess hours required - Overtime hours		(1,000)

**W-4: Variable factory overhead rate by high-low method**

		High	Low	Variable
		(a)	(b)	(a–b)
Factory overheads (Rs.)	A	58,280,000	56,960,000	1,320,000
Labour hours	B	174,000	168,000	6,000
Variable factory overheads rate per hour (Rs.)	(A÷B)			<b>220</b>



**INSTITUTE OF CHARTERED ACCOUNTANTS OF PAKISTAN****EXAMINERS' COMMENTS**

<b>SUBJECT</b>	<b>SESSION</b>
Cost and Management Accounting	Certificate in Accounting and Finance – Autumn 2018

**General:**

The overall performance in this attempt showed decline as passing ratio dropped to 38.8% as compared to 54.08% in the previous attempt. However, considering the previous history of this subject, the performance was satisfactory.

The performance suffered mainly on account of Questions 3 and 5. In question 3, 4% of the candidates secured full marks which showed that it was not difficult. The students seemed to suffer from lack of practice as in many cases they used lengthy methods where easier alternatives were available and also made errors because of lack of concentration rather than lack of understanding.

**Question-wise comments:****Question 1**

This question carrying 16 marks consisted of two parts. The main requirement of the question was to prepare budgeted income statement under marginal costing, for a manufacturer which produced two joint products along with a bye product; and one of the joint products was processed further and converted into a superior product.

The overall performance remained average as 37.7% of the candidates secured passing marks. The common errors were as follows:

- While computing joint cost of process I, proceeds from sale of by product ZEE were correctly deducted but proceeds from sale of normal loss were ignored.
- Normal production loss of 5% was ignored probably because the students failed to realise that output ratio as given in the question was based on quantities produced rather than input quantities.
- Joint costs were allocated on the basis of production quantities instead of their NRVs. Some students allocated joint cost on the basis of NRV per unit instead of total NRV of the produced units.
- Consolidated budgeted income statement was prepared instead of product wise income statement.
- Fixed portion of conversion cost was not excluded while calculating contribution margin for product XI-Plus.

Most of the students did not take part (b) seriously as it only consisted of two marks. Consequently, either they ignored it altogether or made simple calculation errors.

*Page 1 of 4*



**Question 2**

This question required computation of sales required for achieving the target profit and the production capacity utilisation required to achieve the targeted sales. 44.2% candidates secured passing marks in this question. However, only few could achieve high marks as the candidates made several mistakes.

The common mistakes are described below:

- Contribution margin required in next year was computed by considering the existing fixed cost only. Those who considered the increase in fixed cost applied such increase on the entire fixed cost whereas it was mentioned in the question that fixed costs other than depreciation would increase whereas depreciation would remain constant.
- While computing budgeted contribution margin of next year, target profit after tax was added to fixed costs instead of adding target profit before tax. Further, many students multiplied target profit after tax by 1.25 to arrive at the target profit before tax instead of dividing target profit after tax by 0.75 or 75%.
- Instead of computing the contribution margin ratio for the next year based on the given data, many candidates computed it on the basis of figures related to the latest year.
- Very few students were able to correctly calculate the amount of discount and made different types of mistakes.
- Distributor commission was computed on gross sales basis instead of net sales after discount.
- Capacity utilisation was computed by comparing the sales values instead of sales volume. In fact, very few students knew how the increase in sales volume was to be computed i.e. by excluding the impact of price increase from the sales value.

**Question 3**

According to the scenario given in the question, a component (Beta) was being produced internally for use in various other products of the company, where labour was a limiting factor. The requirement was to decide whether to outsource the production of Beta and utilise the labour to produce product Zee.

Poor performance was noted in this question as majority of the students could not understand the requirement of the question and only 20% students were able to score passing marks. However, about 4% candidates secured full marks which showed that the question was not difficult.

The most common mistakes were as follows:

- Majority of the students tried to solve the question by computing and comparing the cost per unit of the two products, which was totally incorrect / illogical.
- Most of the students were unable to understand that 15,000 units of product Zee would be produced by utilising the labour hours which would become available as a result of outsourcing of Beta.
- Savings in fixed costs were taken as Rs. 17.56 million ( $18,000 \times 870 + 1,900,000$ ) instead of Rs. 1,900,000.

**Question 4**

This question on the concept of Economic Order Quantity was well answered and 53% candidates secured passing marks whereas about 5% candidates secured full marks. Performance in each part is discussed below:

**Question 4(a)**

The requirement in this part was to compute the economic order quantity in the given scenario. The common mistakes were as follows:

- Annual requirement was worked out without considering the quantity which is lost during storage. Many students computed the quantity lost as 5% of quantity used instead of 5% of quantity purchased.
- Ordering cost per order was computed on the basis of total cost of the purchase department instead of its variable cost only.
- Finance cost was ignored in the calculation of holding cost.

**Question 4(b)**

In this part, the requirement was to compare the costs if order size is equal to 48,000 units i.e. EOQ and when the order size is increased to 120,000 units to avail the discount. The common mistakes were as follows:

- In the above comparison, cost to be incurred when order size was 60,000 units was compared instead of EOQ.
- When the order size was 120,000 units, the cost of financing should have been reduced by 5% i.e. in line with the reduction in price. This was ignored.

**Question 4(c)**

This part required practical limitations of the EOQ model. The performance in this part was below average. Most of the students resorted to guesswork, whereas many students did not attempt this part.

**Question 5**

This question consisted of two parts. The overall performance was not satisfactory as only 26% candidates secured passing marks. However, performance in part (a) carrying 3 marks was good as most of the students were able to mention the advantages and disadvantages of financing a project through debt as compared to equity. Performance in part (b) was however quite poor as a number of mistakes were observed in most of the answers. The most common mistake was that the students did not realise that it was not mandatory for the company to purchase the new plant as the old plant was also working satisfactorily. Hence, they needed to compare the option to continue with the existing plant with the option to purchase the new plant by using incremental revenues and costs. Instead, they only tried to evaluate the purchase of new plant by taking the revenues and expenses associated with the new plant without considering the existing situation. Other common mistakes were as follows:

- IRR was not worked out and conclusion was drawn on the basis of net present value instead of IRR.
- Tax saving on loss of disposal of old plant was ignored.



**Question 6**

This question required computation of relevant cost of production of a newly developed product and determination of the cost gap where required margin was 30%. The performance in this question remained satisfactory as 46% candidates secured passing marks. Some of the common errors were as follows:

- While determining whether the company should purchase and use raw material X or use material Y which was to be developed internally, only the material cost of producing material Y was considered, whereas labour and factory overheads associated with the production of Y were ignored.
- Since idle direct labour (14,000 hours) was already being paid at 50%, the relevant cost of their utilisation was only the additional amount that was to be paid. However, the additional 1,000 hours (15,000 – 14000) should have been calculated at 40% above the normal rate. These aspects were not clearly understood and most of the students made various types of mistakes.
- Overheads were recorded for 1,000 hours only instead of 15,000 hours.
- Required margin was computed as 30% of cost instead of 30% of sale price.

**Question 7**

This question on cash budgeting was well attempted and 51% candidates secured passing marks. However, many candidates made simple calculation errors which were not expected at this stage. Some of the common mistakes are described below:

- Collection from credit sales were taken from October instead of November.
- Payments for purchase of inventory were computed using cost of sales instead of purchases.
- Mark-up was computed as 10% per month instead of 10% per annum.

*THE END*



**Cost and Management Accounting**  
 Summary of Marking Key  
 Certificate in Accounting and Finance – Autumn 2018

**Note regarding marking scheme:**

The marking scheme is given as a guide. Markers also award marks for alternative approaches to a question and relevant/well-reasoned comments/explanations. Moreover, the available marks in answer may exceed the total marks of a question.

		Mark(s)	
A.1	(a)	▪ Preparation of quantity schedule	2.5
		▪ Determination of joint cost of Process I	2.5
		▪ Determination of conversion cost of Process II	1.0
		▪ Determination of total net realizable values and allocation of joint cost	5.0
		▪ Preparation of product wise budgeted income statement under marginal costing method	3.0
(b)	▪ Calculation of budgeted profit, if offer is accepted	1.5	
	▪ Conclusion	0.5	
A.2	(a)	Determination of:	
		▪ existing variable cost and distributor commission	2.0
		▪ revised fixed cost and target profit	3.0
		▪ revised net average sales and budgeted contribution margin ratio	3.0
	▪ budgeted sales to achieve the target profit	1.0	
(b)	▪ Calculation of average increase in selling price	1.0	
▪ Determination of capacity to be utilised during next year	1.0		
A.3	Determination of:	▪ production of product Zee	2.0
		▪ profit from spare capacity – Production of Zee	2.5
		▪ difference between cost of internal production and cost of outsourcing of component Beta	2.5
		▪ profit/loss due to outsourcing with conclusion	2.0
A.4	(a)	Computation of:	
		– holding cost	1.0
		– annual requirement of AT	1.5
		– cost per order	1.5
	▪ Determination of economic order quantity	2.0	
	(b)	Computation of	
		– number of orders and average inventory levels	2.0
		– revised ordering cost	1.0
		– revised holding cost	1.5
		– purchase cost	1.0
	▪ Conclusion	0.5	
	(c)	01 mark for each assumption/limitation of economic order quantity	3.0

**Cost and Management Accounting**  
 Summary of Marking Key  
 Certificate in Accounting and Finance – Autumn 2018

		Mark(s)
A.5	(a)	0.5 mark for each advantage/disadvantage, if project is financed through debt finance as against when it is financed through equity
		3.0
	(b)	<ul style="list-style-type: none"> <li>▪ Calculation of:                             <ul style="list-style-type: none"> <li>– incremental production</li> <li>– incremental contribution margin</li> <li>– incremental fixed cost</li> <li>– depreciation and adding back to profit after tax</li> <li>– tax expense and savings</li> <li>– initial investment and receipts from residual value</li> </ul> </li> <li>▪ Computation of net present values of cash flows</li> <li>▪ Computation of IRR</li> <li>▪ Conclusion</li> </ul>
		3.0
		3.0
		1.0
		1.5
		1.5
		2.5
		3.0
		1.0
		0.5
A.6	<ul style="list-style-type: none"> <li>▪ Calculation of:                             <ul style="list-style-type: none"> <li>– variable factory overhead rate</li> <li>– overtime hours required</li> <li>– cost of substitute material Y for each unit of B1-Extra</li> </ul> </li> <li>▪ Decision whether to use material X or Y</li> <li>▪ Calculation of direct material and direct labour cost for B1-Extra</li> <li>▪ Determination of cost gap</li> </ul>	
		2.5
		1.0
		3.5
		0.5
		2.5
		1.0
A.7	<ul style="list-style-type: none"> <li>Computation of:                             <ul style="list-style-type: none"> <li>▪ cash sales and credit sales</li> <li>▪ purchases and payment to suppliers</li> <li>▪ wages &amp; salaries and other administrative expenses</li> <li>▪ commission on sales</li> <li>▪ marketing expenses (Fixed and variable)</li> <li>▪ initial promotion and advertisement expenses</li> <li>▪ initial capital expenditures</li> <li>▪ net cash inflows/(outflows) and mark-up on closing balances</li> </ul> </li> </ul>	
		2.5
		4.0
		1.0
		2.0
		3.0
		1.0
		1.5
		3.0

(THE END)





The Institute of  
Chartered Accountants  
of Pakistan

**Certificate in Accounting and Finance Stage Examination**

7 March 2019  
3 hours – 100 marks  
Additional reading time – 15 minutes

**Cost and Management Accounting**

- Q.1 Tulip Enterprises (TE) manufactures a product Alpha that requires two separate processes, A and B. Following information has been extracted from the cost records of **Process B** for the month of February 2019:

	Quantity Liters	Process A cost	Process B cost	
			Material	Conversion
			Rs. in '000	
Opening work-in-process – Process B (80% complete as to conversion)	10,000	1,500	600	400
<b>Cost for the month:</b>				
- Received from process A	90,000	14,000	-	-
- Added during process B	12,000	-	7,000	5,600
Closing work-in-process – Process B (70% complete as to conversion)	9,500	-	-	-

**Additional information:**

- (i) Materials are added at start of the process.
- (ii) Normal loss is estimated at 5% of the input. Loss is determined at completion of the process. Loss of each liter results in a solid waste of 0.75 kg. During the month of February 2019, solid waste produced was 6,000 kg.
- (iii) Solid waste is sold for Rs. 170 per kg after incurring further cost of Rs. 20 per kg.
- (iv) TE uses weighted average method for valuation of inventory.

**Required:**

Prepare accounting entries to record the transactions of process B. *(Narrations to accounting entries are not required)*

(12)

- Q.2 Lily (Private) Limited (LPL) has two factories. LPL manufactures a product Delta in its Quetta factory. One unit of Delta is assembled from three components P, Q and R which are produced in the Hub factory. Monthly demand of Delta is estimated at 5,000 units.

Following information is available in respect of each component:

	P	Q	R
Quantity required for one unit of Delta	2	2	3
Machine hours required for producing each component	4	3	5
<b>Cost of production:</b>			
	----- Rupees -----		
▪ Direct material	900	800	300
▪ Direct labour	270	250	240
▪ Factory overheads	500	700	280
▪ Allocated administrative overheads	40	30	50

Fixed factory overheads are charged at Rs. 20 per machine hour.

Production capacity at Hub factory is restricted to 100,000 machine hours per month. In order to meet the demand, LPL is considering to purchase P, Q and R from a vendor at Rs. 1,700, Rs. 1,800 and Rs. 870 per unit respectively.



**Required:**

Determine how LPL can optimise its profit in the above situation.

(11)

Q.3 Lotus Enterprises (LE) is engaged in trading of various locally manufactured products. Hope Limited (HL), a company incorporated outside Pakistan has offered to assist LE in establishing a manufacturing facility in Pakistan for producing its products. LE has gathered the following information in respect of HL's offer:

- (i) The manufacturing facility will be set up on a land which was acquired by LE three years ago for Rs. 40 million. Market value of the land at the commencement of the project is estimated at Rs. 60 million. Cost of the manufacturing facility is estimated as under:

	Rs. in million
Factory building	30
Plant including its installation	100
Other fixed assets	10

- (ii) Sales for the first year of production is estimated at Rs. 500 million. It is expected that sales demand would increase by 5% in each subsequent year.
- (iii) Under the product licensing agreement, HL would be paid a royalty equal to 15% of sales.
- (iv) It is expected that cost of production in the first year of production would be 75% of sales including fixed costs of Rs. 50 million.
- (v) Additional working capital of Rs. 35 million would be required in the first year of production. Working capital requirement would increase by Rs. 5 million each year.
- (vi) Rate of inflation is estimated at 8% per annum with effect from 2<sup>nd</sup> year onward. It would affect revenues as well as all the costs (excluding depreciation).
- (vii) Factory building would be depreciated at 5% whereas plant and other fixed assets would be depreciated at 25% using reducing balance method. It is estimated that at the end of plant's useful life of four years:
- market value of the land would be Rs. 75 million; and
  - residual value of all the assets would be equal to their carrying value.
- (viii) Applicable tax rate is 30% and tax is payable in the year in which the liability arises.
- (ix) There would be no temporary or permanent timing difference between accounting profit and taxable income.
- (x) LE's cost of capital is 15%.

**Required:**

Compute the net present value (NPV) of the project and advise whether it would be feasible to accept HL's offer. *(Assume that except where stated otherwise, all cash flows would arise at the end of the year)*

(15)

Q.4 (a) On 1 January 2019, Marigold Enterprises (ME) purchased an option for Rs. 10,000 allowing ME to buy 5,000 shares of Aroma Limited (AL) at a price of Rs. 140 per share, during the next two months. On 12 February 2019, ME purchased the shares at the agreed price when the market value of AL's shares was Rs. 180 per share.

**Required:**

Briefly explain each of the following terms and relate each term to the above scenario, wherever possible:

- (i) 'Call option' and 'Put option' (2.5)
- (ii) 'In the money' and 'Out the money' (2.5)

- (b) Orchid Limited (OL) is a trading concern. It is planning to implement Economic Order Quantity model (EOQ) from 1 April 2019. OL deals in four products each of which is purchased from a different supplier. To compute EOQ for one of its products Beta, the following data has been gathered:

(i) **Actual data for the last year relating to Beta:**

▪ Annual sales	<b>Units</b>	72,000
▪ Safety stock	<b>Units</b>	2,000
▪ Transit losses as % of purchases		10%
▪ Average holding cost per month	<b>Rs.</b>	500,000
▪ Average holding cost per month per unit	<b>Rs.</b>	80
▪ Number of purchase orders issued for Beta		40

- (ii) Total cost of purchase department for the last year amounted to Rs. 4,500,000 which included fixed cost of Rs. 1,350,000. A total of 100 purchase orders were issued during the last year.

(iii) **Projections for the next year:**

▪ Increase in sales volume		25%
▪ Safety stock	<b>Units</b>	2,500
▪ Transit losses as % of purchases		6%
▪ Impact of inflation on all costs		10%

- (iv) Closing inventory (excluding safety stock) varies in line with the sales volume.

**Required:**

Calculate EOQ for Beta.

(07)

- Q.5 Daisy Limited (DL) manufactures and markets product Zee. DL uses standard absorption costing. Following information pertains to product Zee for the month of February 2019.

- (i) Data extracted from the budget for the month of February 2019:

Production	Units	27,000
<b>Cost of production:</b>		<b>Rs. in '000</b>
Direct material	X: 16,000 kg @ Rs. 400 per kg	6,400
	Y: 14,000 kg @ Rs. 300 per kg	4,200
Direct labour	10,000 hours @ Rs. 220 per hour	2,200
Factory overheads (including fixed overheads of Rs. 900,000)	Rs. 250 per labour hour	2,500

- (ii) Actual input ratio of X and Y was 55:45 respectively.  
 (iii) Direct materials are added at the beginning of the process. Actual process losses were 6% of the output. There is no change in the direct material prices during the month.  
 (iv) DL increased wages by 12% as against the budgeted increase of 8% which improved labour efficiency by 5%.  
 (v) Due to higher than expected inflation, actual factory overhead rate was 6% higher than the budgeted rate.  
 (vi) Conversion costs were incurred evenly throughout the process.  
 (vii) 27,400 units of Zee were transferred to finished goods. There was no opening or closing work in process. Finished goods inventory at the beginning and closing of the month was 1,000 units and 1,500 units respectively.



**Required:**

Compute the following:

- (a) Material price, mix and yield variances (06)
- (b) Labour rate and efficiency variances (04)
- (c) Over/under applied overheads and analyse it into:
  - (i) variable overhead expenditure and efficiency variances
  - (ii) fixed overhead expenditure and volume variances (06)

Q.6 Rose Industries Limited (RIL) is in process of preparation of its budget for the year ending 31 March 2020. In this respect, following information has been extracted from RIL's projected financial statements for the year ending 31 March 2019:

		Rs. in million
Sales (100% credit sales)	360,000 units	2,800
Cost of sales		
▪ Raw material		1,120
▪ Variable conversion cost		280
▪ Fixed conversion cost (including depreciation of Rs. 24 million)		160
Operating cost		
▪ Variable (varies with sales volume)		190
▪ Fixed (including depreciation of Rs. 16 million)		45
Closing inventory		
▪ Raw material		70
▪ Finished goods	40,000 units	110

**Information and projections for the budget year ending 31 March 2020:**

- (i) The management estimates that profitability can be increased by employing the following measures:
  - Introduction of cash sales at 5% less than the credit sales price. This would increase the total sales volume by 30% whereas credit sales volume would reduce by 20% as some of the existing customers would shift to cash sales.
  - Installation of a software that would automatically generate follow-up emails to the customers and relevant reports for the management. The software having useful life of 10 years would be operational from 1 April 2019. The software would cost Rs. 2.5 million and its maintenance cost is estimated at Rs. 0.15 million per quarter. It is expected that as a result of the use of this software, RIL would be able to reduce its fixed operating costs by 15%.
  - As the purchases increase, RIL would negotiate with the suppliers and receive 2% trade discount.
  - Cost reduction measures would be taken which would save 5% of the variable conversion and variable operating costs.
- (ii) The increase in working capital requirements would be met by arranging a running finance facility of Rs. 100 million at a mark-up of 10% per annum. It is estimated that on an average, 90% of the facility would remain utilised during the budget year.
- (iii) Effect of inflation on price of raw material and all other costs (excluding depreciation) would be 10%.
- (iv) Closing raw material and finished goods inventories would increase by 8%.

RIL uses marginal costing and follows FIFO method for valuation of inventory.

**Required:**

Prepare budgeted profit or loss statement for the year ending 31 March 2020. *Assume that except stated otherwise, all transactions are evenly distributed over the year (360 days).* (16)



- Q.7 Following information has been extracted from the projected results of Saffron Limited (SL) for the year ending 31 March 2019:

Sales	Rs. 160 million
Contribution margin	30%
Margin of safety	25%

**Information for the next year ending 31 March 2020:**

- (i) SL is planning to increase its sales by reducing sales prices by 5% and launching a sales campaign at a cost of Rs. 5 million.
- (ii) Cost efficiency measures planned for the next year are expected to reduce variable cost per unit by 10%.
- (iii) Inflation impact on all costs would be 8%, except depreciation. At present, depreciation is 40% of the total fixed cost.
- (iv) Margin of safety would be maintained at 25%.

**Required:**

- (a) Prepare budgeted statement of profit or loss for the year ending 31 March 2020 based on the above projections. (06)
- (b) Compute the percentage increase in sales volume. (02)

- Q.8 Jasmine Limited (JL) manufactures various products according to customers' specifications. In March 2019, JL is required to submit a tender for supply of 5,000 plastic bodies of a washing machine. In this respect, following information has been gathered:

- (i) The production would be carried out on JL's plant at its Sialkot factory. Cost of the plant is Rs. 3,600,000. Its estimated useful life is 96,000 hours. Each plastic body (unit) would require 2 machine hours.
- (ii) Production would be carried out in ten batches of 500 units each. Cost per unit for the first batch has been estimated as under:

		Rupees
Direct material	2 kg	150
Direct labour	3 labour hours	300
*Overheads (based on direct labour hours):		
▪ Variable overheads		240
▪ Fixed overheads		360

*\*Overheads do not include depreciation of the plant*

- (iii) Direct material consumption would reduce by 5% in each subsequent batch up to the third batch and would become constant thereafter.
- (iv) Applicable learning curve effect is 95% but it will remain effective for the first six batches only. The index of 95% learning curve is  $-0.074$ .

**Required:**

- Compute the bid amount that JL should quote to earn 30% contribution margin. (10)

(THE END)

<p><b>Cost and Management Accounting</b> Suggested Answers Certificate in Accounting and Finance – Spring 2019</p>
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**Ans.1 Tulip Enterprises**  
Accounting entries for Process B

Date	Description	Debit	Credit
		----- Rs. in '000 -----	
1	WIP - Process B	26,600	
	WIP - Process A		14,000
	Raw material		7,000
	Labour and overheads		5,600
2	Scrapped inventory (Normal loss) <span style="float: right;">[C×0.75×170]</span>	653	
	Bank <span style="float: right;">[C×0.75×20]</span>		77
	WIP - Process B (Normal loss) <span style="float: right;">(W-1)</span>		576
3	Scrapped inventory (Abnormal loss) <span style="float: right;">[D×0.75×170]</span>	367	
	Profit or loss account <span style="float: right;">Balancing</span>	448	
	Bank <span style="float: right;">[D×0.75×20]</span>		43
	WIP - Process B (Abnormal loss) <span style="float: right;">(D×H)</span>		772
4	Finished goods <span style="float: right;">(E×H)</span>	25,366	
	WIP - Process B		25,366

**W-1: Equivalent production and cost per liter - Weighted average method**

	Quantity Schedule	Equivalent units	
		Material	Conversion
		----- Liters -----	
Opening WIP (80% complete as to conversion)	10,000		
Input for the month - Process A	90,000		
Process B	12,000		
<b>Total input</b> <span style="float: right;">A</span>	<b>112,000</b>		
Closing WIP (70% complete as to conversion) <span style="float: right;">B</span>	9,500	9,500	6,650
Normal loss <span style="float: right;">(A-B)×5%</span> <span style="float: right;">C</span>	5,125	-	-
Abnormal loss <span style="float: right;">[(6,000÷0.75)-C]</span> <span style="float: right;">D</span>	2,875	2,875	2,875
Transferred to finished goods <span style="float: right;">Balancing</span> <span style="float: right;">E</span>	94,500	94,500	94,500
	<b>F</b>	<b>106,875</b>	<b>104,025</b>

		Process A & material costs	Process B conversion costs
		----- Rs. in '000 -----	
Opening WIP	Process A	1,500	
	Process B	600	400
Cost for the month	Process A	14,000	
	Process B	7,000	5,600
Scrapped inventory (Recovery from normal scrapped units) (C×0.75)×(170-20)		(576)	
<b>Total cost</b> <span style="float: right;">G</span>		<b>22,524</b>	<b>6,000</b>
		Rupees	
	G÷F×1,000	210.74	57.68
<b>Total - Cost per liter</b> <span style="float: right;">H</span>		<b>268.42</b>	

**Cost and Management Accounting**  
Suggested Answers  
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Ans.2 Lily (Private) Limited  
In-house production / External purchase

		P	Q	R
Quantity required to produce one unit of Delta	A	2	2	3
Machine hours to produce the components	B	4	3	5
Components required to produce 5,000 units of Delta (5,000×A)	C	10,000	10,000	15,000
<b>Relevant production cost per component:</b>		----- Rupees -----		
Direct material		900	800	300
Direct labour		270	250	240
Variable overheads 500-(B×20); 700-(B×20); 280-(B×20)		420	640	180
Fixed overheads (Not relevant)		-	-	-
Allocated administrative overheads (Not relevant)		-	-	-
<b>Total relevant cost</b>	D	<b>1,590</b>	<b>1,690</b>	<b>720</b>
External purchase price per component	E	1,700	1,800	870
Savings per component in case of in-house production E-D = F		110	110	150
Savings per machine hour for in-house production F÷B		27.50	36.67	30.00
Priority for in-house production		<b>3rd.</b>	<b>1st.</b>	<b>2nd.</b>
<b>In-house production in sequence of priority</b>	Units G	-	<b>10,000</b>	<b>14,000</b>
Use of available hours	G×B	-	30,000	70,000
<b>External purchase</b>	Units C-G	<b>10,000</b>	-	<b>1,000</b>



**Cost and Management Accounting**  
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**Ans.3 Lotus Enterprises**  
Feasibility to accept HL's offer for establishment of manufacturing facility in Pakistan

	Year 0	Year 1	Year 2	Year 3	Year 4
	----- Rs. in million -----				
Sales - (Increase of 5% in volume & 8% in price)		500.00	567.00	642.98	729.14
Royalty (15% of sales)		(75.00)	(85.05)	(96.45)	(109.37)
Variable cost (500×0.75)-50		(325.00)			
(325×1.05×1.08)			(368.55)	(417.94)	(473.94)
Accounting/tax depreciation:					
- Factory building at 5% <b>A</b>		(1.50)	(1.43)	(1.36)	(1.29)
- Plant & other fixed assets at 25% <b>B</b>		(27.50)	(20.63)	(15.47)	(11.60)
Fixed cost excluding depreciation (50-A-B)		(21.00)			
21×1.08			(22.68)	(24.49)	(26.45)
Taxable profit <b>C</b>		50.00	68.66	87.27	106.49
Tax at 30% <b>C×30%</b>		(15.00)	(20.60)	(26.18)	(31.95)
<b>Net profit</b>		35.00	48.06	61.09	74.54
Non-cash expenses – Depreciation (A+B)		29.00	22.06	16.83	12.89
Market value of the land	(60.00)				75.00
Factory building	(30.00)				24.42
Plant and its installation & other assets	(110.00)				34.80
Working capital		(35.00)	(5.00)	(5.00)	45.00
<b>D</b>	<b>(200.00)</b>	<b>29.00</b>	<b>65.12</b>	<b>72.92</b>	<b>266.65</b>
Present value factor 15% <b>E</b>	1.00	0.87	0.76	0.66	0.57
Present value at 15% <b>D×E</b>	<b>(200.00)</b>	<b>25.23</b>	<b>49.49</b>	<b>48.13</b>	<b>151.99</b>
Net present value					<b>74.84</b>

**Conclusion:**

Since the net present value is positive, it is feasible for LE to accept HL's offer.

**Cost and Management Accounting**  
Suggested Answers  
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Ans.4 (a) (i) 'Call option' and 'Put option'

An option to buy something in the future is called a 'call option'.

An option to sell something in the future is called a 'put option'.

In the given situation, option is for purchase of shares, therefore, it is a 'call option'.

(ii) 'In the money' and 'Out the money'

When the market price of the share is such that by exercising the option, the option holder makes a profit, the option is said to be 'in the money'.

When the market price of the share is such that by exercising the option, the option holder suffers a loss, the option is said to be 'out the money'.

By exercising the option, ME made a profit of Rs. 38 (180-140-2) per share, therefore, the option is said to be 'in the money'.

(b) Orchid Limited  
Economic order Quantity (EOQ) for Beta

<b>Annual demand (Purchases):</b>		<b>Units</b>
Projected sales	$72,000 \times 1.25$	90,000
Opening stock - including safety stock	$(500,000 \div 80)$	(6,250)
Closing stock - including safety stock	$[(6,250 - 2,000) \times 1.25] + 2,500$	7,813
Purchases - net of transit losses		<b>91,563</b>
Purchases including transit losses of 6%	$91,563 \div 0.94$	<b>97,407</b>
<b>Ordering cost per order:</b>		<b>Rupees</b>
Variable cost	$(4,500,000 - 1,350,000) \times (1.1 \div 100)$	<b>34,650</b>
<b>Holding cost per unit per annum</b>	$80 \times 1.1 \times 12$	<b>1,056</b>
<b>Economic Order Quantity (EOQ):</b>		<b>Units</b>
$\text{SQRT}[(2 \times \text{Annual demand} \times \text{Ordering cost per order}) \div \text{Carrying cost per unit}]$		
$\text{SQRT}[(2 \times 97,407 \times 34,650) \div 1,056]$		<b>2,528</b>

**Cost and Management Accounting**  
Suggested Answers  
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**Ans.5 Daisy Limited**  
**Variances for the month of February 2019**

			<b>Units</b>
Budgeted production	A		27,000
Actual production	B		27,400
Allowable production from actual input	A÷D×E	C	26,140
			<b>kg</b>
Total budget input quantity	X 16,000+Y 14,000	D	30,000
Total actual input quantity	B×1.06	E	29,044
			<b>Rs.</b>
Standard material cost per finished unit	(6,400,000+4,200,000)÷A	F	392.59
			<b>Hours</b>
Allowable hours for actual production	10,000÷A×B	G	10,148
Actual hours	G×0.95	H	9,641
			<b>Rs.</b>
Standard Fixed overhead rate per hour	900,000÷10,000	J	90
Standard variable overhead rate per hour	250-90	K	160

(a) **Material mix variance**

Description	Actual input in standard mix ratio (kg)		Actual input in 55:45 ratio (kg)		Rate per kg (Rs.)	Fav/(Adverse) variance (Rs. in '000)
X	16,000÷D×E	15,490.13	E×0.55	15,974.20	400.00	(193.63)
Y	14,000÷D×E	13,553.87	E×0.45	13,069.80	300.00	145.22
<b>Total</b>	<b>E</b>	<b>29,044.00</b>	<b>E</b>	<b>29,044.00</b>		<b>(A) (48.41)</b>

**Material yield variance:**

(Actual yield - Allowable yield from actual input)×Standard material cost per unit  
[(B-C)×F] **(F) 494.66**

**Material price variance:**

No variance as there is no change in prices of material. **-**

(b) **Labour rate variance:**

(Standard rate - Actual rate) × Actual hours [220-(220+1.08×1.12)]×H **(A) (78.56)**

**Labour efficiency variance:**

(Allowable hours - Actual hours) × Standard rate [G-H×220] **(F) 111.54**

(c) **Overheads over/(under) applied**

Applied overheads G×250 2,537.00

Actual overheads:

- Variable overheads H×K×1.06 1,635.11

- Fixed overheads 900×1.06 954.00

2,589.11

**Overheads under applied (A) (52.11)**

**Analysis of under applied overheads:**

(i) **Variable overhead expenditure variance:**

(Standard variable overheads rate - Actual variable overhead rate) × Actual hours  
[K-(K×1.06)×H] **(A) (92.55)**

**Variable overhead efficiency variance**

(Allowable hours - Actual hours) × Standard variable overhead rate per hour  
(G-H)×K **(F) 81.12**



**Cost and Management Accounting**  
Suggested Answers  
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(ii)	Fixed overhead expenditure variance	$900,000 \times 6\%$	<b>(A) (54.00)</b>
	Fixed overhead volume variance:		
	(Allowable hours – Budgeted hours) × Standard fixed overhead rate per hour	$(G - 10,000) \times J$	<b>(F) 13.32</b>

**Ans.6 Rose Industries Limited**  
**Budgeted profit or loss statement for the year ending 31 March 2020**

		Rs. in million
Sales – credit	$2,800 \times 0.8$	2,240.00
Sales – cash	$[(2,800 \times 1.3) - 2,240] \times 0.95$	1,330.00
		<b>3,570.00</b>
<b>Variable cost of goods sold:</b>		
Raw material consumption	<b>(W-1)</b>	<b>(1,574.84)</b>
Variable conversion cost	$[280 \div 360,000 \times 471,200 \text{(W-2)}] \times 0.95 \times 1.1$	<b>(382.98)</b>
Manufacturing cost		<b>(1,957.82)</b>
Opening finished goods		<b>(110.00)</b>
Closing finished goods	<b>(W-3)</b>	<b>179.99</b>
<b>Variable cost of goods sold</b>		<b>(1,887.83)</b>
<b>Gross contribution margin</b>		<b>1,682.17</b>
Variable operating cost	$(190 \times 1.30) \times 0.95 \times 1.1$	<b>(258.12)</b>
<b>Net contribution margin</b>		<b>1,424.05</b>
Fixed conversion cost	$(160 - 24) \times 1.1 + 24$	<b>(173.60)</b>
Fixed operating cost	$[(45 - 16) \times 0.85 \times 1.1 + 16] + (2.5 \times 10\%) + (0.15 \times 4)$	<b>(43.97)</b>
10% mark-up on running finance facility	$100 \times 90\% \times 10\%$	<b>(9.00)</b>
<b>Net profit</b>		<b>1,197.48</b>

<b>W-1: Budgeted raw material consumption</b>		Rs. in million
Consumption at last year's price	$1,120 \div 360,000 \times 471,200 \text{(W-2)}$	1,465.96
Use of opening raw material		70.00
Use of current purchases	$[(1,465.96 - 70) \times 1.10] \times 0.98$	1,504.84
		<b>1,574.84</b>

<b>W-2: Budgeted production quantity</b>		Units
Sales	$360,000 \times 1.3$	468,000
Finished goods inventory - closing	$40,000 \times 1.08$	43,200
- opening		<b>(40,000)</b>
		<b>471,200</b>

<b>W-3: Finished goods inventory valuation using marginal costing and FIFO</b>		Rs. in million
Raw material cost	$43,200 \times (1,120 \div 360,000) \times 1.1 \times 0.98$	144.88
Variable conversion cost	$43,200 \times (280 \div 360,000) \times 1.1 \times 0.95$	35.11
		<b>179.99</b>

**Cost and Management Accounting**  
Suggested Answers  
Certificate in Accounting and Finance – Spring 2019

Ans.7 (a) Saffron Limited  
Budgeted statement of profit or loss for the year ending 31 March 2020

		Rs. in million
Sales	$152(W-2) \div 43.14 \times 56.97$	200.73
Variable cost	Balancing	(143.76)
Contribution margin (CM)		56.97
(at a safety margin of 25% and fixed cost of Rs. 42.73 million)	$[42.73(W-1) + 0.75]$	
Fixed cost	(W-1)	(42.73)
Net profit		14.24

**W-1: Fixed Cost**

- For 2019	$(160 \times 0.3 \times 0.75)$	36.00
- For 2020:		
Depreciation	$(36 \times 0.4)$	14.40
Other fixed cost	$(36 - 14.40) \times 1.08 + 5$	28.33
		<b>42.73</b>

**W-2: CM on revision of sales price and variable cost**

		Rs. in million
Sales	$(160 \times 0.95)$	152.00
Variable cost	$(160 \times 0.7) \times 1.08 \times 0.9$	(108.86)
Contribution margin		43.14

(b) Increase in sales volume %:

Budgeted sales of 2019-20 at 2018-19 prices	$(200.73 \div 0.95)$	211.29
Increase in sales volume (%)	$(211.29 - 160) \div 160$	32.06%

Ans.8 Jasmine Limited  
Computation of bid amount to earn 30% contribution margin

		Rs. in '000
<b>Direct material cost:</b>		
For first 3 batches	$75,000 + (75,000 \times 0.95) + [75,000 \times (0.95)^2]$	214
For last 7 batches	$75,000 \times (0.95)^2 \times 7$	474
	<b>A</b>	<b>688</b>
<b>Direct labour cost:</b>		
For first 6 batches	(W-1) $7,882 \times 100$	788
For last 4 batches	(W-1) $1,224 \times 4 \times 100$	490
	<b>B</b>	<b>1,278</b>
<b>Overheads</b>		
Variable overheads based on direct labour hours	$240 \div 3 \times 1,278$	1,022
Variable overheads based on machine hours (molding plant depreciation)	$3,600 \div 96,000 \times (5,000 \times 2)$	375
		1,397
Fixed overheads		-
	<b>C</b>	<b>1,397</b>
Bid amount to earn 30% contribution margin	$(A+B+C) \div 0.7$	<b>4,804</b>

**W-1: Direct labour hours at 95% learning curve**

		Hours
For the first 6 batches	$6 \times (500 \text{ units} \times 3 \text{ hours}) \times (6)^{-0.074}$	7,882
For the first 5 batches	$5 \times (500 \text{ units} \times 3 \text{ hours}) \times (5)^{-0.074}$	(6,658)
For the 7th. batch and onwards		<b>1,224</b>

**Cost and Management Accounting**  
Suggested Answers  
Certificate in Accounting and Finance – Spring 2019

**(THE END)**



INSTITUTE OF CHARTERED ACCOUNTANTS OF PAKISTAN CERTIFICATE IN ACCOUNTING AND FINANCE (CAF) EXAMINATIONS EXAMINERS' COMMENTS	
<b>SUBJECT</b> Cost & Management Accounting (CMA)	<b>SESSION</b> Spring 2019

**Passing %**

Question-wise								Overall
1	2	3	4	5	6	7	8	
49%	77%	88%	39%	03%	27%	09%	44%	41%

**General comments**

Overall performance in this attempt was slightly improved as passing ratio increased from 39% to 41%. However, performance in Q. 5 – Variance analysis and Q. 7 – Cost profit volume (CPV) analysis was disappointing as evident from the above question-wise pass %.

**Question-wise common mistakes observed**

**Question 1**

- Normal loss was not correctly computed as students did not deduct closing WIP quantity from the total input.
- While computing equivalent units, weighted average method of valuation of inventory was not applied correctly as opening WIP quantity was considered to arrive at equivalent units.
- While computing total cost of process B, students neither deducted recovery from normal scrapped units nor accounted for the opening WIP cost of processes A and B.
- While preparing accounting entries for process B:
  - transfer cost of WIP (process A) to WIP (process B) was ignored; and
  - abnormal loss was accounted for incorrectly by not recording the difference of cost of abnormal loss units and recovery on sale thereof in profit or loss account.

**Question 2**

- Fixed overheads/allocated administrative overheads were taken into consideration. In fact, these were irrelevant for decision making.
- Production priority was determined on the basis of savings per component instead of limiting factor of machine hours.

**Question 3**

- Variable costs were incorrectly computed by deducting the fixed costs of Rs. 50 million from each year's total costs.
- Fixed cost was computed without deducting the depreciation.

- Amount of tax payments was computed after taking into account the working capital requirement, market value of the land and residual value of the assets at the end of project life. In fact, these items were not subjected to tax shield.
- Recovery of working capital at the end of the tenure was not shown.

**Question 4(a)**

Good performance was observed in this question.

**Question 4(b)**

- The annual demand (purchase) of Beta was not computed correctly. In fact, the computation of purchases required adjustment of opening and closing stock in projected sales and the resultant thereof was required to be adjusted for transit losses.
- While computing holding cost per unit, holding cost was not multiplied with 12 months to arrive at annual holding cost.

**Question 5**

- Finished goods inventory at the beginning and closing of the month were incorrectly adjusted to the goods transferred to finished goods to arrive at actual production.
- Allowable raw material quantities and allowable hours required for actual units produced were not computed correctly.
- Students wasted time in calculating at material price variance. They disregarded the fact, clearly mentioned in the question, that there is no change in the direct material prices but still many students made calculation for material price variance.
- While computing labour variances, budgeted labour hours of 10,000 for the month of February 2019 were used instead of using the allowable labour hours computed on the basis of actual production by incorporating the labour efficiency of 5%.
- Over/under applied overheads were not computed. Students restricted their answers to computation of overhead variances.
- While computing overhead variances, per unit and hourly overhead rates were interchangeably used.

**Question 6**

- Students were not able to compute the sales amount correctly. In fact, credit sales could be computed by reducing the existing sales by 20%. Secondly, cash sale could be computed by increasing the existing sales by 30% and then deducted the revised credit sale to arrive at cash sale. Thirdly, cash sales could then be reduced by 5% being the adjustment of sale price.
- Instead of computing the raw material consumption and variable conversion costs on the basis of budgeted production quantity, the costs were computed in line with percentage increase in sales. Other common errors in computation of costs were ignoring the adjustments of opening and closing finished goods inventories in the budgeted production quantity and not following the FIFO method of valuation.
- Opening raw material was not taken into consideration in the raw material costs. Consequently, price increase and trade discount would only be applicable on additional material to be purchased.

- Mark-up on running finance facility was computed on 100% of the running finance facility available, instead of utilized facility of 90%.

**Question 7(a)**

The revised contribution margin was not computed correctly by applying given margin of safety of 25% to revised fixed cost. Consequently, revised sales and variable costs were not worked out correctly.

**Question 7(b)**

While computing the volume increase percentage, the reduction in sales price was ignored. Resultantly, increase in sales revenue was computed instead of increase in sales volume.

**Question 8**

- Direct material costs were taken at Rs. 150,000 per batch instead of Rs. 75,000 per batch i.e. Rs.150 per unit multiply by 500 units being the batch size.
- Learning curve method was not correctly applied for computation of labour hours. Further, per hour cost was taken at Rs. 300 instead of Rs.100.
- While computing bid amount at 30% contribution margin, 30% profit on variable cost was added instead of grossing up the variable cost i.e. by dividing the variable cost by 70%, to arrive at the bid amount.

*The End*



**Cost and Management Accounting**  
 Summary of Marking Key  
 Certificate in Accounting and Finance – Spring 2019

**Note regarding marking scheme:**

The marking scheme is given as a guide. Markers also award marks for alternative approaches to a question and relevant/well-reasoned comments/explanations. Moreover, the available marks in answer may exceed the total marks of a question.

		Mark(s)	
A.1	▪ Preparation of accounting entries to record Process B transactions	5.0	
	▪ Preparation of quantity schedule and equivalent production liters	3.5	
	▪ Computation of cost per liter	3.5	
A.2	▪ Computation of component-wise relevant cost per unit	4.0	
	▪ Computation of savings per machine hour for in-house production and determination of priority for in-house production	4.5	
	▪ Determination of units to be produced in-house and purchased externally	2.5	
A.3	▪ Determination of project investment value at commencement and end of the project	3.0	
	▪ Year-wise computation of sales, variable costs and fixed costs (other than depreciation) incorporating effect of inflation and volume	7.0	
	▪ Calculation of depreciation and adding it back to profit after tax	3.0	
	▪ Computation of net present value	1.5	
	▪ Conclusion	0.5	
A.4	(a) (i)	▪ 01 mark for explanation of each term	2.0
		▪ Relating the term to the given scenario	0.5
	(ii)	▪ 01 mark for explanation of each term	2.0
		▪ Relating the term to the given scenario	0.5
	(b)	▪ Computation of:	
		– annual demand	3.5
		– ordering cost per order	1.5
		– holding cost per unit per annum	1.0
	▪ Determination of EOQ	1.0	
	A.5	(a)	02 marks each for material price, mix and yield variance
(b)		02 marks each for labour rate and efficiency variance	4.0
(c)		▪ 01 mark each for applied and actual overheads	2.0
		▪ 01 mark each for variable overhead expenditure and efficiency variance	2.0
		▪ 01 mark each for fixed overhead expenditure and volume variance	2.0

**Cost and Management Accounting**  
 Summary of Marking Key  
 Certificate in Accounting and Finance – Spring 2019

		Mark(s)
A.6	Computation of budgeted:	
	▪ sale amount	1.5
	▪ production quantity	1.5
	▪ raw material consumption	3.0
	▪ variable conversion and operating costs	4.0
	▪ fixed conversion and operating costs	3.0
	▪ closing finished goods using marginal costing and FIFO	3.0
A.7	(a) Computation of:	
	▪ sales	1.5
	▪ variable and fixed costs	3.0
	▪ contribution margin after revision in sales price and variable cost	1.5
	(b) Computation of percentage increase in sales volume	2.0
A.8	Computation of:	
	▪ direct material cost	2.0
	▪ direct labour cost using learning curve effect of 95%	4.0
	▪ overheads	3.0
	▪ bid amount to earn 30% contribution margin	1.0

(THE END)





The Institute of  
Chartered Accountants  
of Pakistan

**Certificate in Accounting and Finance Stage Examination**

5 September 2019  
3 hours – 100 marks  
Additional reading time – 15 minutes

**Cost and Management Accounting**

- Q.1 Macchiato (Private) Limited (MPL) is planning to launch a new business of manufacturing carpets and rugs. The extracts from the projected statement of profit or loss of the new business are given below:

	Rs. in '000
Sales	500,000
Cost of goods sold	(360,000)
Gross profit	140,000
Operating expenses	(90,000)
Profit before taxation	50,000
Taxation @ 35%	(17,500)
Profit after taxation	<b>32,500</b>

Selling prices of carpets and rugs would be Rs. 24,000 and Rs. 4,000 per unit with contribution margin of 25% and 20% respectively. Carpets and rugs would be sold in the ratio of 1:4.

**Required:**

- (a) Compute the sales revenue at break-even and the margin of safety in units. (07)
- (b) Determine the number of carpets and rugs that must be sold if MPL wishes to maintain profit after taxation equivalent to 10% of sales. (05)

- Q.2 Latte Limited (LL) is considering to accept a five-year proposal from Mocha Limited (ML) for supply of a product namely K44. ML would use K44 as a raw material for its main product. Details of the proposal and related matters are summarized as follows:

- (i) Initial investment in the specialized machinery is estimated at Rs. 60 million. At the beginning of year 4, LL would require a major overhauling on this machinery amounting to Rs. 10 million. The machinery can be disposed of at 80% of written down value at the end of project.
- (ii) In year 1, LL would supply 18,000 units of K44 to ML at Rs. 5,000 per unit. The supply would increase by 5% per annum from year 2 onward.
- (iii) Variable cost is estimated at Rs. 4,000 per unit for year 1. Fixed cost associated with the proposal (other than depreciation) is expected to be Rs. 250,000 per month, out of which Rs. 50,000 would be allocated overheads.
- (iv) Impact of inflation on revenues as well as all costs would be 7%.
- (v) Tax rate would be applicable at 30% and tax would be payable in the year in which liability would arise. Tax depreciation on machinery would be allowed at the rate of 25% under reducing balance method.
- (vi) The cost of capital of LL is 15%.

Assume that except stated otherwise, all cash flows would arise at the end of year.

**Required:**

- (a) Using net present value method, advise whether LL should accept the proposal. (11)
- (b) Determine the minimum discount rate at which the proposal would be acceptable to LL. (03)



Q.3 Frappe Limited (FL) manufactures and sells a single product Sigma. Following information is available:

- During the year ended 31 December 2018, FL sold 5,500 units at Rs. 25,000 per unit.
- Details of opening and closing work in process and finished goods are as follows:

	Number of units	Percentage of completion	
		Direct material	Conversion costs
<b>Work in process:</b>			
Opening	400	100%	60%
Closing	800	100%	40%
<b>Finished goods:</b>			
Opening	600	-	-
Closing	900	-	-

- The work in process account had been debited during the year with the following costs:

	Rs. in '000
Direct material	82,350
Conversion costs (including fixed overheads of Rs. 16.762 million)	44,217

- Variable operating costs amounted to Rs. 500 per unit whereas fixed operating costs for the year were Rs. 7,500,000.
- Effective from 1 January 2018, direct material price and conversion costs were increased by 5% and 10% respectively.
- FL uses FIFO method for valuation of its inventories.

**Required:**

- (a) Prepare statements of equivalent units and cost per equivalent unit. (04)
  - (b) Prepare profit statements on the basis of:
    - (i) marginal costing (08)
    - (ii) absorption costing (07)
- (Round off all figures to the nearest rupee amount)*

Q.4 Following information pertains to Espresso Limited (EL), engaged in manufacturing of a product 'Rita':

- (i) Extracted from last year's records:
  - EL budgeted to produce 16,000 units of Rita by utilizing 32,000 budgeted machine hours.
  - The absorption rate for fixed overheads was determined at Rs. 1,250 per machine hour.
  - Actual fixed overheads incurred were Rs. 41.20 million that included depreciation of Rs. 12.50 million.
  - The actual production was 17,000 units by utilizing 32,400 machine hours.
- (ii) EL absorbs fixed overheads by using pre-determined machine hour rate.
- (iii) For the next year, the management of EL has made the following projections:
  - Production and demand for Rita is expected to increase by 15%. EL is intending to buy a new automated machinery costing Rs. 7.3 million to increase the actual efficiency by 25%. The new machinery would have a useful life of 8 years with residual value of Rs. 1 million.
  - Existing fixed overheads other than depreciation are expected to increase by 10%. Additional supervision cost would need to be incurred at Rs. 70,000 per month.

**Required:**

- (a) Compute under/over absorption of fixed overheads for the last year and analyse it into fixed overhead expenditure, efficiency and capacity variances. (06)
- (b) Determine fixed overheads absorption rate for the next year. (04)

Q.5 Americano Limited (AL) is engaged in the assembling and marketing of three products, Alpha, Beta and Gamma. AL is in the process of preparation of product-wise projected statement of contribution margin for the next financial year commencing from 1 January 2020. Following information in this regard is available:

- (i) Total sales of AL for the year ending 31 December 2019 are estimated to be Rs. 28 million. The current sales price and ratio of sales for each of three products are given below:

	Alpha	Beta	Gamma
Sale price per unit (Rs.)	8,000	12,000	10,000
Ratio of quantities sold	4	1	2

With effect from 1 January 2020, AL is intending to increase the selling prices by 10%. The demand would decline by 2% due to increase in sale prices.

- (ii) The details of components that are used in each product are as follows:

Description	Components		
	A	B	C
	----- Units -----		
Alpha	4	2	5
Beta	5	4	6
Gamma	4	3	4
	----- Rs. -----		
Purchase price per component	45	60	30

The suppliers have informed AL that prices of components would increase by 15% with effect from 1 April 2020.

- (iii) All products pass through assembling and finishing departments. Details of labour costs at each department are as follows:

Description	Assembling	Finishing
	Direct labour (Hours)	
Alpha	10	15
Beta	12	20
Gamma	10	18
	----- Rs. -----	
Rate per hour	50	40

- (iv) Factory overheads are estimated at 60% of direct labour cost. 40% of factory overheads are fixed.

**Required:**

Prepare a product-wise statement showing projected contribution margin for the year ending 31 December 2020. (16)

Q.6 Reporting perspective is an integral part of IFAC Sustainability Framework. It includes key considerations on how professional accountants can help improving the usefulness and relevance of their organization's external communications.

**Required:**

State any **two** key considerations for professional accountants as mentioned in each of the following sections of reporting perspective:

- (a) Developing an organizational reporting strategy (02)
- (b) Determining materiality (02)
- (c) External review and assurance of sustainability disclosures (02)



Q.7 (a) Explain briefly what is meant by the term 'inventory control'. Suggest and explain the method of stock valuation which should be used in times of fluctuating prices. (05)

(b) Cappuccino Limited (CL), incorporated in January 2018, is engaged in manufacturing and marketing of two types of products, S1 and S2. Due to strict quality standards at CL, the ratio of damaged goods is high. Damaged units of S1 can only be identified at 100% completion whereas damaged units of S2 can be identified at 60% completion. Damaged units of S1 and S2 can be sold at 80% and 50% of market prices respectively.

CL's production department believes that damaged units can be sold at full market price after incurring per unit rectification costs of Rs. 150 and Rs. 450 on S1 and S2 respectively.

**Additional information:**

- Following information has been extracted from CL's latest records:

	S1	S2
	----- Units -----	
No. of units sold	347,000	218,000
Closing inventory	47,000	34,000
	----- Rs. in '000 -----	
Sales	492,800	463,760
Cost of goods manufactured	431,430	349,370
Closing inventory	(51,465)	(48,287)
Cost of goods sold	379,965	301,083
Gross profit	<b>112,835</b>	<b>162,677</b>

- Closing inventory includes units of S1 and S2 damaged during the year i.e. 15,000 and 22,500 units respectively.
- Fixed costs are incurred at the beginning of period and variable costs are incurred throughout the manufacturing process.
- Cost of goods manufactured includes fixed cost of Rs. 80 million which is allocated on the basis of total units produced.
- Selling expenses during the period was 1% of sales.

**Required:**

- (i) Advise CL whether it should sell damaged units of each product with or without further processing. (12)
- (ii) Determine value of damaged units of S1 and S2 included in the closing inventories, under each of the following situations:
- If CL opts for further processing
  - If CL does not opt for further processing (06)

**(THE END)**



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	Rs. in '000
Sales [given]	500,000
Less: Variable costs (W-1)	(385,000)
Contribution	115,000
Combined CM [Contribution/Sales]	23.0%
Fixed costs (W-3)	65,000
Break-even sales [Fixed costs/Combined CM]	282,609

	Sales at BE	Existing sales	Safety units
Carpets Break-even sales/D×B (W-2)	7,065	12,500	5,435
Rugs Break-even sales/D×B (W-2)	28,261	50,000	21,739

(b) Sales revenue to yield desired net margin	[65,000 (W-3)/0.0762 (W-4)]	853,018,373
Carpets	Sales/D×B	21,325
Rugs	21,325×4 OR Sales/D×B	85,300

**WORKINGS:**

W-1: Variable costs	Carpets	Rugs	Total
Selling price per unit [given]	24,000	4,000	
Contribution [Selling price × CM%]	(6,000)	(800)	
Variable cost per unit	18,000	3,200	
Number of units sold (W-2)	12,500	50,000	
Total variable costs (Rs. in '000)	225,000	160,000	385,000

W-2: Number of units sold		Carpets	Rugs	Total
Sales (Rs.)	A			500,000,000
Ratio	B	1	4	
Sale price (Rs.)	C	24,000	4,000	
Weighted average ratio	D=B×C	24,000	16,000	40,000
No. of units sold	A/D×B	12,500	50,000	

W-3: Fixed costs	Rs. in '000
Cost of goods sold [given]	360,000
Operating expenses [given]	90,000
Total costs	450,000
Less: Variable costs (W-1)	(385,000)
Fixed costs	65,000

W-4: Net margin	Rs. in '000
Contribution margin [From (a)]	23%
Desired retained profit [0.1/(1-0.35)]	15.38%
Net margin [CM- desired retained profit]	7.62%

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A.2 (a) Net present value method:

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
	----- Rs. in '000 -----					
Sales revenue [18,000×5,000×1.05×1.07]	-	90,000	101,115	113,603	127,633	143,396
Variable cost [18,000×4,000×1.05×1.07]	-	(72,000)	(80,892)	(90,882)	(102,106)	(114,716)
Fixed cost [(250,000-50,000)×12×1.07]	-	(2,400)	(2,568)	(2,748)	(2,940)	(3,146)
Depreciation [WDV×0.25]	-	(15,000)	(11,250)	(8,438)	(8,828)	(6,621)
Loss on disposal [WDV×0.2]	-	-	-	-	-	(3,973)
Profit before tax	-	600	6,405	11,535	13,759	14,940
Income tax @30%	-	(180)	(1,922)	(3,461)	(4,128)	(4,482)
Profit after tax	-	420	4,483	8,074	9,631	10,458
Cost of machine	(60,000)	-	-	-	-	-
Overhauling cost	-	-	-	(10,000)	-	-
Residual value [WDV×0.8]	-	-	-	-	-	15,890
Addback depreciation	-	15,000	11,250	8,438	8,828	6,621
Addback loss on disposal	-	-	-	-	-	3,973
Net cash flows	(60,000)	15,420	15,733	6,512	18,459	36,942
Discount factor @ 15%	1.00	0.87	0.76	0.66	0.57	0.50
Present value	(60,000)	13,415	11,957	4,298	10,522	18,471
Net present value	(1,337)					

**Conclusion:**

Since expected NPV is negative, LL should not accept the proposal.

(b) Determination of minimum discount rate:

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
	----- Rs. in '000 -----					
Net cash flows [from part (a)]	(60,000)	15,420	15,733	6,512	18,459	36,942
Discount factor @ 10%	1.00	0.91	0.83	0.75	0.68	0.62
Present value	(60,000)	14,032	13,058	4,884	12,552	22,904
Net present value (NPV)	7,430					

$$IRR = A\% + [NPV_a / NPV_a - NPV_b] \times (B\% - A\%)$$

$$IRR = 10\% + [7,430 / 7,430 - (-1,337)] \times (15\% - 10\%)$$

$$IRR = 14.24\% \text{ (Minimum discount rate)}$$

A.3 (a) Statement of equivalent units

	Direct Material	Variable CC	Fixed overheads
Completed units [5500+900-600]	5,800	5,800	5,800
Closing WIP [800×Completion%]	800	320	320
Less: Opening WIP [400×Completion%]	(400)	(240)	(240)
Equivalent units A	6,200	5,880	5,880

Statement of cost per equivalent unit	Direct Material	Variable CC	Fixed overheads
Total cost			
[Conversion cost-Fixed overheads] [B]	82,350	(Bal.) 27,455	16,762
Cost per equivalent unit C= B/A	13,282	4,669	2,851

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<b>(b) Marginal costing profit statement</b>		<b>Rs. in '000</b>
Sales	[5500×25000]	137,500
Less: Variable cost of sales		
Opening WIP	(W-1)	6,079
Opening finished goods	(W-2)	10,137
Variable cost of production	(82,350+27,455)	109,805
Closing WIP	(W-1)	(12,120)
Closing finished goods	(W-2)	(16,156)
		(97,745)
Less: Variable operating costs	[5,500×500]	(2,750)
Contribution		37,005
Less: Fixed costs [16,762+7,500]		(24,262)
Net profit		<b>12,743</b>

<b>Absorption costing profit statement</b>		<b>Rs. in '000</b>
Sales [5,500×25,000]		137,500
Less: Cost of goods sold		
Opening WIP	(W-1)	6,701
Opening finished goods	(W-2)	11,692
Production cost	(82,350+27,455+16,762)	126,567
Closing WIP	(W-1)	(13,032)
Closing finished goods	(W-2)	(18,722)
		(113,206)
Gross profit		24,294
Less: Selling and administrative costs		
Variable operating costs	[5,500×500]	2,750
Fixed operating costs [given]		7,500
		(10,250)
Net profit		<b>14,044</b>

<b>W-1: Cost of opening and closing WIP</b>	<b>Direct Material</b>	<b>Variable CC</b>	<b>Total VC</b>	<b>Fixed OHs</b>	<b>Total costs</b>
Closing WIP					
Cost per EPU [From (a)] (Rs.)	13,282	4,669	17,951	2,851	20,802
Equivalent units [From (a)]	800	320		320	
Total cost (Rs. in '000)	10,626	1,494	12,120	912	13,032
Opening WIP					
Cost per EPU [Current cost/1.05,1.1] (Rs.)	12,650	4,245	16,895	2,592	19,487
Equivalent units [From (a)]	400	240		240	
Total cost (Rs. in '000)	5,060	1,019	6,079	622	6,701

<b>W-2: Finished goods</b>	<b>Direct Material</b>	<b>Variable CC</b>	<b>Total VC</b>	<b>Fixed OHs</b>	<b>Total costs</b>
Opening (Qty.) (given)	600	600		600	
Opening (Rs. in '000)(12650, 4245, 2592 × 600)	7,590	2,547	10,137	1,555	11,692
Closing (Qty.) (given)	900	900		900	
Closing (Rs. in '000) (13282, 4669, 2851 × 900)	11,954	4,202	16,156	2,566	18,722

**A.4 (a) Under/(Over) Absorption of Fixed Production Overheads**

		<b>Rs. in '000</b>
Actual overheads [given]		41,200
Absorbed overheads	[17,000×2×1,250]	42,500
Over absorbed overheads		<b>1,300</b>

<b>Fixed Overhead Expenditure Variance</b>	<b>Rs. in '000</b>



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Budgeted overheads	[32,000×1,250]	40,000
Actual overheads [given]		41,200
Adverse variance	A	(1,200)

**Fixed Overhead Efficiency Variance**

Actual hours		32,400
Allowable hours	[17,000 × 2(i.e.32,000/16,000)]	34,000
Variance		1,600
Absorption rate		1,250
Favorable variance (Rs. in '000)	B	2,000

**Capacity Variance**

Budgeted hours		32,000
Actual hours		32,400
Variance		400
Absorption rate		1,250
Favorable variance (Rs. in '000)	C	500
<b>Total fixed production overhead variance (Rs. in '000)</b>	<b>A+B+C</b>	<b>1,300</b>

(b)		<b>Hours</b>
Projected hours required	[32,400×1.15×0.75] A	27,945
		<b>Rs. in '000</b>
Expected fixed overheads excluding depreciation	[(41,200-12,500)×1.1]	31,570
Depreciation	[12.5+(7.3-1)/8]	13,288
Additional supervision cost	[70,000×12]	840
Revised fixed cost	B	45,698
Absorption rate	B/A	1,635

<b>A.5</b>	<b>For the first three months (per unit)</b>	<b>Alpha</b>	<b>Beta</b>	<b>Gamma</b>
	Sales (8000, 12000, 10000 × 1.1)	8,800	13,200	11,000
	Cost of components used			
	- A (4, 5, 4 × 45)	180	225	180
	- B (2, 4, 3 × 60)	120	240	180
	- C (5, 6, 4 × 30)	150	180	120
	A	450	645	480
	Direct labour			
	- Assembling (10, 12, 10 × 50)	500	600	500
	- Finishing (15, 20, 18 × 40)	600	800	720
	B	1,100	1,400	1,220
	Variable overheads (DL×0.6×0.6)	396	504	439
	Total variable costs	1,946	2,549	2,139
	Contribution per unit	6,854	10,651	8,861
	Qty (1750, 438, 875 × 0.98×3/12) (W-1)	429	107	215
	Total contribution	2,940,366	1,139,657	1,905,115
	<b>For next nine months (per unit)</b>	<b>Alpha</b>	<b>Beta</b>	<b>Gamma</b>
	Sales (8000, 12000, 10000 × 1.1)	8,800	13,200	11,000

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Cost of components used (A×1.15)	518	742	552
Direct labour	1,100	1,400	1,220
Variable overheads	396	504	439
<b>Total variable costs</b>	<b>2,014</b>	<b>2,646</b>	<b>2,211</b>
<b>Contribution</b>	<b>6,786</b>	<b>10,554</b>	<b>8,789</b>
Qty (1750, 438, 875 × 0.98×9/12)(W-1)	1,286	322	643
<b>Total contribution</b>	<b>8,726,796</b>	<b>3,398,388</b>	<b>5,651,327</b>
<b>Net contribution</b>	<b>11,667,162</b>	<b>4,538,045</b>	<b>7,556,442</b>

W-1: Sales		Alpha	Beta	Gamma	Total
Selling price (given)	A	8,000	12,000	10,000	
Sales ratio (given)		4	1	2	
Weighted average sales ratio		32,000	12,000	20,000	<b>64,000</b>
Sales for the year (given)					<b>28,000,000</b>
Sales (on the basis of sales ratio)					
B		14,000,000	5,250,000	8,750,000	
Number of units to be sold	B/A	1,750	438	875	

A.6 Key considerations for professional accountants are stated below:

(a) Developing an organizational reporting strategy:

- Determine the range of users and their needs for various types of reports and disclosures.
- Project planning and management, and structured processes.

(b) Determining materiality:

- In defining report content, materiality should be considered along with the need for other important information characteristics.
- Accountability for materiality thresholds and judgments.

(c) External review and assurance of sustainability disclosures:

- The quality of external assurance is directly linked to stakeholder inclusiveness.
- Clarifying the purpose and scope of the assurance.

A.7 (a) Inventory control can be defined as the system used in an organization to control its investment in inventory/stocks i.e. to minimize, in total, the costs associated with stock.

This includes; the recording and monitoring of stock levels, forecasting future demands and deciding when and how many to order.

Weighted Average stock valuation method should be used in times of fluctuating prices because this method is rational, systematic and not subject to manipulation. It is representative of the prices that prevailed during the entire period rather than the price at any particular point in time. It is because of this smoothening effect that this method should be used for stock valuation in times of fluctuating prices.

(b) (i)

	Without further processing		With further processing	
	S1	S2	S1	S2
Sales price [Sales/Quantity]	1,136 (1,420×80%)	1,064 (2,127×50%)	1,420 (492,800÷347)	2,127 (463,760÷218)
<b>Costs</b>				
Fixed cost (Irrelevant)	-	-	-	-
Variable cost (W-1)	971	786	971	1,309
Further processing costs (given)	-	-	150	450

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Selling Expense (1% of sales price)	11	11	14	21
	(982)	(797)	(1,135)	(1,780)
Profit	154	267	285	347

**Conclusion**

Sell S1 after further processing  
Sell S2 after further processing

(ii) Lower of costs and NRV	Without further processing		With further processing	
	S1	S2	S1	S2
<i>Without further processing</i>				
NRV [Sales price less selling costs] A	1,125	1,053	1,256	1,656
Costs [Variable + Fixed costs] B	1,095	910	1,095	1,433
Lower of costs or NRV	1,095	910	1,095	1,433
Value of damaged units	16,425,000	20,475,000	16,425,000	32,242,500
Adjustments requirement in the books	No	No	No	No

**WORKINGS:**

**W-1: Variable cost per unit**

	S1	S2
	----- Rs. in '000 -----	
Total costs (given)	431,430	349,370
Fixed cost (W-2)	48,793	31,207
Variable cost (Total cost – Fixed cost)	382,637	318,163
No. of units manufactured (W-3)	394	243
Variable cost per unit	(382,637 ÷ 394)	(318,163 ÷ 243)
	971	1,309

**W-2: Fixed cost per unit**

	S1	S2	Total
	----- Rs. in '000 -----		
Fixed costs (given)			80,000
No. of units produced (W-3)	394	252	646
Fixed cost per unit	(80,000 ÷ 646)		124
Allocated fixed cost	(394 ÷ 646 × 80,000)	(252 ÷ 646 × 80,000)	
	48,793	31,207	

**W-3: No. of completed units manufactured**

	S1	S2
No. of units sold [given]	347,000	218,000
Closing stock [given]	47,000	34,000
No. of completed units manufactured [including damaged units]	394,000	252,000
Damaged stock [Damaged × 1 – Completion]	-	(9,000)
No. of completed units manufactured [excluding damaged goods]	394,000	243,000

(THE END)



INSTITUTE OF CHARTERED ACCOUNTANTS OF PAKISTAN CERTIFICATE IN ACCOUNTING AND FINANCE (CAF) EXAMINATIONS EXAMINERS' COMMENTS	
<b>SUBJECT</b> Cost & Management Accounting (CMA)	<b>SESSION</b> Autumn 2019

**Passing %**

Question wise							Overall
1	2	3	4	5	6	7	
29%	82%	39%	39%	62%	5%	08%	31%

**General comments**

Overall performance in this attempt was lower than previous attempt as passing ratio declined from 41% to 31%. Disappointing performance in Question 6 and Question 7 reflected selected study and poor time management in the overall attempt of question paper.

**Question-wise common mistakes observed**

**Question 1(a)**

- Examinees could not apply the concept of weighted average ratio to compute number of units sold.
- Examinees attempted to compute break even using contribution margin of both products individually instead of using combined contribution margin.

**Question 1(b)**

Examinees could not compute the net margin (contribution margin less desired retained profit percentage) correctly. Examinees applied profit retention percentage to existing sales without considering the other factors i.e. taxation and contribution margin. Please refer ICAP's suggested answer for further guidance.

**Question 2(a)**

- Examinees either missed to apply the impact of increase in quantity of production and sales or the impact of inflation while computing sales revenue and variable cost over a life of project.
- Examinees did not exclude allocated overheads while accounting for fixed cost.
- Examinees accounted for overhauling cost on machinery at the end of year 4 instead of beginning of year 4.
- Examinees did not account for depreciation on overhauling cost.

**Question 2(b)**

Examinees could not apply correct formula of IRR while computing the required discount rate.

**Question 3(a)**

Examinees could not account for opening and closing WIP units correctly while computing statement of equivalent units.

**Question 3(b)**

- Examinees could not differentiate between marginal and absorption costing while preparing the profit statements and used the components (contribution and gross profit) interchangeably under each statement.
- Examinees did not account for opening and closing WIPs while preparing marginal and absorption profit statements.
- Examinees did not account for change in material and conversion costs while computing opening WIP and finished goods.
- Examinees wasted time in computing production cost per unit wherein production cost was given in the question.

**Question 4(a)**

Examinees mixed up fixed overhead efficiency variance with fixed overhead capacity variance.

**Question 4(b)**

- Examinees either missed increase in production or increase in efficiency while determining the projected hours.
- Examinees did not account for increase in fixed overheads while computing the fixed costs.

**Question 5**

- Examinees could not apply the concept of weighted average sales ratio while determining the projected sales of each product.
- Examinees did not consider the impact of increase in the price of components from April and instead either accounted for whole year or ignored it altogether.
- Examinees could not account for decrease in demand while computing the variable cost components.
- Examinees did not apply the correct rates (60% and 60%) while computing the variable overheads and instead applied (60% and 40%).

**Question 6**

Examinees opted for guess work and performed poorly on this otherwise straight forward question from study text and question bank.

**Question 7(a)**

Examinees wrongly suggested FIFO method instead of Weighted Average method to be used in the times of fluctuating prices.

**Question 7(b)**

- Examinees could not bifurcate between variable cost and fixed cost while determining total costs under with or without further processing options.
- Examinees did not account for damaged units correctly while determining number of completed units manufactured.
- Examinees ignored the concept of valuing the inventory at lower of cost and NRV and simply reproduced the numbers from requirement (i) of this part.

***(THE END)***



**Cost and Management Accounting**  
 Summary of Marking Key  
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**Note regarding marking scheme:**

The marking scheme is given as a guide. Markers also award marks for alternative approaches to a question and relevant/well-reasoned comments/explanations. Moreover, the available marks in answer may exceed the total marks of a question.

		Mark(s)		
A.1	(a)	Computation of:		
		▪ number of units sold, variable cost and contribution	4.0	
		▪ fixed cost and combined contribution	1.0	
		▪ break-even sales	1.0	
		▪ margin of safety units	1.0	
	(b)	▪ Determination of net margin	2.5	
		▪ Sales revenue to yield net margin	1.0	
	▪ Number of carpets and rugs to be sold	1.5		
A.2	(a)	▪ Year-wise computation of sales, variable costs and fixed costs (other than depreciation) incorporating effect of inflation and volume	4.0	
		▪ Calculation of depreciation, loss on disposal and added back to profit after tax	3.0	
		▪ Cost of machine, overhauling cost and residual value	2.0	
		▪ Computation of net present value	1.5	
		▪ Conclusion	0.5	
	(b)	Determination of minimum discount rate	3.0	
	A.3	(a)	▪ Equivalent units	3.0
			▪ Cost per equivalent unit	1.0
		(b) (i)	<b>Marginal costing</b>	
			▪ Variable cost of production	4.0
▪ Variable operating costs			3.0	
▪ Profit			1.0	
(b) (ii)			<b>Absorption costing</b>	
			▪ Production cost	4.0
		▪ Gross profit	2.0	
		▪ Profit	1.0	
A.4	(a)	▪ Over absorption of fixed overheads	1.5	
		▪ Expenditure variance	1.5	
		▪ Efficiency variance	1.5	
		▪ Capacity variance	1.5	
	(b)	▪ Projected required hours	1.0	
		▪ Expected fixed overheads, depreciation and supervision cost	2.5	
		▪ Absorption rate	0.5	

**Cost and Management Accounting**  
 Summary of Marking Key  
 Certificate in Accounting and Finance – Autumn 2019

		<b>Mark(s)</b>	
<b>A.5</b>	▪ Sales	<b>4.0</b>	
	▪ Cost of components used	<b>6.0</b>	
	▪ Direct labor cost	<b>4.0</b>	
	▪ Variable overheads	<b>1.0</b>	
	▪ Contribution margin	<b>0.5</b>	
	▪ Fixed cost	<b>0.5</b>	
<b>A.6</b>	(a) 01 mark for each consideration	<b>2.0</b>	
	(b) 01 mark for each consideration	<b>2.0</b>	
	(c) 01 mark for each consideration	<b>2.0</b>	
<b>A.7</b>	(a) ▪ Explanation of inventory control	<b>2.0</b>	
	▪ Suggestion of stock valuation method	<b>1.0</b>	
	▪ Explanation of suggested stock valuation method	<b>2.0</b>	
	(b) (i)	▪ Sales price	<b>2.0</b>
		▪ Fixed costs	<b>2.0</b>
		▪ Variable costs	<b>5.0</b>
		▪ Further processing costs	<b>0.5</b>
		▪ Selling expense	<b>1.0</b>
		▪ Profit	<b>0.5</b>
		▪ Conclusion	<b>1.0</b>
	(ii)	▪ Net realizable value	<b>2.0</b>
		▪ Total costs	<b>2.0</b>
		▪ Value of damaged units	<b>2.0</b>

**(THE END)**



The Institute of  
Chartered Accountants  
of Pakistan

## Certificate in Accounting and Finance Stage Examination

5 March 2020  
3 hours – 100 marks  
Additional reading time – 15 minutes

### Cost and Management Accounting

**Instructions to examinees:**

- (i) Answer all SEVEN questions.
- (ii) Answer in black pen only.

Q.1 Venus Limited (VL) is engaged in the business of processing and selling cashew nuts. It purchases raw cashew nuts which are then processed and packaged before selling to consumers.

VL uses standard costing system. The standard cost card for the month of February 2020 is given below:

**Standard cost card per tonne of processed cashew nuts**

Direct material	1.75 tonnes of raw cashew nuts at Rs. 50,000 per tonne.
Direct labour	8 hours at Rs. 300 per hour (idle time is estimated at 5% of total time).
Fixed production overhead	Rs. 275 per direct labour hour for budgeted production of 17,500 tonnes of processed and packaged cashew nuts.

**Actual results for the month of February 2020:**

- (i) 17,050 tonnes were produced.
- (ii) 31,500 tonnes of direct material at Rs. 46,500 per tonne were purchased and consumed during the month.
- (iii) Each tonne of processed cashew nuts took 7 hours to produce and direct labour was paid at Rs. 375 per hour.
- (iv) Scheduled maintenance of machine was not carried out which reduced the idle time to 4%.
- (v) Fixed production overhead amounting to Rs. 32 million was incurred during the month.

VL's actual profit for the month of February 2020 was higher than the budgeted profit. Views of three department heads on high profitability are as follows:

- **Head of purchase department**  
Despite stable prices of raw cashew nuts in the market for last three years, his department has saved significant cost by purchasing material from a new supplier at a relatively cheaper rate by good negotiations. This contributes significantly to the increase in VL's profitability.
- **Head of production department**  
His team's decision to increase labour rate has resulted in an increased motivation and overall efficiency of workers which led to the increase in VL's profitability.
- **Head of maintenance department**  
Delaying the scheduled maintenance of machines has contributed to VL's profitability. The machines are running well, therefore, scheduled maintenance can be delayed for another month.



**Required:**

- (a) Calculate the following variances for the month of February 2020:
- All material variances
  - All labour variances
  - Fixed production overhead expenditure variance (08)
- (b) Critically evaluate the views of departmental heads. Your evaluation should include the discussion of claims made and likely impact of their decisions on the long-term profitability of VL. (07)

Q.2 Neo Hardware (Private) Limited (NHPL) is engaged in the manufacturing and marketing of a single product 'locks'. NHPL is in the process of preparing its budgeted profit or loss statement for the year ending 28 February 2021. Following information pertains to the year ended 29 February 2020:

- (i) Extracts from profit or loss statement:

	Rs. in million
Sales	6,930
Cost of goods sold:	
Material	(3,140)
Labour	(645)
Manufacturing overheads	(960)
Gross profit	2,185
Selling expenses (55% variable)	(468)
Administration expenses	(276)
Net profit before tax	<b>1,441</b>

- (ii) The production plant at NHPL factory has an annual production capacity of 6 million locks. During the year, it operated at 77% of capacity and all locks produced during the year were sold out.
- (iii) During the year, NHPL had received a quotation from a Chinese company at Rs. 1,400 per lock, similar to NHPL's locks. Since the production target for the year had already been met, the management decided to keep this option open for any future shortfall in production.
- (iv) NHPL has divided the sales team in three regions i.e. East, West and Central with 20, 24 and 46 sales personnel in each region respectively. During the year, the ratio of each region's sales to total sales was 20%, 30% and 50% respectively.
- (v) Manufacturing overheads include fixed overheads of Rs. 625 million which include depreciation of Rs. 415 million.
- (vi) Administration expenses comprised of fixed costs including depreciation of Rs. 23 million.

**Information and projections for the budget year ending 28 February 2021**

- (i) Selling price would be increased by Rs. 150 per lock.
- (ii) It is anticipated that sales volume will increase by 25% and in order to achieve this target, sales commission would be introduced to motivate the sales personnel. However, the commission would be paid on regional teams' performances and the rate of commission would be determined on the basis of average number of units sold by each team member as follows:

Average number of locks sold by a sales person	Commission % on regional sale revenue
0 – 50,000	1.00%
50,001 – 70,000	1.25%
70,001 – 90,000	1.50%
> 90,000	1.75%

- (iii) It is expected that East, West and Central will contribute to the increase in sales volume by 10%, 30% and 60% respectively.
- (iv) The price of locks from the Chinese company is expected to increase to Rs. 1,500 per lock.
- (v) Labour is short in supply and already working overtime. The increase in production can only be achieved by increasing efficiency of the existing labour. The management has approved 20% bonus for labour which would increase the efficiency by 15%.
- (vi) At the beginning of the year, a major overhaul amounting to Rs. 55 million will be carried out on one of the machines in a manufacturing department which was originally purchased in 2018 for Rs. 100 million. The overhauling would increase the original useful life of machine from 4 years to 8 years and salvage value would increase from Rs. 12 million to Rs. 15 million. The company uses straight line method for depreciating its machines.
- (vii) All variable costs would increase by 8% and all fixed costs other than depreciation would increase by 5%.

**Required:**

Prepare budgeted profit and loss statement for the year ending 28 February 2021. (18)

- Q.3 Ayyan Group (AG) opened a pizza outlet under the brand name 'Say Cheese' (SC) two years ago. The initial assessment of the investment in SC had high financial prospects. AG entered into a five year rent agreement for pizza outlet. The rent for the first year was agreed at Rs. 600,000 subject to an annual increment of 10%. For pizza preparation, AG imported equipment amounting Rs. 5,000,000 having useful life of five years with a residual value of Rs. 1,000,000.

After two years of operations, SC has failed to achieve desirable results and the management of AG is skeptical whether to continue to operate SC for further three years or not. You have been provided the following information in this regard:

- (i) Sales for the first two years were amounted to Rs. 7,500,000 and Rs. 9,000,000 respectively.
- (ii) Variable costs for the first two years were amounted to Rs. 6,000,000 and Rs. 7,080,000 respectively.
- (iii) The fixed costs other than rent and depreciation for the first two years were amounted to Rs. 500,000 and Rs. 525,000 respectively.
- (iv) The trend in sales, variable costs and fixed costs other than rent and depreciation from year 1 to year 2 is expected to continue in future.
- (v) If management of AG decides to discontinue the investment in SC now, equipment could be sold for Rs. 4,000,000. Further, termination of rent agreement would require three months' notice period.
- (vi) Applicable tax rate is 30% and tax is payable in the year in which liability arises. Tax depreciation on equipment is allowed at the rate of 25% under reducing balance method.
- (vii) The cost of capital of AG is 16%.

Assume that except stated otherwise, all cash flows arise at the end of the year.

**Required:**

By using net present value method, recommend whether management of AG should continue to operate SC for a further period of three years or discontinue it now. (16)



- Q.4 Ring Limited (RL) is engaged in the manufacture and sale of customized products. In January 2020, RL entered into an agreement with Gamma Limited (GL) for manufacture and supply of 3,500 units of a customized product 'Zing' at Rs. 4,000 per unit.

RL placed the order for raw material AA-2 and the supplier agreed to supply the material in second week of March 2020. RL had also hired skilled labour for the production of Zing. However, in February 2020, GL went bankrupt.

RL has recently been approached by Sigma Limited (SL) for supply of 3,500 units of D-Zing which is a modified version of Zing. RL can use the ordered raw material and the hired skilled labour for this product. The production of D-Zing will take three months. Following information has been provided in this regard:

#### **Machinery**

Specialized machinery will be needed to produce D-Zing. Following proposals are under consideration:

- (i) Lease machinery for three months at monthly lease rentals of Rs. 250,000 and an upfront payment of refundable security deposit of Rs. 5,000,000. The upfront payment will be financed through running finance @ 20% per annum. As per the lease terms, monthly maintenance cost of Rs. 15,000 will be borne by the lessor.
- (ii) Lease machinery at monthly lease rentals of Rs. 160,000 for a minimum period of six months. In this case, monthly maintenance of Rs. 20,000 will be borne by RL which will be incurred only in the months in which machinery is operative.

#### **Direct material**

Following raw materials will be required for manufacturing of each unit of D-Zing:

- (i) **15 units of AA-2:** RL had already ordered 50,000 units of AA-2 at Rs. 75 per unit under the original contract of Zing. The current market price for AA-2 is Rs. 80 per unit. If the contract is not fulfilled, a penalty at 20% of the contract value will be payable by RL.
- (ii) **10 units of A-78:** A-78 is available in market at Rs. 110 per unit. However, it can also be produced internally at a variable cost of Rs. 80 per unit. Fixed cost would be absorbed at Rs. 25 per unit. Internally produced A-78 would be subject to 20% normal loss.
- (iii) **5 units of C-11:** Market price of C-11 is Rs. 20 per unit. However, a substitute material D-50 can also be used after processing it at a cost of Rs. 15 per unit. Presently 5,000 units of D-50 is available in stock as a result of over purchasing for a previous order. D-50 was purchased at Rs. 5 per unit and can be sold back to the supplier at Rs. 3 per unit.

#### **Direct labour**

- (i) RL had hired skilled labour from a third party at Rs. 1,000 per hour under the original contract of Zing. If order from SL is not accepted, 200 labour hours would become idle and RL will have to pay 50% of the contract rate.
- (ii) If SL's offer is accepted, then D-Zing would be produced in batches of 350 units and the first batch would require 400 skilled labour hours. Learning curve effect is estimated at 80% but would remain effective for the first four batches only. The index of learning curve is  $-0.322$ .
- (iii) 1.5 hours of semi-skilled labour is required for every unit of D-Zing. Since there is a shortage of semi-skilled labour in the market, only 4,000 labour hours are available at Rs. 600 per hour. However, labour is willing to do overtime at a 50% higher rate up to maximum of 1,500 hours. Alternatively, unskilled labour can be hired at Rs. 200 per hour, however, unskilled labour would require 300% of the time taken by semi-skilled labour. This can be reduced to 250% if training is given to them at a cost of Rs. 300,000.

#### **Variable overheads**

Variable overheads would be charged at Rs. 125 per skilled labour hour.



**Required:**

By using the relevant costs approach, compute the minimum price per unit that RL may quote. (20)

- Q.5 Scents Limited produces three joint products P, Q and R. Raw material is added at the beginning of process I. On completion of process I, these three products are split in the ratio of 50:30:20 respectively. Joint costs incurred in process I are apportioned on the basis of net realizable value of the three products at split-off point. Products P and Q are sold in the same state whereas product R is further processed in process II before being sold in the market. A by-product TS is also produced in process II.

Following information relating to the two processes is available for the month of February 2020:

	Process I	Process II
Raw material at Rs. 411 per kg	744,000 kg	-
Direct labour at Rs. 200 per hour	611,568 hours	55,450 hours
Production overheads	Rs. 91,456,000	Rs. 7,230,000

**Additional information:**

- (i) Loss of 7% is considered normal in process I.
- (ii) Details of opening and closing stocks, estimated cost to sell and selling price are given as under:

	Selling price per kg (Rs.)	Cost to sell per kg (Rs.)	Opening stock (kg)	Closing stock (kg)
Product P	1,045	15	-	20,200
Product Q	960	10	-	15,140
Product R	1,021	12	7,800	48,134

- (iii) Values of opening and closing stocks of product R comprised of cost of both processes. Value of opening stock of product R is Rs. 5,850,000.
- (iv) In process II, 7450 kg of TS was produced and sold at Rs. 175 per kg. Proceeds from sale of TS are adjusted against cost of process II.
- (v) Selling and administration costs are charged to P, Q and R at 12% of sales.

FIFO method is used for inventory valuation.

**Required:**

Prepare product-wise income statement for the month of February 2020. (15)

- Q.6 For the purpose of this question, assume that today is 01 March 2020.

On 01 March 2018, Shahab Pakistan Limited (SPL) purchased 10,000 convertible bonds of Delphi Limited (DL) at par value of Rs. 100 each. The bonds carry annual mark-up of 12% which is payable semi-annually that is at the end of February and August each year. Each bond is convertible into 5 ordinary shares of DL which are currently trading at Rs. 24 each. Any bonds not converted by 28 February 2022 will be redeemed at Rs. 120 per bond. SPL's cost of capital is 15%.

**Required:**

Advise whether SPL should hold the bonds till redemption or convert them into ordinary shares today. Also determine at what market price per share SPL would be indifferent to hold bonds till redemption or convert into shares today. *(Ignore tax)* (04)

- Q.7 (a) List any **four** situations in which EOQ model for determining optimum level of stocks becomes invalid. (04)
- (b) Jamal Limited (JL) purchases raw material T3 for its product DBO on a quarterly basis as per the requirement of the production department. The management is considering to revise the existing policy of placing orders for T3. Following information is available in this regard:
- (i) Annual production of DBO is 19,000 units.
  - (ii) Each unit of DBO requires 1 kg of T3 which is the resultant quantity after normal loss of 5%.
  - (iii) Minimum order quantity set by the supplier for purchase of T3 is 3,500 kg. However, the supplier offers following prices at different order quantities:

Order quantity (kg)	Price per kg (Rs.)
3,500	305
4,000	299
5,000	296

- (iv) JL maintains T3's safety stock of 320 kg.
- (v) The cost of placing each order is Rs. 4,200 out of which Rs. 1,780 pertains to salaries of staff of purchase department.
- (vi) Holding cost per kg of average stock is Rs. 260 which includes rent of Rs. 180 for the floor space occupied by each kg. Variation in the stock held has no effect on the remaining holding cost.

**Required:**

Determine the purchase order quantity of T3 offered by the supplier at which JL's cost would be minimized. (08)

(THE END)

**Cost and Management Accounting**  
Suggested Answers  
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A.1 (a)	<b>Material Variances</b>	Rs. in million
	<b>Price variance</b>	
	Standard price per ton	50,000.0
	Actual price per ton	46,500.0
	Price saved per ton	3,500.0
	Actual quantity purchased and consumed	31,500.0
	<b>Favourable</b>	<b>110,250,000.0</b>
	<b>Usage variance</b>	
	Actual quantity of material used to make actual production	31,500.0
	Standard quantity allowed for actual production [1.75×17,050]	29,837.5
	Excess quantity used	1,662.0
	Standard cost per ton	50,000.0
	<b>Adverse</b>	<b>83,125,000.0</b>
	<b>Total material variance</b>	<b>Favourable 27,125,000.0</b>
	<b>Labour Variances</b>	
	<b>Rate variance</b>	
	Actual rate per hour	375.0
	Standard rate per hour	300.0
	Excess rate per hour	75.0
	Actual hours paid [17,050×7]	119,350.0
	<b>Adverse</b>	<b>8,951,250.0</b>
	<b>Efficiency variance</b>	
	Standard hours allowed for actual production [8×17,050×0.95]	129,580.0
	Actual hours used for actual production (17,050×0.96×7)	114,576.0
	Hours saved	15,004.0
	Standard rate per hour	300.0
	<b>Favourable</b>	<b>4,501,200.0</b>
	<b>Idle time variance</b>	
	Estimated idle time [17,050×8×0.05]	6,820.0
	Actual idle time [17,050×7×0.04]	4,774.0
	Idle time saved	2,046.0
	Standard rate per hour	300.0
	<b>Favourable</b>	<b>613,800.0</b>
	<b>Total labour variance</b>	<b>Adverse 3,836,250.0</b>
	<b>Fixed production overhead expenditure variance</b>	
	Budgeted fixed production overhead [17,500×8×275]	38,500,000.0
	Actual fixed production overhead	32,000,000.0
	<b>Favourable</b>	<b>6,500,000.0</b>



**Cost and Management Accounting**  
Suggested Answers  
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(b) **Commentary**

**Material variances**

Purchase department's claim is correct to the extent that savings have been made by purchasing from a new supplier at a cheaper rate as indicated by favourable direct material price variance of Rs. 110.25 million. However, his claim of getting good price by using good negotiation skills does not seem correct as market for cashew nuts remained stable for the past three years. It seems that quality of direct material is compromised as indicated by adverse direct material usage variance of Rs. 83.13 million. Although total direct material variance is still favourable i.e. Rs. 27.13 million, using low quality material may adversely affect the quality of final product which might create a risk of losing customers and profitability in the long-term.

**Labour variances**

Favourable labour efficiency variance of Rs. 4.5 million indicates that increase in labour rate has boosted workers' morale and increased their motivation level which has made them work more efficiently. However, this decision has also resulted in an adverse labour rate variance of Rs. 8.95 million which ultimately results in overall adverse labour variance amounting Rs. 3.8 million. It is implied that labour rate should have been increased by a lower amount as the impact of increased rate is currently outweighing the benefit obtained from it i.e. efficiency. If this trend continues, it would adversely impact the overall profitability of the company in the long-term.

Further, delaying the scheduled maintenance of machines is the reason for lower idle labour hours which means that the entire increase in efficiency cannot be fully attributed to the wage increase.

**Fixed production overhead expenditure variance**

The maintenance department's decision to delay the annual maintenance has resulted in a favourable fixed production overhead expenditure variance of Rs. 6.5 million. However, maintenance cost can only be delayed, not avoided, therefore Rs. 8 million saved during this month would have to be spent in the upcoming months which would have an adverse impact on variances for those months. Further, maintenance department's point of view is not correct that machines are working well so the maintenance can be delayed. In fact, the scheduled maintenance should be carried out regularly to avoid any future shutdowns and disturbances in production which may adversely impact the long-term profitability of the company.

**Cost and Management Accounting**  
Suggested Answers  
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		Rs.in million
Sales	[5.775(W-1)×1,650 (W-2)]	9,529
Less: Sales commission	(W-3)	(126)
Net sales		9,403
Cost of goods sold:		
Material	(3,140×1.15×1.08)	3,900
Labour	(645×1.15×1.08×1.2)	961
Manufacturing overheads	(W-4)	1,046
Imported locks	(462,000(W-1)×1,500)	693
		(6,600)
Gross profit		2,803
Selling expenses	(W-5)	(568)
Administration expenses	[(276-23)×1.05]+23	(289)
Net profit		1,946

W-1:		No. of locks
Required production	(6,000,000×0.77= 4,620,000×1.25)	5,775,000
Less: Maximum production due to labour constraints	(4,620,000×1.15)	5,313,000
Locks to be imported from chinese company		462,000

W-1.1:		No. of locks
Increase in total sales	(5,775,000-4,620,000)	1,155,000

W-2:		Rs. 1,650
Selling price per unit	[6,930 million÷4.62+150]	

**W-3: Sales commission**

Categories	Existing sales	Increased sales (W-1.1)	Total sales	No. of persons	Avg. unit sale/person	Commission %	Commission (Rs.)
	----- Units -----		(A)			(B)	(A×B)×1,650
A	924,000	115,500	1,039,500	20	51,975	1.25%	21,439,688
B	1,386,000	346,500	1,732,500	24	72,188	1.50%	42,879,375
C	2,310,000	693,000	3,003,000	46	65,283	1.25%	61,936,875
	4,620,000	1,155,000	5,775,000	90			126,255,938

**W-4: Manufacturing overheads**

		Rs. in million
Fixed overheads other than depreciation	[(625-415)×1.05]	221
Depreciation	(W-4.1)	409
Variable overheads	[(960-625) ×1.15×1.08]	416
		1,046

**W-4.1: Depreciation**

		Rs. in million
Existing depreciation		415
Less: depreciation on machine before overhaul	[(100-12)÷4]	(22)
Add: depreciation after overhaul	[100-(22×2)+55-15]÷(8-2)]	16
		409

**W-5: Selling expenses**

		Rs. in million
Variable	(468×0.55×1.25×1.08)	347
Fixed	(468×0.45×1.05)	221
		568

**Cost and Management Accounting**  
Suggested Answers  
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A.3	<b>If discontinue now</b>	<b>Rupees</b>
	Resale value of equipment (given)	4,000,000
	Tax on gain on sale of equipment (W-1)	(356,250)
	Net rent expense (W-2)	(127,050)
		<b>3,516,700</b>
	<b>If continue for three more years</b>	
Present value of cash flows (W-3)	<b>3,745,878</b>	

**Conclusion:**

AG should continue to operate SC for a further period of three years as this option provides higher return to the company.

<b>W-1: Tax on gain on sale of machine</b>		<b>Rupees</b>
Resale value of equipment		4,000,000
Tax WDV of equipment (W-3.2)		(2,812,500)
Taxable gain		1,187,500
Tax @ 30% on gain (1,187,500×30%)		<b>356,250</b>

<b>W-2: Net rent expense</b>		<b>Rupees</b>
Rent payable [726,000×3/12]		181,500
Tax saving on rent expense @ 30%		(54,450)
Net rent expense		<b>127,050</b>

<b>W-3:</b>	<b>1</b>	<b>2</b>	<b>3</b>
	----- Rupees -----		
Sales [9,000,000×1.2(W-3.1)]	10,800,000	12,960,000	15,552,000
Variable costs [7,080,000×1.18(W-3.1)]	(8,354,400)	(98,58,192)	(11,632,667)
Contribution	2,445,600	3,101,808	3,919,333
Fixed costs other than rent and depreciation [500,000×1.05(W-3.1)]	(551,250)	(578,813)	(607,754)
Depreciation (W-3.2)	(703,125)	(527,344)	(395,508)
Loss on disposal [1,000,000–1,186,523(W-3.2)]			(186,523)
Rent expense	(726,000)	(798,600)	(878,460)
Profit before tax	465,225	1,197,051	1,851,088
Tax @ 30%	(139,568)	(359,115)	(555,326)
Profit after tax	325,657	837,936	1,295,762
Add back depreciation	703,125	527,344	395,508
Add back loss on disposal			186,523
Residual value of equipment			1,000,000
Net cash flows	1,028,782	1,365,280	2,877,793
Discount factor @ 16%	0.862	0.743	0.641
Present value	886,810	1,014,403	1,844,665
NPV	3,745,878		



**Cost and Management Accounting**  
Suggested Answers  
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**W-3.1: Trend in sales, variable costs and fixed costs other than rent and depreciation**

Sales	$[9,000,000 \div 7,500,000]$	1.20
Variable costs	$[7,080,000 \div 6,000,000]$	1.18
Fixed costs other than rent and depreciation	$[525,000 \div 500,000]$	1.05

**W-3.2: Depreciation**

	Rupees
Cost	5,000,000
Depreciation - Year 1	1,250,000
WDV	3,750,000
Depreciation - Year 2	937,500
WDV	2,812,500
Depreciation - Year 3	703,125
WDV	2,109,375
Depreciation - Year 4	527,344
WDV	1,582,031
Depreciation - Year 5	395,508
WDV	1,186,523

A.4

Machinery	----- Rupees -----	
Lower of:		
<b>Proposal 1</b>		
- Lease rentals <span style="float: right;"><math>[250,000 \times 3]</math></span>	750,000	
- Finance cost <span style="float: right;"><math>[(5,000,000 \times 20\%) \div 4]</math></span>	250,000	
	1,000,000	
<b>AND</b>		
<b>Proposal 2</b>		
- Lease rentals <span style="float: right;"><math>(160,000 \times 6)</math></span>	960,000	
- Maintenance <span style="float: right;"><math>[20,000 \times 3]</math></span>	60,000	
	1,020,000	1,000,000
<b>Direct Material</b>		
<b>AA-2</b>		
Contract price <span style="float: right;"><math>[50,000 \times 75]</math></span>	3,750,000	
Less: Savings from penalty amount <span style="float: right;"><math>[50,000 \times 75 \times 20\%]</math></span>	(750,000)	
Purchasing cost <span style="float: right;"><math>[(3,500 \times 15) - 50,000] \times 80]</math></span>	200,000	3,200,000
<b>A-78</b>		
Lower of:		
Purchasing cost <span style="float: right;"><math>[3,500 \times 10 \times 110]</math></span>	3,850,000	
<b>AND</b>		
Internal cost <span style="float: right;"><math>[(3,500 \times 10 \times 80) \div 0.8]</math></span>	3,500,000	3,500,000
<b>C-11</b>		
Opportunity cost of selling back <span style="float: right;"><math>[5,000 \times 3]</math></span>	15,000	
Further processing cost <span style="float: right;"><math>[5,000 \times 15]</math></span>	75,000	
Purchasing cost <span style="float: right;"><math>[(3,500 \times 5) - 5,000] \times 20]</math></span>	250,000	340,000

**Cost and Management Accounting**  
Suggested Answers  
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Direct Labour	----- Rupees -----	
<b>Skilled</b>		
Idle hours saved <span style="float: right;">[200×1,000×50%]</span>	(100,000)	
Labour for 10 batches <span style="float: right;">[1,024(W-1)+1,092(W-1)]×1,000</span>	2,116,000	<b>2,016,000</b>
<b>Semi-skilled</b>		
Lower of:		
Normal rate <span style="float: right;">[4,000×600]</span>	2,400,000	
Overtime <span style="float: right;">[(3,500×1.5)-4,000]×600×1.5</span>	1,125,000	
	<b>3,525,000</b>	
<b>AND</b>		
Unskilled		
Without training		
Labour cost <span style="float: right;">[3,500×1.5×3×200]</span>	3,150,000	
<b>AND</b>		
With training		
Labour cost <span style="float: right;">[3,500×1.5×2.5×200]</span>	2,625,000	
Training cost	300,000	
	<b>2,925,000</b>	<b>2,925,000</b>
Variable OH		
Cost <span style="float: right;">[1,024(W-1)+(182×6)]×125</span>		<b>264,500</b>
Total relevant costs		<b>13,245,500</b>
Minimum price to be quoted <span style="float: right;">(13,245,500÷3,500)</span>		<b>3,784</b>
<b>Irrelevant costs/income</b>		
- Fixed overhead absorbed for internal production of A-78		
- Maintenance cost of machine under proposal A i.e. that is lease offer		
- Original purchase cost of D-50 of Rs. 5 per unit		

W-1: Learning curve effects	No. of hours
For the first 4 batches <span style="float: right;">[4×400×(4)<sup>-0.322</sup>]</span>	1,024
For the first 3 batches <span style="float: right;">[3×400×(3)<sup>-0.322</sup>]</span>	842
For the 5th batch and onwards <span style="float: right;">(1,024-842)</span>	182
Total hours <span style="float: right;">(182×6)</span>	1,092

**Cost and Management Accounting**  
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A.5

	P	Q	R
	----- Rupees -----		
Sales (quantity sold × selling price)	340,419,200	184,738,560	92,502,600
<b>Cost of sales</b>			
Opening stock	-	-	5,850,000
Production cost	(W-1)273,813,041	(W-1)151,527,605	(W-5)110,622,450
Less: Closing stock [Cost per kg (W-1)&(W-5)×quantity(W-1)]	(16,010,318)	(11,067,794)	(40,666,973)
<b>Cost of sales</b>	257,802,723	140,459,811	75,805,477
<b>Gross profit</b>	82,616,477	44,278,749	16,697,123
Selling and administration costs @12% of revenue	(40,850,304)	(22,168,627)	(11,100,312)
<b>Net profit</b>	41,766,173	22,110,122	5,596,811

**W-1: Quantity schedule**

<i>Process I</i>	Quantity produced [Total Quantity W-2)×split ratio A	Closing Stock	Quantity transferred/ Sold	NRV of products (W-3)	Total Cost (as per NRV ratio) B	Cost per kg C = B / A
Product P - 50%	345,960	20,200	325,760	356,338,800	274,203,639	792.59
Product Q - 30%	207,576	15,140	192,436	197,197,200	151,743,761	731.03
Product R - 20%	138,384	-	138,384	121,645,071	93,606,200	
	691,920	35,340	656,580	675,181,071	(W-4)519,553,600	

**Process II**

	Product R Kgs
Opening stock	7,800
Quantity produced	130,934*
Closing stock	(48,134)
<b>Quantity sold</b>	90,600

\*[138,384-7,450]

**W-2:**

	Kgs
Input materials	744,000
Normal loss @7%	(52,080)
<b>Total quantity produced</b>	691,920

**W-3:**

	P	Q	R
	----- Rupees -----		
Selling price per kg	1,045	960	1,021
Less: Estimated cost to sell per kg	15	10	12
	1,030	950	1,009
Less: Estimated further processing cost per kg (Process II)			
- Labour cost (11,090,000(W-5)/130,934)	-	-	84.70
- Production overheads (7,230,000/130,934)	-	-	55.22
- Sales of byproduct TS [(175×7,450)/130,934]	-	-	(9.96)
	-	-	129.96
<b>Net realizable value per kg</b>	1,030	950	879.04
<b>Net realizable value</b> [NRV per kg × quantity produced(W-1)]	356,338,800	197,197,200	121,645,071



**Cost and Management Accounting**  
Suggested Answers  
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W-4:		Rupees
<i>Process I</i>		
Material cost	(744,000×411)	305,784,000
Labour	(611,568×200)	122,313,600
Production overheads		91,456,000
<b>Total cost of process I</b>		<b>519,553,600</b>

W-5:		Rupees
<i>Process II</i>		
Cost transferred from PI (W-1)		93,606,200
Labour cost (55,450×200)		11,090,000
Production overheads		7,230,000
		111,926,200
Less: Sales of byproduct TS (175×7,450)		(1,303,750)
<b>Total cost of process II</b>		<b>110,622,450</b>
Cost/kg of final product R[110,622,450÷130,934(W-1)]		844.87

A.6	$P = R \left[ \frac{1 - (1+i)^{-n}}{i} \right] = 60,000 \left[ \frac{1 - (1+0.075)^{-4}}{0.075} \right] \Rightarrow$	200,960
	$P = S(1+i)^{-n} = 1,200,000 (1+0.15)^{-2} \Rightarrow$	907,200
		<b>1,108,160</b>
	Market value of shares if converted today (10,000×5×24)	<b>1,200,000</b>
	SL should convert the bonds today as it gives higher value than holding till redemption.	
	The market price per share at which SL would be indifferent [1,108,160/50,000]	<b>22.16</b>

- A.7 (a) The EOQ model becomes invalid in the following situations:
- The holding cost per unit is not constant.
  - The stock is not consumed at a constant rate throughout the period due to which average inventory is not equal to one half of the order quantity.
  - The cost per order is not constant.
  - There are quantity discounts available.

(b) Annual usage [(19,000×1)/95%] = 20,000

**Annual costs**

Order quantity	Cost per kg	Purchase of cost of 20,000 kg	Number of orders	Order cost	Holding cost at Rs. 180 per unit (Note 1)	Total cost
A	B	C=20,000×B	D=20,000÷A	E=2,420 [4,200-1,780]×D		
3,500	305	6,100,000	6.00	14,520	372,600	6,487,120
4,000	299	5,980,000	5.00	12,100	417,600	6,409,700
5,000	296	5,920,000	4.00	9,680	507,600	6,437,280

**Note 1:**

Holding cost = (\*average stock + safety stock) × holding cost per unit

**Cost and Management Accounting**  
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\*Average stock = Order quantity ÷ 2

**Conclusion:**

The order quantity to achieve minimization of costs is 4,000 kg, or JL will have to place 5 orders every year.

**(THE END)**

<b>INSTITUTE OF CHARTERED ACCOUNTANTS OF PAKISTAN</b>	
<b>CERTIFICATE IN ACCOUNTING AND FINANCE (CAF) EXAMINATIONS</b>	
<b>EXAMINERS' COMMENTS</b>	
<b>SUBJECT</b> Cost & Management Accounting (CMA)	<b>SESSION</b> Spring 2020

**Passing %**

1	2	3	4	5	6	7	Overall
41%	28%	53%	55%	54%	7%	63%	48%

**General comments**

The overall performance in this attempt has improved markedly (48%) in comparison to previous attempt (31%). However, performance in Question 6 reflected selected study as majority of examinees performed poorly on a straight-forward question on bond valuation.

It is generally observed that examinees tend to attempt answers without strategizing the approach and format for the answer resulting in missing out important information given in the questions, uncalled long workings and wastage of time. It is suggested to utilize the reading time effectively and read the requirement and information given in the questions carefully before answering the questions.

**Question-wise common mistakes observed****Question 1**

- Idle time variance was either not calculated or wrongly calculated.
- Instead of calculating fixed production overhead expenditure variance, overall fixed production overhead variance was calculated.
- Every variance was analyzed on a standalone basis and examinees could not draw a holistic picture by taking the total variance into consideration, e.g. material usage and material price variances were evaluated separately without considering the impact of total material variance.
- Evaluation in many cases was restricted to whether the variances were favorable or not and no discussion was done on departmental heads' views.
- Discussion of likely impact on the long-term profitability of the company was missing.

**Question 2**

- Labor supply constraint factor was missed altogether as sales volume was expected to increase by 25% but labor efficiency could only be increased by 15%. Therefore, entire production cost was computed on the basis of 25% increased production instead of 15% increase.
- Production capacity of 6 million units was wrongly taken as last year's production.



- Labor supply constraint was not considered thereby option of import from China to meet the demand was also missed out.
- For calculation of sales commission, prior year's sales volume and the increased sales volume were not divided correctly by using the ratios given in the question.
- Sales commission percentage was applied to sales volume instead of sales revenue.

**Question 3**

- Evaluation of option of discontinuing the operations now was altogether missed out.
- Tax on gain on sale of equipment if operations are discontinued now was ignored.
- Cash flows were presented for five years despite the fact that it was mentioned that two years had already been elapsed. Due to this, discount factor was wrongly applied in determining the net present value.
- The given trends in sales, variable costs and fixed costs were either not considered or wrongly applied while determining the projected cash flows for the remaining three years.
- Residual value was subtracted from cost while computing depreciation by using reducing balance method.
- Residual value was not considered while computing the gain / loss on sale of equipment.

**Question 4**

- Instead of determining the total cost of each given element and later on to divide with total number of units, many examinees attempted to compute cost per unit of each given element separately. This approach required more detailed computation and examinees made mistakes out of confusion.
- Cost of penalty for AA-2 was added to the contract cost instead of subtracting it.
- Irrelevant costs were also included in the cost of contract.
- Cost of idle hours saved was added in the cost of contract instead of subtracting it.
- Learning curve information was either ignored or wrongly applied.

**Question 5**

- Normal loss was either ignored or wrongly computed while determining the units produced.
- Sales revenue was computed on the basis of units produced instead of units sold.
- NRV was applied while computing the sales revenue instead of the selling price.
- Cost of Process I was allocated using per unit NRV instead of total NRV.
- Opening and closing stocks of Product R were included in the quantity schedule of Process I.
- Cost of Process II was not deducted while computing NRV of Product R at the end of Process I.

**Question 6**

- Redemption value of bonds was compared with present value of shares while interest element was altogether ignored.

*Examiners' comments on Cost and Management Accounting Spring 2020*

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- Interest amount was computed on the basis of annual mark-up rate instead of semi-annual mark-up rate.
- Cash flows were discounted by using mark-up rate instead of cost of capital.
- The annual cost of capital rate was used for discounting semi-annual cash flows.

**Question 7 (a)(b)**

- Many examinees could only offer 2-3 situations. Some examinees repeated the same situation with different wordings to meet the requirement of listing four situations.
- EOQ model was attempted to be applied despite the fact that information regarding bulk purchase discount was given in the question.
- Annual production was taken as annual usage and normal loss of 5% was not considered.
- Cost per kg was applied to order quantity size instead of annual usage for the purpose of determining total purchase cost.
- Fixed cost was not excluded from the calculation of holding cost per unit.

*The End*

**Cost and Management Accounting**  
 Summary of Marking Key  
 Certificate in Accounting and Finance – Spring 2020

**Note regarding marking scheme:**

The marking scheme is given as a guide. Markers also award marks for alternative approaches to a question and relevant/well-reasoned comments/explanations. Moreover, the available marks in answer may exceed the total marks of a question.

		Mark(s)
A.1	(a) Up to 1.5 marks for calculation of each variance	8.0
	(b) Up to 2.5 marks for evaluating the views of:	
	▪ head of purchase department	2.5
	▪ head of production department	2.5
	▪ head of maintenance department	2.0
A.2	▪ Sales	2.0
	▪ Sales commission	4.0
	▪ Material	1.0
	▪ Labour	1.5
	▪ Manufacturing overheads	4.0
	▪ Cost of imported locks	2.0
	▪ Selling expenses	2.5
	▪ Administration expenses	1.0
A.3	▪ For evaluating whether to discontinue operations now:	
	– Resale value of equipment	0.5
	– Tax on gain on sale of equipment	2.0
	– Rent expense – net of tax	2.0
	▪ For evaluating whether to continue operations for a further period of three years:	
	– Sales	1.5
	– Variable costs	1.5
	– Fixed costs	1.5
	– Depreciation and adding back depreciation	2.0
	– Loss on disposal and adding back loss on disposal	1.0
	– Rent expense	1.0
	– Tax	0.5
	– Residual value of equipment	0.5
	– Net present value	1.5
	– Decision making	0.5
A.4	▪ Relevant cost of the following:	
	– Machinery under proposal 1 & 2 (including decision making)	3.0
	– Materials (including decision making)	6.5
	– Labours (including decision making for semi-skilled or unskilled labour with or without training)	9.0
	– Variable overheads	1.0
	▪ Calculation of minimum price per unit for quotation	0.5



**Cost and Management Accounting**  
 Summary of Marking Key  
 Certificate in Accounting and Finance – Spring 2020

		<b>Mark(s)</b>
<b>A.5</b>	▪ Sales (including determination of units sold)	<b>2.0</b>
	▪ Opening stock	<b>0.5</b>
	▪ Units produced (including normal loss treatment)	<b>2.5</b>
	▪ Calculation of NRV	<b>4.0</b>
	▪ Cost of process I	<b>1.5</b>
	▪ Cost of process II	<b>2.0</b>
	▪ Closing stock	<b>1.5</b>
	▪ Selling and administration expense	<b>1.0</b>
<b>A.6</b>	▪ Market value of shares if converted today	<b>0.5</b>
	▪ Present value of cash flows from shares if not converted till redemption	<b>2.5</b>
	▪ Decision making	<b>0.5</b>
	▪ Market price at point of indifference	<b>0.5</b>
<b>A.7</b>	(a) 01 mark for each situation	<b>4.0</b>
	(b)	
	▪ Annual usage	<b>1.0</b>
	▪ Purchase cost for all three order quantities	<b>1.5</b>
	▪ Order cost for all three order quantities	<b>2.5</b>
	▪ Holding cost for all three order quantities	<b>2.5</b>
	▪ Conclusion	<b>0.5</b>

**(THE END)**



The Institute of  
Chartered Accountants  
of Pakistan

## Certificate in Accounting and Finance Stage Examination

24 September 2020  
3 hours – 100 marks  
Additional reading time – 15 minutes

### Cost and Management Accounting

**Instructions to examinees:**

- (i) Answer all **SIX** questions.
- (ii) Answer in **black** pen only.

Q.1 Smart Fit (SF) is engaged in manufacturing and selling of product X75. It offers two variants of X75 that are 'Standard' and 'Premium'.

The management is in the process of preparing its budgeted profit or loss statement for the year ending 31 August 2021. Following information are available in this respect:

**Information for the year ended 31 August 2020**

- (i) Extracts from profit or loss statement:

	Rs. in million
Sales	5,250
Cost of goods sold:	
Material	(1,584)
Labour	(540)
Manufacturing overheads	(440)
Gross profit	2,686
Selling and administration expenses	(426)
Profit before tax	<b>2,260</b>

- (ii) During the year, SF operated at 75% of capacity. It manufactured and sold 900,000 and 600,000 standard and premium units respectively.
- (iii) The retail price of premium unit is set at two times of retail price of standard unit.
- (iv) 1.6 kg of material is required for each standard unit whereas 2 kg of material is required for each premium unit.
- (v) Labour manufactures three standard units per hour. Each premium unit takes 50% more labour time than standard unit.
- (vi) 25% of total manufacturing overheads are fixed. Variable manufacturing overheads per premium unit are 1.25 times of a standard unit.
- (vii) All selling and administration expenses are fixed.
- (viii) There are no closing stocks of raw material and finished goods.

**Information and projections for the budget year ending 31 August 2021**

- (i) Retail price of standard and premium units would be increased by 10% and 15% respectively. It is expected that existing demand for standard and premium units would not be affected by price increase. In addition, SF has entered into a contract with a new foreign customer for supply of 450,000 premium units at a discount of 20% of new retail price.
- (ii) Any constraint due to production capacity would be met by reducing the existing production of standard units. However, any shortfall in production of standard units would be met by purchasing it from the market at a price of Rs. 2,400 per unit.
- (iii) Material price would increase by 5% with effect from 1 January 2021. The material would be purchased evenly during the year.
- (iv) Labour, manufacturing overheads and selling and administration expenses would be subject to inflation of 10% per annum.

**Required:**

Prepare a budgeted profit or loss statement for the year ending 31 August 2021. (19)

- Q.2 Pizza Inc. has pizza outlets in all major shopping malls in the city. It prepares and sells approximately 4,850 standard pizzas per week. A premium quality imported cheese (cheese), the key ingredient for pizza preparation is purchased from a supplier at Rs. 1,200 per kg. Other costs related to cheese are as follows:

	Rupees
Administration cost per order	150,000
Transportation cost per order	22,500
Quality inspection cost per order	20,000
Refrigeration cost per kg	250
Warehouse cost per annum	4,420,000
Cost of financing the stock per month	1.5%

**Other information:**

- (i) The company places orders on the basis of Economic Order Quantity (EOQ).
- (ii) Each standard size pizza requires 0.25 kg of cheese. However, 3% of cheese is lost in refrigeration.
- (iii) 80% of administration cost and 50% of warehouse cost are variable. All other costs are fixed.
- (iv) The company operates throughout the year which is 52 weeks.

The supplier has offered to reduce 5% price if the company agrees to double the size of order for the coming year. However, it would have following implications:

- (i) 4% of cheese would be lost in refrigeration.
- (ii) Variable cost of warehouse, transportation cost and inspection cost would increase by 50%.
- (iii) Refrigeration cost would increase by 75%.

**Required:**

Advise whether Pizza Inc. should accept offer of the supplier. (13)

- Q.3 Francisco Limited (FL) is a manufacturer of product Z and has annual operational capacity of 82,500 machine hours. FL uses **absorption costing**.

Below is a summary of FL's profit or loss statement for the years ended 31 August 2019 and 2020:

	31 August 2020		31 August 2019	
	Units	Rs. in '000	Units	Rs. in '000
Sales	9,950	149,250	10,500	155,500
Opening inventory – finished goods	3,500	31,000	2,500	20,000
Cost of production	10,450	94,050	11,500	97,750
Closing inventory – finished goods	4,000	(36,000)	3,500	(31,000)
Cost of goods sold		(89,050)		(86,750)
Gross profit		60,200		68,750
(Under)/over absorbed production overheads		(400)		650
Selling and administration cost		(20,900)		(22,475)
Net profit		<b>38,900</b>		<b>46,925</b>

In both years, the actual and standard machine usage per unit are 6 hours. However, the standard machine usage was 80% and 82% of the operational capacity in 2019 and 2020 respectively.

Fixed overhead absorption rate of Rs. 700 per machine hour was applied in 2019. FL revises its fixed overhead absorption rate for each year on the basis of prior year's actual fixed overhead expenditure.



**Required:**

- (a) Calculate budgeted and actual fixed overheads for 2019 and 2020. (04)
- (b) Prepare profit or loss statement for the year ended 31 August 2020, using marginal costing. (05)
- (c) Reconcile the actual profits under marginal and absorption costing for the year ended 31 August 2020. (02)

Q.4 Siyab Limited (SL) is involved in manufacturing and exporting of products BA, CA and DA. Keeping in view the continuous operating losses in product BA, the management is considering to discontinue the production of BA.

Summarised operating results of BA for the year 2019 are as follows:

Units sold ( <b>2018: 156,250 units</b> )	150,000
	<b>Rs. in '000</b>
Sales revenue	30,000
Raw material consumption	(12,000)
Labour	(6,000)
Variable manufacturing overheads	(3,000)
Fixed manufacturing overheads:	
Directly attributable	(2,800)
Allocated (30% of total)	(750)
Selling expenses ( <b>2018: Rs. 8,050,000</b> )	(7,800)
Operating loss	<b>(2,350)</b>

Chief Financial Officer (CFO) is of the view that discontinuance of BA would save all manufacturing and selling expenses except allocated fixed manufacturing overheads. It is estimated that total allocated fixed manufacturing overheads will be reduced by 10%.

In a recent management meeting, SL's sales director does not agree with the suggestion to discontinue this product. She is of the view that BA is in high demand in the local market and the management should consider to launch this product in the local market through an online marketplace, Jamal Express (JE). She argues that this will not only minimize the selling expenses but also allow SL to reach maximum customers.

Following information have been available in respect of launching an online store of BA at JE:

- (i) Existing production capacity of BA is 172,000 units.
- (ii) Existing demand of BA in the online market is sufficient to boost sales by 10% from the previous year. However, for achieving this target level of sales, a digital marketing service provider would be hired at an annual cost of Rs. 800,000.
- (iii) BA would be sold at Rs. 180 per unit.
- (iv) SL would have to pay an annual subscription fee of Rs. 110,000 to JE to operate as a seller. In addition, JE would charge 2% sales commission.
- (v) JE also provides an additional facility of handling delivery and sales return to its clients. This service can be availed by paying either an annual lump sum fee of Rs. 1,500,000 or an additional commission of 5% of the selling price. If this service is availed, entire fixed selling expenses will be saved.
- (vi) Fixed and variable selling expenses pertaining to BA would be reduced by 10% and 80% respectively.
- (vii) Additional support staff would be hired at a cost of Rs 200,000 per month. This additional hiring cost can be reduced to 80% if existing staff is given additional responsibilities with overtime payment which would increase variable selling expense by 10%.

**Required:**

Evaluate the suggestions of CFO and sales director and recommend the best course of action to the management. (17)

Q.5 Siyara Pakistan Limited (SPL) manufactures and sells a single product Zeta. The product passes through two processes before transferring to warehouse for sale. Following data pertains to Process I for the month of August 2020:

**Standard cost information:**

- (i) Direct material per unit – 1 kg at Rs. 75.
- (ii) Direct labour per unit – 1.2 hours at Rs. 40 per hour.
- (iii) Factory overheads per unit – 150% of direct labour. Factory overheads are budgeted on the basis of 250,000 direct labour hours. 40% of factory overheads are variable.

**Actual data for the month of August 2020:**

	Rs. in '000
Direct material issued: Rs. 75 per kg	6,750
Rs. 85 per kg	11,475
Direct labour paid for 235,000 hours	9,870
Variable factory overheads	6,345
Fixed factory overheads	11,250
	<b>45,690</b>

- (i) Direct material is added at the beginning of the process. Conversion costs are incurred evenly throughout the process. Losses up to 7% of the input are considered as normal. However, losses are determined at the time of inspection which takes place when product is 75% complete.
- (ii) During the month, 225,000 kg of direct material was issued to Process I and 200,000 units were transferred to Process II.
- (iii) Opening and closing work in processes were 25,000 units (80% completed) and 35,000 units (60% completed) respectively.
- (iv) 10% of direct labour hours were idle due to machine break-down but fully paid.
- (v) SL uses FIFO method for inventory valuation.

**Required:**

- (a) Calculate the following variances for the month of August 2020:
  - Material price and usage
  - Labour rate, efficiency and idle
  - Variable factory overhead expenditure and efficiency
  - Fixed factory overhead expenditure and volume (17)
- (b) Reconcile the budgeted expenditure with actual expenditure for the month of August 2020 by using relevant variances calculated in part (a). (03)



Q.6 Aluminium Limited (AL) is engaged in the manufacture of product GH which requires one unit of a single raw material PQR. The manufacturing of PQR is currently outsourced under a contract which is expiring shortly.

The management of AL has decided to setup an in-house manufacturing facility for production of PQR instead of renewing the existing contract of supply on its expiry. In this respect, following two proposals **at current prices** have been forwarded for evaluation:

	Proposal 1	Proposal 2
Purchase cost (including setup cost)	Rs. 3,500,000	Rs. 5,000,000
Useful life (Note)	3 years	5 years
Residual value (Note)	Nil	Rs. 1,000,000
Annual production capacity	10,000 units	9,000 units
Plant operation cost	Rs. 90,000 per month	Rs. 70,000 per month
Annual maintenance cost	Rs. 1,380,000	Rs. 1,200,000

**Note:** Under proposal 1, on carrying out a major overhaul at a cost of Rs. 1,300,000 (at current price) at the end of year 2, useful life and residual value of the plant would increase to 5 years and Rs. 500,000 (at current price) respectively.

**Other information:**

- (i) Existing demand of GH is 7,500 units which is expected to increase by 5% every year.
- (ii) In case of any shortage of PQR, it would be purchased from the market at a price of Rs. 550 per unit at current price.
- (iii) Variable cost of production at current price under proposal 1 and proposal 2 are Rs. 400 per unit and Rs. 380 per unit respectively.
- (iv) Depreciation would be charged on a straight line basis. Accounting depreciation is assumed to be the same as tax depreciation.
- (v) Inflation rate is estimated to be 6% per annum which is applicable from year 1.
- (vi) Applicable tax rate is 30% and is payable in the year in which liability arises.
- (vii) AL's cost of capital is 14%.

Assume that except stated otherwise, all cash flows arise at year-end.

**Required:**

By using net present value (NPV) method, recommend the best course of action to the management of AL.

(20)

(THE END)



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A.1

**Budgeted profit or loss statement**  
For the year ending August 31, 2020

		Rs. in million
Sales	(W-1)	7,995.0
Cost of goods sold:		
Material	(W-3)	2,120.4
Labour	(W-4)	792.0
Manufacturing overheads	(W-5)	591.3
Purchase from market (W-2)	(75,000×2,400)	180.0
		(3,683.7)
Gross Profit		4,311.3
Less: Selling & Administration expenses	(426×1.1)	(468.6)
<b>Profit before tax</b>		<b>3,842.7</b>

W-1: Sales	Standard	Premium	Total
Ratio of sale price	1	2	
Actual sale quantity (units) <b>A</b>	900,000	600,000	
Weighted quantity (units)	900,000	1,200,000	2,100,000
Sales value (Rs. in million)			
[900/2,100×5,250,000,1,200/2,100×5,250,000] <b>B</b>	2,250	3,000	5,250
Sales price (Rs.) <b>C=B/A</b>	2,500	5,000	
Revised sale price (Rs.) <b>(C×1.1,1.15)</b>	2,750	5,750	
Sales for 2021 (Rs. in million)	2,475	6,037.5	8,512.5
	(900,000×2,750)	(1,050,000(w-2)×5,750)	
Less: Discount (Rs. in million) <b>(450,000×5,750×0.2)</b>			(517.5)
<b>Net sales (Rs. in million)</b>			<b>7,995</b>

W-2: Purchase from market	Standard	Premium
Production at current capacity <b>D</b>	900,000	600,000
Production at full capacity <b>[E=D/0.75]</b>	1,200,000	800,000
Maximum production of premium with existing capacity (units) <b>F=[(1,200/1.5)+800]</b>		1,600,000
Demand for Premium (units) <b>G=(600,000+450,000)</b>		1,050,000
Remaining capacity for Standard (units) <b>[(F-G)×1.5]</b>	825,000	
To be purchased from market (units) <b>(900,000-825,000)</b>	75,000	

W-3: Material		
Consumed - 2020 (kg)	(900,000×1.6+600,000×2)	2,640,000
Material cost (Rs. in million)		1,584
Price per kg (Rs.)	(1,584,000/2,640)	600
<b>Material for 2021</b>		
Required (kg)	(825×1.6,1050×2)	3,420,000
Average cost per kg (Rs.)	(600×4+600×1.05×8)/12	620
Total material cost (Rs. in million)	(3,420×620)	2,120.4

W-4: Labour		
Total labour hours utilized in 2020	[300,000(900,000+3)+300,000(600,000+3×1.5)]	600,000
Labour cost - 2020 (Rs. in million)		540
Labour rate per hour (Rs.)	(540,000/600)	900
<b>Labour for 2021</b>		
Revised rate (Rs.)	(900×1.1)	990

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Labour hours required	$(825 \div 3) + (1,050 \div 3 \times 1.5)$		800,000
Total labour cost (Rs. in million)	$(800,000 \times 990)$		792
<b>W-5: Manufacturing overheads</b>	<b>Standard</b>	<b>Premium</b>	<b>Total</b>
Variable manufacturing overhead $(440 \times 0.75)$			330,000,000
Ratio of variable overheads	1.00	1.25	
Units produced <b>A</b>	900,000	600,000	
Weighted average ratio	900,000	750,000	1,650,000
Overheads $[900/1,650 \times 330,000, 750/1,650 \times 330,000]$			
<b>B</b>	180,000,000	150,000,000	330,000,000
Cost per unit <b>B/A</b>	200	250	
<b>Manufacturing overheads for 2021</b> ----- Rs. in million -----			
Fixed manufacturing overheads $(440 \times 0.25 \times 1.1)$			121.0
Variable manufacturing overheads	181.5 $(825 \times 200 \times 1.1)$	288.8 $(1,050 \times 250 \times 1.1)$	470.3
Total manufacturing overheads cost			<b>591.3</b>

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A.2 For determining EOQ and warehouse cost:

Ordering cost = Carrying cost

Annual demand/EOQ × Per order cost =  $[250+216+\{(4,420,000 \times 0.5)/(EOQ/2)\}] \times EOQ/2$

$65,000/x \times 162,500 = [250+216+\{(4,420,000 \times 0.5)/(x/2)\}] \times x/2$

$10,562,500,000/x = 233x + 2,210,000$

$10,562,500,000 = 233x^2 + 2,210,000x$

$233x^2 + 2,210,000x - 10,562,500,000 = 0$

By using quadratic equation:

$x = 3,493$  units

	Existing	Proposed
Number of orders	19 (65,000/3,493)	10 (W-4)
	----- Rupees -----	
Purchase cost	78,000,000 (65,000(W-1)×1,200)	74,871,875 (65,677(W-4)×1,200×0.95)
Ordering cost	3,087,500 (162,500(W-2)×19)	1,837,500 (183,750(W-5)×10)
Holding cost	3,023,192 (3,493/2×1,731(W-3))	5,560,856 [(6,986/2×1,592(W-6))]
	<b>84,110,692</b>	<b>82,270,231</b>

**Conclusion:**

The company should accept the offer of supplier as it would save Rs. 1,840,461

	Rupees
W-1: Annual Demand	[(4,850×0.25×52)/0.97] 65,000

	Rupees
W-2: Ordering cost per order	
- Administration cost	(150,000×0.8) 120,000
- Transportation cost	22,500
- Quality inspection cost	20,000
	<b>162,500</b>

	Rupees
W-3: Carrying cost per kg	
- Refrigeration cost	250
- Financing cost	(1,200×0.015×12) 216
- Warehouse cost	[(4,420,000×0.5)/(3,493/2)] 1,265
	<b>1,731</b>

	Rupees
W-4: Annual demand	[(65,000×0.97)/0.96] 65,677
Order size	(3,493×2) 6,986
Number of orders	10

	Rupees
W-5: Ordering cost per order	
- Administration cost	120,000
- Transportation cost	(22,500×1.5) 33,750
- Quality inspection cost	(20,000×1.5) 30,000
	<b>183,750</b>



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W-6:		Rupees
<i>Carrying cost per kg</i>		
- Refrigeration cost	(250×1.75)	438
- Financing cost	(1,200×0.95×0.015×12)	205
- Warehouse cost	$[(4,420,000 \times 0.5) / (6,986 / 2)] \times 1.5$	949
		<b>1,592</b>

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A.3 (a) Budgeted and actual fixed overheads	August 2020	August 2019
	----- Rupees -----	
Budgeted machine hours $A = [82,500 \times 82\%, 80\%]$	67,650	66,000
<b>Budgeted fixed overheads</b> $A \times OAR(W-2)$	47,625,600	46,200,000
Fixed overheads applied [actual machine hours (W-1) $\times$ OAR(W-2)]	44,140,800	48,300,000
Under/(over) absorbed fixed overheads [given]	400,000	(650,000)
<b>Actual fixed overheads</b>	44,540,800	47,650,000

(b) Profit or loss statement - marginal costing	Rs. in '000
Sales	149,250
Opening inventory - finished goods (W-3)	(16,300)
Variable cost of production (W-4)	(49,909)
Closing inventory - finished goods (W-5)	19,104
<b>Contribution margin</b>	<b>102,145</b>
Less: Fixed overheads actual	(44,541)
Less: Selling and admin expense	(20,900)
<b>Net profit</b>	<b>36,704</b>

(c) Reconciliation	Rs. in '000
Actual profit under marginal costing	36,704
Add: Fixed cost included in the closing stock $(4,000 \times 6 \times 704)$	16,896
Less: Fixed cost included in opening stock $(3,500 \times 6 \times 700)$	(14,700)
<b>Actual profit under absorption costing</b>	<b>38,900</b>

**WORKINGS:**

W-1: Actual machine hours	Hours
- 2019 $(11,500 \times 6)$	69,000
- 2020 $(10,450 \times 6)$	62,700

W-2: Overhead absorption rate [OAR]	Hours
2019 [given]	700
<b>2020</b>	
Actual fixed overheads of 2019 (Rs.)	47,650,000
Budgeted machine hours	67,650
OAR - 2020 (Rs.) $(47,650,000 / 67,650)$	<b>704</b>

W-3:	Rs. in '000
Opening inventory [given]	31,000
Less: Fixed overheads absorbed $(3,500 \times 700 \times 6)$	(14,700)
<b>Opening inventory under marginal costing</b>	<b>16,300</b>

W-4:	Rs. in '000
Cost of production [given]	94,050
Less: Applied fixed overheads $(10,450 \times 6 \times 704)$	(44,141)
<b>Cost of production under marginal costing</b>	<b>49,909</b>

W-5:	Rs. in '000
Closing inventory [given]	36,000
Less: Fixed overheads absorbed $(4,000 \times 704 \times 6)$	(16,896)
<b>Closing inventory under marginal costing</b>	<b>19,104</b>

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A.4 Option 1: Discontinue BA	Rupees
Contribution forgone <span style="float: right;">(20(W-1)×150,000)</span>	3,000,000
<u>Savings from discontinuing BA</u>	
Directly attributable fixed cost	2,800,000
Reduction in joint fixed overheads <span style="float: right;">(750,000/0.3×0.1)</span>	250,000
Fixed selling expenses <span style="float: right;">(W-1.1)</span>	1,800,000
	4,850,000
<b>Net benefit from discontinuing BA</b>	<b>1,850,000</b>

**Option 2: If sold through online marketplace**

	Existing	Online marketplace	Incremental
	----- Rupees -----		
Sales	30,000,000	29,700,000	(300,000)
Less: Commission @2%	-	(594,000)	(594,000)
Less: Additional Commission @ 5% (W-2)	-	(1,485,000)	(1,485,000)
<b>Net sales</b>	<b>30,000,000</b>	<b>27,621,000</b>	<b>(2,379,000)</b>
Less: Raw material	(12,000,000)	(13,200,000)	(1,200,000)
Less: Labour	(6,000,000)	(6,600,000)	(600,000)
Less: Variable overheads	(3,000,000)	(3,300,000)	(300,000)
Less: Variable selling overheads	(6,000,000)	(1,320,000)	4,680,000
Less: Increase in variable selling overheads (W-3)	-	(132,000)	(132,000)
<b>CM</b>	<b>3,000,000</b>	<b>3,069,000</b>	<b>69,000</b>
Less: Fixed overheads			
- Directly attributable	(2,800,000)	(2,800,000)	-
- Allocated	(750,000)	(750,000)	-
Less: Fixed selling expense	(1,800,000)	-	1,800,000
Less: Digital marketing cost	-	(800,000)	(800,000)
Less: Annual subscription	-	(110,000)	(110,000)
Less: Additional support staff (W-3)	-	(1,920,000)	(1,920,000)
<b>Operating loss</b>	<b>(2,350,000)</b>	<b>(3,311,000)</b>	<b>(961,000)</b>

**Conclusion:**

The benefit of discounting BA is Rs. 2,811,000 as compared to the option of selling through an online market place. Hence the management should discontinue production of BA.



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W-1:		Rupees
Sales	(30,000/150)	200
Less: Variable costs		
Raw material	(12,000/150)	80
Labour	(6,000/150)	40
Variable overheads	(3,000/150)	20
Variable selling expense	(W-1.1)	40
		180
CM per unit		20

W-1.1:	2018	2019	Difference
Units sold	156,250	150,000	6,250
Selling expense (Rs.)	8,050,000	7,800,000	250,000
Variable selling expense per unit (Rs.)	(250,000 ÷ 6,250)		40
Fixed selling expense (Rs.)	[7,800,000 – (40 × 150,000)]		1,800,000

W-2:			
Lump sum fee			1,500,000
Commission @ 5% (lowest)	(180 × 150,000 × 1.1 × 5%)		1,485,000
Fixed selling expense	(1,800,000 × 0.9)		1,620,000

W-3:			
Option 1: Additional support staff	(200,000 × 12)		2,400,000
Option 2: Combination of additional staff and overtime to the exiting staff (lower)			
- Additional support staff reduced	(2,400,000 × 0.8)		1,920,000
- Increase in variable selling expense	(150,000 × 40 × 1.1 × 0.2 × 0.1)		132,000
			2,052,000

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**A.5 (a) Material price and usage variances (W-2)**

Price variance = AQ (AR - SR)	225,000 (81-75)	1,350,000	<b>Adv.</b>
Usage variance = SR (AQ - SQ)	75 (225,000-211,700)	997,500	<b>Adv.</b>

**Labour rate, efficiency and idle variances (W-3)**

Rate variance = AH (AR-SR)	235,000 (42-40)	470,000	<b>Adv.</b>
Efficiency variance = SR (AH worked-SH allowed)	40 (211,500-242,730)	1,249,200	<b>Fav.</b>
Idle time variance =	23,500×40	940,000	<b>Adv.</b>

**Variable factory overhead expenditure and efficiency (W-4)**

Expenditure variance = AH (AR-SR)	211,500 (30-24)	1,269,000	<b>Adv.</b>
Efficiency variance = SR (AH - SH)	24 (211,500-242,730)	749,520	<b>Fav.</b>

**Fixed factory overhead expenditure and volume (W-5)**

Expenditure variance = Budgeted - Actual	9,000,000 - 11,250,000	2,250,000	<b>Adv.</b>
Volume variance = SR (Budgeted Hrs - SH)	36 (250,000-242,730)	261,720	<b>Adv.</b>

W-1: Equivalent production units	Quantity schedule	Equivalent production units	
		Direct material	Conversion cost
Opening WIP (80% conversion)	25,000	(25,000)	(20,000)
Material added	225,000		
	<b>250,000</b>		
Units transferred to warehouse	200,000	200,000	200,000
Closing WIP (60% conversion)	35,000	35,000	21,000
Normal loss [(225,000-35,000)×7%]	13,300	-	-
Abnormal loss - balancing figure	1,700	1,700	1,275
	<b>250,000</b>	<b>211,700</b>	<b>202,275</b>

**W-2: Material**

Actual quantity (AQ) purchased and consumed	225,000
Standard quantity (SQ) allowed (211,700(W-1)×1)	211,700
Standard rate (SR)	75
Actual rate (AR) [(6,750+11,475)/225]	81

**W-3: Labour**

Actual hours (AH) paid	235,000
AH worked (235,000×0.9)	211,500
Idle hours (235,000-211,500)	23,500
Standard hours (SH) allowed (202,275 (W-1)×1.2)	242,730
AR (9,870/235)	42
SR	40

**W-4: Variable factory overhead**

AR (6,345/211.5)	30
SR (40×1.5×0.4)	24

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AH worked	(235,000-0.9)	211,500
SH allowed	(202,275×1.2)	242,730

**W-5: Fixed factory overhead**

SR	(40×1.5×0.6)	36
Budgeted expenditure	(36×250,000)	9,000,000
Actual expenditure		11,250,000
Budgeted hours		250,000
SH allowed	(202,275×1.2)	242,730

**(b) Reconciliation:**

	Rupees
Direct material	(211,700×75)
Direct labour	(202,275×1.2×40)
Variable overheads	(202,275×1.2×24)
Fixed overheads	(202,275×1.2×36)
<b>Budgeted expenditure</b>	<b>40,150,500</b>
	<b>Rupees</b>
Add: Adverse material price variance	1,350,000
Add: Adverse material usage variance	997,500
Add: Adverse labour rate variance	470,000
Less: Favourable labour efficiency variance	(1,249,200)
Add: Adverse labour idle time variance	940,000
Add: Adverse variable overhead expenditure variance	1,269,000
Less: Favourable variable overhead efficiency variance	(749,520)
Add: Adverse fixed overhead expenditure variance	2,250,000
Add: Adverse fixed overhead volume variance	261,720
	5,539,500
<b>Actual expenditure</b>	<b>45,690,000</b>



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**A.6 Proposal 1**

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
	----- Rupees -----					
Variable cost [units produced [(W-1) × 400 × 1.06]	-	3,339,000	3,716,419	4,136,160	4,603,646	5,123,798
Plant operation cost [90,000 × 12 × 1.06]	-	1,144,800	1,213,488	1,286,297	1,363,475	1,445,284
Annual maintenance cost [1,380,000 × 1.06]	-	1,462,800	1,550,568	1,643,602	1,742,218	1,846,751
Depreciation (W-2)	-	1,166,667	1,166,667	688,516	688,516	688,516
Gain on disposal (W-3)	-	-	-	-	-	(107,315)
<b>Total cash outflow</b>	-	<b>7,113,267</b>	<b>7,647,142</b>	<b>7,754,575</b>	<b>8,397,855</b>	<b>8,997,034</b>
Tax @ 30%	-	(2,133,980)	(2,294,143)	(2,326,373)	(2,519,357)	(2,699,110)
Less back: Depreciation	-	(1,166,667)	(1,166,667)	(688,516)	(688,516)	(688,516)
Add back: Gain on disposal	-	-	-	-	-	107,315
Purchase cost	3,500,000	-	-	-	-	-
Overhaul of machine (W-2)	-	-	1,460,680	-	-	-
Residual value of machine (W-3)	-	-	-	-	-	(669,113)
<b>Net cash outflow</b>	<b>3,500,000</b>	<b>3,812,620</b>	<b>5,647,012</b>	<b>4,739,686</b>	<b>5,189,982</b>	<b>5,047,610</b>
Discount factor @ 14%	1.000	0.877	0.769	0.675	0.592	0.519
Present value	3,500,000	3,343,668	4,342,552	3,199,288	3,072,469	2,619,710
<b>NPV of cost</b>	<b>20,077,687</b>					

**Proposal 2**

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
	----- Rupees -----					
Variable cost [(W-1) × 380 × 1.06]	-	3,172,050	3,530,598	3,929,352	4,317,671	4,576,731
Shortfall - to be purchased from market [(W-1) × 550 × (1.06) <sup>4,5</sup> ]	-	-	-	-	80,546	421,006
Plant operation cost [70,000 × 12 × 1.06]	-	890,400	943,824	1,000,453	1,060,481	1,124,109
Annual maintenance cost [1,200,000 × 1.06]	-	1,272,000	1,348,320	1,429,219	1,514,972	1,605,870
Depreciation	-	800,000	800,000	800,000	800,000	800,000
Gain on disposal (W-3)	-	-	-	-	-	(338,226)
<b>Total cash outflow</b>	-	<b>6,134,450</b>	<b>6,622,742</b>	<b>7,159,024</b>	<b>7,773,670</b>	<b>8,189,490</b>
Tax @ 30%	-	(1,840,335)	(1,986,823)	(2,147,707)	(2,332,101)	(2,456,847)
Less back: Depreciation	-	(800,000)	(800,000)	(800,000)	(800,000)	(800,000)
Add back: Gain on disposal	-	-	-	-	-	338,226
Purchase cost	5,000,000	-	-	-	-	-
Residual value of machine (W-3)	-	-	-	-	-	(1,338,226)
<b>Net cash outflow</b>	<b>5,000,000</b>	<b>3,494,115</b>	<b>3,835,919</b>	<b>4,211,317</b>	<b>4,641,569</b>	<b>3,932,643</b>
Discount factor @ 14%	1.000	0.877	0.769	0.675	0.592	0.519
<b>Present Value of cost</b>	<b>5,000,000</b>	<b>3,064,339</b>	<b>2,949,822</b>	<b>2,842,639</b>	<b>2,747,809</b>	<b>2,041,042</b>
<b>NPV of cost</b>	<b>18,645,651</b>					

**Conclusion:**

AL should purchase the machine under proposal 2 for in house production of PQR.

**W-1**

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
	----- Rupees -----					
Units of PQR required [7500 × 1.05] <b>A</b>	7,500	7,875	8,269	8,682	9,116	9,572
Shortfall - to be purchased from market under Proposal - 2 <b>C=A-B</b>	-	-	-	-	116	572

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**W-2: Depreciation**

<b>Proposal 1:</b>	<b>Rupees</b>
First 2 years <span style="float: right;">(3,500,000/3)</span>	1,166,667
<b>For next 3 years</b>	
WDV <span style="float: right;">[3,500,000-(1,166,667×2)]</span>	1,166,667
Overhauling cost <span style="float: right;">[1,300,000×(1.06)<sup>2</sup>]</span>	1,460,680
	2,627,347
Less: Residual value <span style="float: right;">[500,000×(1.06)<sup>2</sup>]</span>	(561,800)
Depreciable value	2,065,547
Life (years)	3
Depreciation (Rs.)	<b>688,516</b>
<b>Proposal 2:</b>	
Depreciation <span style="float: right;">[(5,000,000-1,000,000)/5]</span>	800,000

<b>W-3: Gain on disposal</b>	<b>Proposal 1</b>	<b>Proposal 2</b>
Residual value <span style="float: right;">[500,000×(1.06)<sup>5</sup>, 1,000,000×(1.06)<sup>5</sup>]</span>	669,113	1,338,226
Less: Investment <span style="float: right;">[(3,500,000+1,460,680), 5,000,000]</span>	4,960,680	5,000,000
Less: Accumulated depreciation	(4,398,882)	(4,000,000)
WDV	561,798	1,000,000
Gain on disposal	<b>107,315</b>	<b>338,226</b>

**(THE END)**

<b>INSTITUTE OF CHARTERED ACCOUNTANTS OF PAKISTAN</b>	
<b>CERTIFICATE IN ACCOUNTING AND FINANCE (CAF) EXAMINATIONS</b>	
<b>EXAMINERS' COMMENTS</b>	
<b>SUBJECT</b>	<b>SESSION</b>
Cost & Management Accounting (CMA)	Autumn 2020

**Passing %**

Question-wise						Overall
1	2	3	4	5	6	
23%	61%	17%	11%	39%	44%	26%

**General comments**

The overall performance in this attempt has declined (26%) in comparison to previous attempt (48%). The underperformance can be attributed to selective studies, poor time management and weak concepts.

It is generally observed that examinees do not read the question properly and are unable to understand the requirement of the question. With particular reference to questions 6, it was observed that examinees tried to produce answers in a rote learned format instead of what the question required. It is suggested to read the question and the requirement carefully to avoid wastage of time on unnecessary computations.

**Question-wise common mistakes observed****Question 1**

- Examinees did not compute the production at full capacity in order to get the total units to be produced in 2020. Instead, they used production units of current year for the budget which was incorrect.
- In computation of material cost, the impact of price increase was not taken correctly or not taken at all.
- Labour hours were computed by multiplying units per labour hour with units produced instead of dividing it.
- Weighted average ratio for computation of overheads was not calculated.

**Question 2**

- In computation of demand, consumption of cheese per unit was not considered.
- In some cases, EOQ was computed under the proposed scenario as well which demonstrated lack of understanding.
- The entire warehouse cost was incorrectly included in carrying cost which included fixed cost as well.
- Monthly finance cost was taken as annual finance cost.



**Question 3**

- Actual overheads were computed by adjusting the over/under absorbed amount to budgeted overheads instead of applied overheads. It appears that examinees are not clear about the difference between budgeted and applied overheads.
- In some cases, both the budgeted machine hours and actual machine hours were not computed and only one of the two was used for computation of all the overheads in the question.
- Overhead rate for 2020 was computed using budgeted overheads.
- Fixed overheads included in opening inventory, variable cost of production and closing inventory were not computed correctly. Due to this reason, correct figures were not taken in the profit and loss statement. Many examinees tried to compute the variable cost directly without computing the fixed overheads and ended up wasting time.
- In the reconciliation, the fixed cost included in opening and closing inventory was incorrectly added/subtracted from the profit under marginal costing.

**Question 4**

- Many examinees ignored the option of discontinuing production of BA and did not compute the benefit under that option.
- Examinees did not apply the concept of incremental costs/benefits under option 2 for decision making purposes.
- In decision making of availing the service of delivery and sales returns, the option of continuing with the existing fixed cost was not evaluated.
- In decision making of additional support staff, the impact of increase in variable selling expense under the second option was not considered.

**Question 5**

- Some examinees attempted to compute variances on the basis of self-assumptions instead of determining the equivalent production units.
- Normal loss was computed incorrectly.
- Opening WIP was taken in the computation of equivalent production units without taking the effect of stage of completion.
- Impact of two different material prices was not taken in computation of material price variance.
- Impact of idle hours was not taken in computation of labour efficiency variance and variable factory overhead variances.
- In computation of factory overhead volume variance, actual hours were taken instead of budgeted hours.
- Budgeted expenditure was not computed for the reconciliation.
- Variances were incorrectly added and subtracted in the reconciliation. It appears that examinees were not clear that adverse variances would be added and favorable variances would be deducted from budgeted expenditure to get the actual expenditure.

**Question 6**

- Most examinees tried to include sales in the cash flow even though no such information was given in the question. Examinees failed to identify that the question required them to evaluate only the cost side of both proposals.
- Cash flows of three years were calculated instead of five years under proposal 1.
- Impact of inflation and increase in demand were taken from year 2 instead of year 1.
- Most examinees did not compute the gain on disposal of machine under both proposals.
- Impact of overhauling cost on depreciation was not computed correctly.
- In proposal 2, shortfall units were not computed and consequently its impact on variable cost was not included.
- Taxation, add back of depreciation and add back of gain on disposal were not included in the cash flows.

*(THE END)*

**Cost and Management Accounting**  
 Summary of Marking Key  
 Certificate in Accounting and Finance – Autumn 2020

**Note regarding marking scheme:**

The marking scheme is given as a guide. Markers also award marks for alternative approaches to a question and relevant/well-reasoned comments/explanations. Moreover, the available marks in answer may exceed the total marks of a question.

		Mark(s)	
A.1	▪ Sales	4.0	
	▪ Material	3.5	
	▪ Labour	3.5	
	▪ Manufacturing overheads	4.0	
	▪ Purchase from market	3.5	
	▪ Selling & administration expense	0.5	
A.2	▪ Annual demand under existing	0.5	
	▪ Annual demand under proposal	0.5	
	▪ Per order cost under existing	1.0	
	▪ Per order cost under proposal	1.0	
	▪ Per kg carrying cost under existing	3.5	
	▪ Per kg carrying cost under proposal	2.0	
	▪ Determination of economic order quantity	3.0	
	▪ Computation of total cost under existing and proposal	1.0	
	▪ Conclusion	0.5	
A.3	(a) ▪ Budgeted fixed overheads	2.0	
	▪ Actual fixed overheads	2.0	
	(b)	▪ Sales	0.25
		▪ Opening inventory	1.5
		▪ Variable cost of production	1.0
		▪ Closing inventory	1.5
		▪ Fixed overheads	0.5
		▪ Selling and administration expense	0.25
	(c)	▪ Fixed cost included in opening stock	1.0
		▪ Fixed cost included in closing stock	1.0



<p><b>Cost and Management Accounting</b>                  Summary of Marking Key                  Certificate in Accounting and Finance – Autumn 2020</p>
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		Mark(s)
A.4	▪ <b>Option 1:</b>	
	– Contribution forgone	2.0
	– Directly attributable fixed cost	0.5
	– Reduction in joint fixed overheads	1.0
	– Fixed selling expense	3.0
	▪ <b>Option 2:</b>	
	– Sales	0.5
	– Sales commission	2.0
	– Raw material	0.5
	– Labour	0.5
	– Variable overheads	1.0
	– Variable selling overheads	3.0
	– Fixed overheads	0.5
	– Fixed selling expense	0.5
	– Digital marketing cost	0.5
	– Annual subscription	0.5
– Additional support staff	0.5	
▪ Conclusion	0.5	

A.5	(a)	▪ Equivalent production units	4.0
		▪ Material price and usage variances	3.0
		▪ Labour rate, efficiency and idle variances	4.0
		▪ Variable factory overhead expenditure and efficiency variances	3.0
		▪ Fixed factory overhead expenditure and volume variances	3.0
(b)	▪ Budgeted expenditure	1.5	
	▪ Actual expenditure	1.5	

A.6	▪ Variable cost under proposal 1 and 2	4.0
	▪ Plant operation cost under proposal 1 and 2	1.0
	▪ Annual maintenance cost under proposal 1 and 2	1.0
	▪ Depreciation under proposal 1 and 2	2.5
	▪ Gain on disposal under proposal 1 and 2	2.0
	▪ Tax under proposal 1 and 2	1.0
	▪ Add/less back depreciation and gain on disposal under proposal 1 and 2	2.0
	▪ Purchase cost under proposal 1 and 2	1.0
	▪ Overhauling cost	1.0
	▪ Residual value under proposal 1 and 2	1.0
	▪ Net present value under proposal 1 and 2	3.0
	▪ Conclusion	0.5

(THE END)



The Institute of  
Chartered Accountants  
of Pakistan

## Certificate in Accounting and Finance Stage Examination

4 March 2021  
3 hours – 100 marks  
Additional reading time – 15 minutes

### Cost and Management Accounting

**Instructions to examinees:**

- (i) Answer all **SEVEN** questions.
- (ii) Answer in **black** pen only.

- Q.1 Mehnat Limited (ML) manufactures a product KLM which goes through two processes, Process A and Process B. Following information pertains to process A for the month of February 2021:

	kg	Rs. in '000
Opening work in process (80% complete)	2,000	5,000
Materials added during the month	18,000	36,000
Conversion costs		12,000
Transferred to Process B	16,000	-
Closing work in process (60% complete)	3,000	-

**Additional information relating to Process A:**

- (i) Costs of opening work in process consisted of Rs. 3,600,000 as to material and Rs. 1,400,000 as to conversion costs.
- (ii) Materials are added at the start of the process and conversion costs are incurred evenly throughout the process.
- (iii) Process loss is determined on inspection which is carried out at 75% of completion.
- (iv) Process loss is estimated at 12% of the input which is sold as scrap at Rs. 400 per kg.
- (v) Inventory is valued using weighted average method.

**Required:**

- (a) Prepare a statement of equivalent production units. (04)
- (b) Compute the costs of finished goods, closing work in process and production gain/loss. (07)
- (c) Prepare journal entries to record production gain/loss of process A for the month. (02)

- Q.2 (a) What do you understand by the term 'Sustainability Reporting'? List any **three** external benefits of sustainability reporting. (05)

- (b) Platinum (Private) Limited (PPL) has recently obtained a loan of Rs. 500 million from Gold Enterprises (GE) for 2 years. The loan carries a floating rate of interest payable annually. The existing rate of interest is 10%.

PPL's treasury department expects increase in interest rate in the coming monetary policy. In order to avoid any losses in this respect, PPL has entered into an agreement with Metallic Investments (MI) to buy an interest rate cap at 14% and they also agreed to a floor at 8%.

**Required:**

- (i) Briefly explain the terms cap, floor and collar. (02)
- (ii) Compute the interest which PPL would pay to GE and the amounts which PPL and MI would pay to settle their obligations towards each other, if the interest rate on the due date is:
  - 15% per annum
  - 9% per annum (04)



Q.3 Elements Limited (EL) is in the process of launching a newly developed product 'Lotus'. Manufacturing facility has been commissioned and production would commence from 1 July 2021. In this respect, a cash budget for the six months ending 31 December 2021 is under preparation and following information has been gathered:

- (i) At 100% capacity utilisation of the facility, Lotus's annual production is 800,000 units. Considering market demand, EL plans to operate the plant at 60% capacity in the first quarter ending 30 September 2021 and at 75% capacity in the subsequent quarters.
- (ii) Lotus's cost per unit is estimated as under:

Direct material	1.5 kg at Rs. 360 per kg <b>(inclusive of normal loss)</b>
Direct labour	1.2 hours at Rs. 240 per hour
Factory overheads – variable	Rs. 180 per direct labour hour
Operating expenses – variable	Rs. 94 per unit produced

- (iii) Direct material would be added at start of the manufacturing process. Normal loss is estimated at 10% of the input. 60% of the loss would result in solid waste which would be sold for cash at Rs. 500 per kg. Sale proceeds from the waste would be credited to cost of production.

Direct material inventory would be maintained for average 15 days' consumption of current quarter based on budgeted production, whereas finished goods inventory would be maintained for average 30 days' budgeted production of the next quarter.

- (iv) Fixed factory overheads of Rs. 1,000,000 (including depreciation of Rs. 450,000) would be incurred every month.
- (v) In addition to the above, following expenses would be incurred:
  - Lotus is an outcome of a research carried out by Humble Research Institute (HRI). As per the agreement, a fixed amount of Rs. 2,800,000 is payable to HRI on the date of commencement of production of Lotus. In addition, a royalty of Rs. 40 per unit sold would also be payable.
  - Administrative expenses would amount to Rs. 1,200,000 per month. This amount would be inclusive of allocated head office salaries of Rs. 250,000.
  - A sales promotion campaign has been planned from 1 July 2021 at a cost of Rs. 6,000,000. In this respect, 20% of the cost would be paid in June 2021 and the remaining amount would be payable in two equal instalments on 1 October 2021 and 15 January 2022.
- (vi) Unless otherwise specified, payments would be made as detailed under:
  - Direct material purchases within 50 days;
  - Direct labour on 25<sup>th</sup> of each month; and
  - All other expenses within 30 days.
- (vii) Lotus would be sold at a contribution margin of 20% and 25% for cash and credit sales respectively. Cash sales is estimated to be 25% of the credit sales. Credit customers are expected to pay within 40 days of the sales.

**Other information:**

- EL uses marginal costing and follows FIFO method for valuation of inventory.
- All the transactions would occur evenly throughout the period unless otherwise specified.
- Consider 30 days in a month.

**Required:**

Prepare cash budget for the six months ending 31 December 2021. *(Month-wise / quarter-wise cash budget is not required)*

(20)



Q.4 Standard Limited (SL) is in the business of buying and selling electric ovens. It follows perpetual inventory system and uses weighted average method for valuation of inventory. Following information is extracted from SL's records for the month of February 2021:

- (i) Opening inventory consisted of 220,000 units having average cost of Rs. 7,000 per unit.
- (ii) 280,000 units were purchased on 5 February 2021, at Rs. 7,200 per unit.
- (iii) 180,000 units were sold to Khurram Limited (KL) on 10 February 2021.
- (iv) 5,000 defective units were returned by KL on 12 February 2021.
- (v) 30% of the defective units returned to SL, had a manufacturing fault and were returned to the supplier on 15 February 2021. Remaining defective units were damaged due to mishandling at the warehouse. These units were disposed of as scrap on 20 February 2021 for Rs. 2,000 per unit.
- (vi) 5,000 units were sent to KL on 22 February 2021 in replacement of the defective units returned.
- (vii) 150,000 units were sold on 25 February 2021.

On 28 February 2021, a physical stock count was carried out and the following was discovered:

- 4,500 units were identified as obsolete having net realizable value of Rs. 6,000 per unit.
- 500 units were found missing.

**Required:**

Prepare necessary journal entries to record the above transactions relating to inventory. (09)

Q.5 Bright Limited (BL) is engaged in the manufacturing of two products, Shine and Glow. Both these products are processed through two production departments, A and B, while department X and Y provide services to both the production departments. Below is a summary of the indirect costs incurred by BL for manufacture of 100,000 units of Shine and 60,000 units of Glow during the year ended 31 December 2020:

	Rs. in '000
Salaries and wages	115,000
Depreciation of machinery	80,000
Building insurance	25,000
Electricity	60,000
	<b>280,000</b>

Other information related to the four departments is given below:

	Department A	Department B	Department X	Department Y	Total
Cost of machinery (Rs. in '000)	250,000	150,000			400,000
Floor Area (square feet)	15,000	6,000	6,000	3,000	30,000
No. of employees	150	50	25	25	250
Services provided by					
– Department X	80%	20%			
– Department Y	75%	15%	10%		

The overhead absorption rates used by BL for allocation to Shine and Glow are Rs. 1,800 and Rs. 1,700 per unit respectively. Any under/over absorbed overheads are adjusted to cost of sales.

**Required:**

- (a) Compute product-wise actual overheads for Shine and Glow. (08)
- (b) Compute the product-wise under/over absorbed production overheads. (02)

Q.6 Bounce Enterprises (BE) manufactures and sells customized products. To utilise its idle facilities, BE is working on a three-year proposal received from Joy Limited to manufacture and supply a product 'Crystal' at Rs. 3,600 per unit. Details of the proposal and relevant information are summarised as under:

- (i) In the first year, BE would supply 10,000 units of Crystal that would increase annually by 1,000 units.
- (ii) A specialised machine for refining and finishing of Crystal would be purchased at a cost of Rs. 8 million. The machine can be disposed of at 30% of its cost at the end of third year.
- (iii) BE depreciates its plant and machinery at 25% using reducing balance method.
- (iv) One unit of Crystal would require 2 kg of a raw material Z-plus which is available in the market at Rs. 1,000 per kg.

Presently, 12,000 kg of a raw material Z1 is available with BE which was purchased at Rs. 400 per kg for manufacture of a product which is now discontinued. Currently Z1 has no use. Available quantity of Z1 can be converted into 8,000 kg of Z-plus at a processing cost of Rs. 550 per kg of input. Alternatively, Z1 can be sold back to the supplier at 40% of its cost.

- (v) Crystal would be produced in batches of 1,000 units each and the first batch would require 2,500 skilled labour hours. Learning curve effect is estimated at 90% but that would remain effective for the first nine batches only. At 90%, the index of learning curve is -0.152.

BE hires skilled labour at a rate of Rs. 260 per hour. It is expected that if the project is not accepted then there would be 2,200 idle labour hours available for each year.

- (vi) BE would also require 1,200 semi-skilled labour hours per batch which is available at a cost of Rs. 150 per hour. Alternatively, this work can be outsourced at a cost of Rs. 195 per unit.
- (vii) Variable overheads would be charged at Rs. 140 per skilled labour hour. Fixed costs associated with the proposal (other than depreciation) is expected to be Rs. 3.2 million per annum, 25% of which would be allocated overheads.
- (viii) Inflation is estimated at 5% per annum on sales revenue and all costs, with effect from year one.

**Required:**

- (a) Determine year-wise relevant cost of:
  - raw material
  - direct labour
  - overheads(15)
- (b) BE evaluates its projects using a cost of capital of 15%. Tax rate applicable on BE is 30% and tax is payable/refundable in the year in which liability arises. Tax depreciation is assumed to be the same as accounting depreciation.

Using the cost worked out in part (a) above, compute feasibility of this proposal for BE. *(Assume that except where stated otherwise, all cash flows would arise at the end of the year)* (10)

- Q.7 Fine Limited (FL) is involved in manufacturing and distribution of various consumer products. Following information pertains to one of its products, FGH for the year ended 31 December 2020:

	Rs. in '000
Sales (500,000 units)	56,000
Material (Rs. 30 per kg)	(22,500)
Skilled labour (Rs. 125 per hour)	(10,000)
Semi-skilled labour (Rs. 100 per hour)	(5,000)
Production overheads (50% variable)	(4,500)
<b>Gross profit</b>	<b>14,000</b>

The management of FL has decided to take following measures with respect to production of FGH for the next year:

- (i) Increase production volume by 10% to take advantage of increase in demand. Currently the plant for FGH is operating at 80% of its capacity.
- (ii) Purchase 60% of the material from FL's associated company that has offered a bulk discount of 5%. Additional wastage from this material is expected to be 1%.
- (iii) Replace 40% of the skilled labour with semi-skilled labour. It is estimated that semi-skilled labour will take 30% more time to do the work of skilled labour.

Impact of inflation on all costs would be 10%.

FL's management also wants to maintain the same gross profit margin in 2021 as the previous year.

**Required:**

Compute the selling price per unit of FGH for the next year.

(12)

(THE END)



**Cost and Management Accounting**  
Suggested Answers  
Certificate in Accounting and Finance – Spring 2021

A.1 (a) Mehnat Limited

Statement of equivalent production units:

	Equivalent units		Quantity schedule
	Material	Conversion	
<b>Process A</b>	----- Kg -----		
Opening WIP	-	-	2,000
Material			18,000
			20,000
Goods transferred during the month	16,000	16,000	16,000
Closing WIP (60% conversion)	3,000	1,800	3,000
Normal loss [(18,000-3,000)×12%]	-	-	1,800
Abnormal gain (75% conversion) (Bal.)	(800)	(600)	(800)
<b>A</b>	<b>18,200</b>	<b>17,200</b>	<b>20,000</b>

(b) Computation of costs:

	Material	Conversion
	----- Rs. in '000 -----	
Opening WIP	3,600	1,400
Cost for the month	36,000	12,000
Normal loss (1,800×400)	(720)	-
<b>Total cost B</b>	<b>38,880</b>	<b>13,400</b>

	----- Rupees -----		
	----- Rs. in '000 -----		
Cost per unit (B÷A)	2,136	779	2,915
Finished goods	34,176	12,464	46,640
Closing WIP	6,408	1,402	7,810
Abnormal gain	1,709	467	2,176

(c) Accounting entries to account for production losses:

	Debit	Credit
	----- Rs. in '000 -----	
Scrap inventory	720	
WIP – Process A		720
WIP – Process A	2,176	
Scrap inventory (800×400)		320
Profit and loss account (Balancing)		1,856

**Cost and Management Accounting**  
Suggested Answers  
Certificate in Accounting and Finance – Spring 2021

- A.2 (a) It is a report published by a company or organization:
- about the economic, environmental and social impacts caused by its everyday activities.
  - about its values and governance model.
  - that demonstrates the link between its strategy and its commitments to a sustainable global economy.

**External benefits of a sustainability reporting:**

- (i) Mitigates or reverses negative environmental, social and governance impacts.
- (ii) Improves reputation and brand loyalty.
- (iii) Enables external stakeholders to understand the organization's true value and tangible and intangible assets
- (iv) Demonstrates how the organization influences, and is influenced by, expectations about sustainable development

- (b) (i) **Cap:** A cap is a ceiling agreed to an interest rate which is 14% in the given scenario.

**Floor:** A floor is lower limit set for an interest rate which is 8% in the given scenario.

**Collar:** A collar combines both caps and floors thus maintaining the interest rate within a particular range e.g. 8% to 14% in the given scenario.

(ii) Platinum (Private) Limited		Rs. in million
<b>Interest payable by PPL to GE:</b>		
At interest rate of 15%	500×15%	75.00
At interest rate of 9%	500×9%	45.00
<b>Settlement between PPL and MI:</b>		
At interest rate of 15%	Payable by MI to PPL [(15%-14%)×500]	5.00
At interest rate of 9%	No amounts to be settled between PPL and MI, as interest is payable at a rate which is less than agreed cap and more than agreed floor rates.	Nil

**Cost and Management Accounting**  
Suggested Answers  
Certificate in Accounting and Finance – Spring 2021

**A.3 Elements Limited**  
Cash budget for six months ending 31 December 2021

	Rupees
<b>CASH INFLOWS:</b>	
Cash sales <span style="float:right">(14,000+30,000)×1,416</span>	62,304,000
Credit sales <span style="float:right">[56,000+(120,000/90×50)]×1,511</span>	185,350,000
Sale proceeds from solid waste <span style="float:right">[(120,000+150,000)×45]</span>	12,150,000
	<b>259,804,000</b>
<b>CASH OUTFLOWS:</b>	
Material purchase <span style="float:right">[210,000+(232,500/90×40)]×360</span>	112,800,000
Direct labour <span style="float:right">(120,000+150,000)×288</span>	77,760,000
Factory overheads - variable <span style="float:right">[120,000+(150,000/90×60)]×216</span>	47,520,000
Factory overheads - fixed <span style="float:right">(1,000,000-450,000)×5</span>	2,750,000
Operating expenses <span style="float:right">[(120,000+(150,000/90×60)]×94</span>	20,680,000
Royalty per unit <span style="float:right">[70,000+(150,000/90×60)]×40</span>	6,800,000
Fixed annual royalty amount	2,800,000
Salaries excluding head office allocated salaries <span style="float:right">[(1,200,000-250,000)×5]</span>	4,750,000
Sales promotion campaign <span style="float:right">(6,000,000×0.4)</span>	2,400,000
	<b>278,260,000</b>
<b>Net cash out-flow</b>	<b>(18,456,000)</b>

**W-1: Sales quantity**

		1 <sup>st</sup> Quarter	2 <sup>nd</sup> Quarter
		----- Units -----	
Production <span style="float:right">(800,000/12×3×60%; 75%)</span> <b>A</b>		120,000	150,000
Opening inventory		-	50,000
Units available for sale <b>B</b>		120,000	200,000
Closing inventory <span style="float:right">[(150,000/90)×30]</span> <b>C</b>		(50,000)	(50,000)
Total units to be sold <b>C</b>		70,000	150,000
Credit sales <span style="float:right">(C÷1.25)</span> <b>D</b>		56,000	120,000
Cash sales <span style="float:right">(D×0.25)</span>		14,000	30,000

**W-2: Raw material purchases**

		----- kg -----	
Required for production <b>A×1.5</b>		180,000	225,000
Closing inventory <span style="float:right">(180,000;225,000/90×15)</span>		30,000	37,500
Raw material requirement		210,000	262,500
Opening inventory		-	(30,000)
Purchases		<b>210,000</b>	<b>232,500</b>

**W-3: Selling price per unit**

		Rupees
Direct material <span style="float:right">(1.5×360)</span>		540
Direct labour <span style="float:right">(1.2×240)</span>		288
Variable factory overheads <span style="float:right">(1.2×180)</span>		216
Royalty per unit		40
Operating cost		94
Proceeds from solid waste <span style="float:right">[(1.5×0.1×0.6)×500]</span>		(45)
Total variable cost per unit <b>E</b>		<b>1,133</b>
Selling price - Cash sales at 20% CM <span style="float:right">(E/0.80)</span>		1,416
Selling price - Credit sales at 25% CM <span style="float:right">(E/0.75)</span>		1,511



**Cost and Management Accounting**  
Suggested Answers  
Certificate in Accounting and Finance – Spring 2021

**A.4 Standard Limited  
General Journal**

Date	Description	Debit	Credit
		----- Rs. in '000 -----	
05-Feb-2021	Inventory	2,016,000	
	Account payable		2,016,000
	<i>(Inventory purchased)</i>		
10-Feb-2021	Cost of goods sold	1,280,160	
	Inventory		1,280,160
	<i>(Sales made to KL)</i>		
12-Feb-2021	Inventory	35,560	
	Cost of goods sold		35,560
	<i>(Defective units returned by KL)</i>		
15-Feb-2021	Account Payable	10,800	
	Inventory		10,800
	<i>(Defective units returned to supplier)</i>		
20-Feb-2021	Cash (3,500×2,000)	7,000	
	Profit & loss account (Bal.)	17,891	
	Inventory		24,891
	<i>(Defective units sold as scrap)</i>		
22-Feb-2021	Cost of goods sold	35,558	
	Inventory		35,558
	<i>(Replacement of defective units to KL)</i>		
25-Feb-2021	Cost of goods sold	1,066,739	
	Inventory		1,066,739
	<i>(Sales made)</i>		
28-Feb-2021	Profit & loss account - NRV Adjustment [4,500×(7,111.59-6,000)]	5,002	
	Profit & loss account - Shortage (7,111.59×500)	3,556	
	Inventory		8,558
	<i>(Cost of obsolete and shortages charged to factory overheads)</i>		

Date	Particulars	Receipts/(Issues)		
		Quantity	Rate	Rs. in '000
01-Feb-21	Balance	220,000	7,000.00	1,540,000
05-Feb-21	Purchases	280,000	7,200.00	2,016,000
	<b>Balance</b>	<b>500,000</b>	<b>7,112.00</b>	<b>3,556,000</b>
10-Feb-21	Sales to KL	(180,000)	7,112.00	(1,280,160)
12-Feb-21	Returned by KL	5,000	7,112.00	35,560
15-Feb-21	Returned to supplier - defective	(1,500)	7,200.00	(10,800)
	<b>Balance</b>	<b>323,500</b>	<b>7,111.59</b>	<b>2,300,600</b>
20-Feb-21	Defective goods scrapped	(3,500)	7,111.59	(24,891)
22-Feb-21	Replacement of defective to KL	(5,000)	7,111.59	(35,558)
25-Feb-21	Sales	(150,000)	7,111.59	(1,066,739)
28-Feb-21	Short inventory found in physical count	(500)	7,111.59	(3,556)
	<b>Balance</b>	<b>164,500</b>	<b>7,111.59</b>	<b>1,169,856</b>

**Cost and Management Accounting**  
Suggested Answers  
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**A.5 Bright Limited**  
Actual overheads for production of Shine and Glow

(a) Cost allocation to production department:

Items	Allocation basis	Total	Production departments		Service departments	
			A	B	X	Y
Salaries & wages	No. of employees	115,000	69,000	23,000	11,500	11,500
Depreciation	Cost of machine	80,000	50,000	30,000	-	-
Building insurance	Floor Area	25,000	12,500	5,000	5,000	2,500
Electricity	Floor Area	60,000	30,000	12,000	12,000	6,000
					<b>28,500</b>	<b>20,000</b>
<b>Service departments:</b>						
Department Y	75:15:10	20,000	15,000	3000	2000	(20,000)
					<b>30,500</b>	
Department X	80:20	30,500	24,400	6,100	(30,500)	
			<b>200,900</b>	<b>79,100</b>	-	-

Cost allocation to Shine and Glow:	Shine	Glow	Total
Actual units produced	100,000	60,000	160,000
Overheads allocation on the basis of units:			
– Department A	125,563	75,337	200,900
– Department B	49,437	29,663	79,100
	<b>175,000</b>	<b>105,000</b>	<b>280,000</b>

(b) Under/over absorbed production overheads

	Absorbed overheads	Actual overheads	Under/(Over) absorbed
Shine @ Rs. 1,800	180,000	175,000	(5,000)
Glow @ Rs. 1,700	102,000	105,000	3,000
	<b>282,000</b>	<b>280,000</b>	<b>(2,000)</b>

**Cost and Management Accounting**  
Suggested Answers  
Certificate in Accounting and Finance – Spring 2021

**A.6 Bounce Enterprises (BE)**

**(a) Year-wise relevant cost**

Description		Year 1	Year 2	Year 3
No. of units to supply	<b>A</b>	10,000	11,000	12,000
----- Rupees -----				
<b>RAW MATERIAL</b>				
Conversion cost per kg of Z-plus:				
- Opportunity cost of selling back Z1 [400×40%×(12,000÷8,000)] =	240			
- Processing cost per kg [(12,000×550)÷8,000]×1.05 =	866			
	<b>1,106</b>			
Purchase cost per kg of Z-plus (1,000×1.05)	<b>1,050</b>			
<i>Purchase option is cheaper than conversion of Z1</i>				
<b>Relevant cost of raw material</b>	<b>(A×2×1,050);1.05</b>	<b>21,000,000</b>	<b>24,255,000</b>	<b>27,783,000</b>
<b>DIRECT LABOUR</b>				
<b>Direct labour - Skilled</b>				
Idle hours available from existing labour (Not relevant)				
	-	-	-	-
Cost of additional hrs. required	[B(W-1)- 2,200]×260×1.05]	4,216,212	4,199,996	4,871,101
<b>Direct labour - Semi-skilled</b>				
In house [(1,200÷1,000)×150×1.05]	189			
Outsourced (195×1.05)	205			
<i>In house is cheaper</i> (189×A×1.05)		1,890,000	2,182,950	2,500,470
<b>Relevant cost of direct labour</b>		<b>6,106,212</b>	<b>6,382,946</b>	<b>7,371,571</b>
<b>OVERHEADS</b>				
Variable overheads (B×140×1.05)		2,593,668	2,601,106	2,979,449
Depreciation on specialized machine (8,000,000×25%)		2,000,000	1,500,000	1,125,000
(Gain)/loss on sale of specialized machine - (W-2)		-	-	975,000
Allocated fixed overheads (Not relevant)				
		-	-	-
Directly attributable fixed overheads (3,200,000×75%×1.05)		2,520,000	2,646,000	2,778,300
<b>Relevant cost of overheads</b>		<b>7,113,668</b>	<b>6,747,106</b>	<b>7,857,749</b>
<b>Total relevant costs of Crystal</b>		<b>34,219,880</b>	<b>37,385,052</b>	<b>43,012,320</b>

**W-1:**

Hours required (W-1.1) [16,112+(1×1,532)]; [11×1,532]; [12×1,532]	<b>B</b>	17,644	16,852	18,384
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**W-1.1:**

<b>Labour hours per batch for batch 9 and onwards:</b>		
Hours for the first 9 batches	[9×2,500×(9) <sup>-0.152</sup> ]	16,112
Hours for the first 8 batches	[8×2,500×(8) <sup>-0.152</sup> ]	(14,580)
		<b>1,532</b>

**W-2:**

<b>Loss on sale of specialized machine</b>		
Net book value	[8,000,000×(0.75) <sup>3</sup> ]	3,375,000
Sales proceeds	(8,000,000×30%)	2,400,000
<b>Loss on disposal</b>		<b>975,000</b>



**Cost and Management Accounting**  
Suggested Answers  
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(b) Feasibility of the proposal at cost of capital of 15%

Description	Year 0	Year 1	Year 2	Year 3
	Cash inflows/(outflows) - Rupees			
Sales revenue (A×3,600×1.05)		37,800,000	43,659,000	50,009,400
Relevant cost of Crystal as (a) above		(34,219,880)	(37,385,052)	(43,012,320)
		3,580,120	6,273,948	6,997,080
Tax at 30%		(1,074,036)	(1,882,184)	(2,099,124)
Add: Deprecation on the specialized machine		2,000,000	1,500,000	1,125,000
Add: Loss on sale of the specialized machine		-	-	975,000
Purchase/sale of specialized machine	(8,000,000)	-	-	2,400,000
<b>Net cash flows</b>	<b>(8,000,000)</b>	<b>4,506,084</b>	<b>5,891,764</b>	<b>9,397,956</b>
Present value factor at 15%	1.0000	0.8696	0.7561	0.6575
Present value at 15%	<b>(8,000,000)</b>	<b>3,918,490</b>	<b>4,454,763</b>	<b>6,179,156</b>
<b>NPV</b>				<b>6,552,409</b>

**Conclusion:**

The proposal should be accepted as it generates positive NPV.

A.7 Fine Limited

		Units
Revised sales volume	500,000×1.1	550,000
		Rs. in '000
Material - from existing supplier	22,500×1.1×40%	9,900
Material - from new supplier	22,500×1.1×60%×95%×(100/99)	14,250
Skilled labour	10,000×1.1×0.6	6,600
Semi-skilled labour	100,760(W-1)×100	10,076
production overhead - variable	4,500×0.5×1.1	2,475
production overhead - fixed	4,500×0.5	2,250
Total costs		45,551
Add: Inflation @10%		4,555
Target cost		50,106
Add: Target gross profit @ 25%	50,106×25/75	16,702
Target sales		66,808
		Rupees
Target selling price	66,808,000/550,000	121.47
<b>W-1:</b>		--- Hours ---
Semi-skilled labour hours required:		
	(10,000,000/125)×1.1×40%×1.	
- in replacement of skilled labour	3	45,760
- existing requirement	(50,000/100)×1.1	55,000
		100,760

**(THE END)**

<b>INSTITUTE OF CHARTERED ACCOUNTANTS OF PAKISTAN</b>	
<b>EXAMINERS' COMMENTS</b>	
<b>SUBJECT</b>	<b>SESSION</b>
Cost and Management Accounting	Certificate in Accounting and Finance (CAF) Examination - Spring 2021

**Passing %**

1	2	3	4	5	6	7	Overall
84%	34%	7%	41%	86%	42%	64%	48%

**General**

The overall performance in this attempt has improved significantly (48%) in comparison to the previous attempt (26%). Except Question 3, the overall performance was satisfactory. In Question 3, it was observed that most examinees simply ignored a note mentioned with the requirement of the question that month-wise/quarter-wise cash budget is not required. Despite this note, these examinees prepared month-wise/quarter-wise cash flows and made many mistakes which could have been easily avoided. It is therefore advised to all the examinees to carefully read the requirement of the questions before attempting the answer.

**Question-wise common mistakes observed**

**Question 1**

- Normal loss was computed on input units without deducting closing WIP.
- Abnormal gain was added instead of subtracting it in computation of equivalent production units for material and conversion costs.
- Scrap value of normal loss was not deducted from total process cost for computation of cost per unit.
- Incorrect entries were made for normal loss and abnormal gain, which demonstrates weak concepts. Please refer ICAP's suggested answer for correct entries.

**Question 2(a)**

- Sustainability reporting was not explained with clarity.
- Most examinees could not manage to list down the relevant external benefits.

**Question 2(b)**

- Settlement between PPL and MI was computed even at 9% interest rate. Most examinees failed to pick the point that no settlement will be made if interest rate is within the agreed cap and floor.

**Question 3**

- Most examinees made the mistake of attempting this question by preparing a month-wise/quarter wise budget even though it was clearly mentioned in the question that month-wise/quarter-wise cash budget was not required. This resulted in wastage of time and errors in computation of cash inflows and outflows.
- Opening and closing inventory of finished goods and raw material were either not computed or computed incorrectly using annual production units instead of quarterly production.
- Cash inflows from revenue were computed using production units instead of units sold.
- Total units sold was not bifurcated correctly between cash sales and credit sales.
- Sale proceeds from solid waste was not subtracted from variable cost per unit and in many cases it was not even taken as a cash inflow in the cash budget.
- Selling prices for cash sales and credit sales were not computed separately. Most examinees computed a single selling price and computed cash inflows from revenue using that one price.

**Question 4**

- The question explicitly required journal entries relating to inventory, yet many examinees prepared entries related to sales and receivables.
- Weighted average rates were not computed correctly under the perpetual inventory system.
- Incorrect head of accounts were debited/credited.

**Question 5**

- Cost computed for the two departments was not allocated to Shine and Glow.
- Over/under absorbed overheads were incorrectly computed by comparing the total cost of the two departments with absorbed overheads of the two products.

**Question 6 (a)**

- Elements of relevant cost were inflated from year 2 instead of year 1.
- Most examinees failed to correctly identify the two options available for raw material. As a result of that, in most cases the decision making process was entirely skipped and the option to convert Z1 into Z-plus was combined with partial purchase of Z-plus for computation of material cost of year 1.
- Learning effect was incorporated in computation of skilled labor hours for first nine batches of all three years instead of just year 1. This resulted in incorrect computation of labor hours for year 2 and year 3.
- Idle labor hours were not deducted from total skilled labor hours while computing relevant cost for skilled labor.
- The option to outsource the task of semi-skilled labor was ignored and no decision making was done for computation of relevant cost.
- In computation of variable overheads, skilled labor hours net of idle hours were taken instead of total skilled labor hours.
- Total fixed overheads were taken as relevant instead of just the attributable portion of 75%.



**Question 6(b)**

- Sales revenue was inflated from year 2 instead of year 1.
- Depreciation and loss on disposal was not added back for computing net cash flows.

**Question 7**

- Additional wastage of 1% was computed on total raw material units instead of raw material to be purchased from new supplier.
- Production increase of 10% was ignored in computation of costs.
- Computation of semi-skilled labor hours in replacement of skilled labor hours was computed incorrectly.
- Impact of inflation was ignored in some cases.
- Target profit was incorrectly computed by multiplying the gross profit margin with the total cost.

*(THE END)*

**Cost and Management Accounting**  
 Summary of Marking Key  
 Certificate in Accounting and Finance – Spring 2021

**Note regarding marking scheme:**

The marking scheme is given as a guide. Markers also award marks for alternative approaches to a question and relevant/well-reasoned comments/explanations. Moreover, the available marks in answer may exceed the total marks of a question.

		Mark(s)	
A.1	(a)	▪ Normal Loss	1.5
		▪ Abnormal loss	0.5
		▪ EPU of material	1.0
		▪ EPU of conversion cost	1.0
	(b)	▪ Total costs (net of scrap proceeds)	1.5
		▪ Per unit cost	1.5
		▪ Cost of finished goods	1.0
		▪ Cost of closing WIP	1.5
		▪ Cost of abnormal gain	1.5
	(c)	▪ Entry for normal loss scrap	1.0
		▪ Entry for abnormal gain	1.0
	A.2	(a)	▪ Explanation of 'Sustainability reporting'
▪ External benefits			3.0
(b) (i)		▪ Explanation of the terms cap, floor and collar	2.0
		(ii)	▪ Computations in case of 15% interest rate
▪ Computations in case of 9% interest rate			2.0
A.3		▪ 2.5 marks each for sales volume, material purchase units and selling price per unit	7.5
	▪ Cash and credit sales	2.5	
	▪ Sales proceeds from wastage	2.0	
	▪ Material purchases	1.5	
	▪ Direct labour	1.0	
	▪ Factory overheads – variable	1.5	
	▪ Factory overheads – fixed	0.5	
	▪ Operating expenses	1.5	
	▪ Royalty expense	1.0	
	▪ Administrative expenses and sales promotion expense	1.0	
A.4	Journal entries for:		
	▪ purchase of inventory	0.5	
	▪ sales to KL	0.5	
	▪ sales return from KL	1.0	
	▪ returns to supplier	1.0	
	▪ scrap sale of defective units	2.0	
	▪ replacement to KL	1.0	
	▪ sale to customer	1.0	
	▪ NRV adjustment	1.0	
	▪ short inventory	1.0	

**Cost and Management Accounting**  
 Summary of Marking Key  
 Certificate in Accounting and Finance – Spring 2021

		Mark(s)	
A.5	(a)	▪ 01 mark for allocation of each expense	4.0
		▪ 01 mark for allocation of each service department cost to production departments	2.0
		▪ 01 mark for allocation of cost to each product	2.0
	(b)	▪ Over absorbed production overheads of Shine	1.0
		▪ Under absorbed production overheads of Glow	1.0
	A.6	(a)	▪ Conversion cost of Z-plus
▪ Purchase cost of Z-plus			1.0
▪ Direct labour hours – skilled			2.0
▪ Direct labour cost – skilled			2.0
▪ Direct labour cost – semi skilled (in-house)			1.5
▪ Direct labour cost – semi skilled (outsource)			1.0
▪ Variable overheads			1.5
▪ 01 mark each for depreciation, loss on disposal and fixed overheads			3.0
▪ Decision making for:			
– raw material			0.5
– direct labour – semi skilled		0.5	
(b)		▪ Sales revenue	2.5
		▪ Relevant cost of crystal	1.5
		▪ Tax	0.5
	▪ Add back of depreciation and loss on disposal	1.0	
	▪ Purchase/ sale of specialized machine	2.5	
	▪ Net present value	1.5	
	▪ Conclusion	0.5	
A.7	▪ Sales volume	0.5	
	▪ Material cost – from existing supplier	1.5	
	▪ Material cost – from new supplier	2.0	
	▪ Skilled labour cost	1.5	
	▪ Semi- skilled labour cost	2.0	
	▪ Production overheads – variable	1.0	
	▪ Production overheads – fixed	0.5	
	▪ Inflation	0.5	
	▪ Target profit	1.0	
	▪ Target sales	0.5	
▪ Target selling price	1.0		

(THE END)





The Institute of  
Chartered Accountants  
of Pakistan

## Certificate in Accounting and Finance Stage Examination

9 September 2021  
3 hours – 100 marks  
Additional reading time – 15 minutes

### Cost and Management Accounting

**Instructions to examinees:**

- (i) Answer all **SIX** questions.
- (ii) Answer in **black** pen only.

Q.1 White Limited (WL) had prepared five years' projection for its then newly developed product 'Delta'. Based on the original estimates, the management was highly optimistic regarding the performance of Delta. However, during the first two years, Delta could not meet the expectations and had incurred heavy losses. Now, at the beginning of third year, the management is considering two options; either to discontinue production of Delta or continue to produce and sell Delta for three more years.

Following information is available in this respect:

**Original estimates:**

- (i) Machinery would be purchased for Rs. 2,000,000 which would be depreciated at 25% reducing balance method. Tax depreciation would be calculated on the same basis. The estimated residual value of machinery would be equal to its written down value at the end of project life i.e. 5 years.
- (ii) Quantity to be produced and sold would be 3000, 3500, 4800, 5500 and 6000 units from year 1 to year 5 respectively.
- (iii) Sales price for the first year would be Rs. 1,000 per unit subject to increase of 10% per annum.
- (iv) Each Delta would require one unit of material A-4. The supplier of A-4 has offered a discount of 20% for all annual orders of 3000 units or more.
- (v) Variable cost for the first year would be Rs. 600 per unit after accounting for 20% discount from supplier. Variable cost would comprise of direct material, direct labour and variable overhead in the proportion of 50:30:20.
- (vi) The storage facility would be acquired on rent for 5 years. The rent for first year would be Rs. 500,000 which would be subject to an annual increase of 10%. However, if the agreement is terminated before 5 years, penalty equivalent to 6 months' rent payable in the year the termination takes place, would need to be paid.
- (vii) Other fixed cost would amount to Rs. 500,000 per annum.
- (viii) Tax rate applicable to WL is 30%. Tax is payable in the same year in which it arises.
- (ix) WL's weighted average cost of capital is 15%.
- (x) All costs unless otherwise specified are subject to 5% inflation rate.

**Option 1: Discontinue production of Delta**

- (i) The existing stock of 1500 units of Delta would be sold to an existing customer at 75% of price based on the original estimates.
- (ii) Machinery would be sold for Rs. 1,500,000.
- (iii) All other information would remain the same as per original estimates.

**Option 2: Continue to produce and sell Delta for 3 more years**

- (i) WL would continue to sell Delta (including opening stock of 1500 units) at the budgeted price based on original estimates. However, at that price, WL would only be able to sell 80% of budgeted quantity including 5% units to be given away as free under the promotional scheme.
- (ii) Marketing campaign would be carried out at Rs. 500,000 per annum.
- (iii) More stringent controls would be introduced to reduce variable overheads and other fixed cost by 20%.
- (iv) All other information would remain the same as per original estimates.

**Required:**

Evaluate both options by using net present value method. Recommend the best course of action that WL should follow. (20)

**Notes:**

- *Net present value based on original estimates is not required.*
- *Assume that except where stated otherwise, all cash flows would arise at the end of the year.*

- Q.2 (a) Yellow Limited (YL) is engaged in manufacturing and selling of three products that are Alpha, Beta and Gamma. YL has recently received an order from an overseas customer for 3000, 4000 and 1000 kg of Alpha, Beta and Gamma respectively. This order represents 25% of total demand for each of the three products. The management has decided to consider this order as 'high priority' as it is expected that repeated orders would be received if the customer is fully satisfied; therefore, this order would be fulfilled before any other order.

The per unit details of sales price, costs and direct labour hours required for each product are given below:

	Alpha	Beta	Gamma
	----- Rupees -----		
Selling price	10,000	9,000	12,500
Specialized chemical	2,500	1,800	3,500
Direct labour	1,250	2,000	1,500
Variable production cost	250	200	500
*Fixed production cost	750	400	600
*Selling and administration costs (30% variable)	250	200	300
	----- Hours -----		
Direct labour hours required	6	5	8

*\*Fixed costs are allocated on the basis of expected demand*

Each product requires specialized imported chemical. YL has been allowed to import that chemical maximum to Rs. 70 million per annum.

The management of YL is concerned over restrictions on import of specialised chemical in the existing country of operation as any shortfall to meet demand cannot be fulfilled. One of the proposals is to shut-down the existing plant and start manufacturing in Country X.

Following information is relevant if YL considers to start manufacturing in Country X:

- (i) There is no import restriction on required chemical.
- (ii) Direct labour hours required for manufacturing YL's products are in short supply and available up to 100,000 hours only.
- (iii) Any shortfall in the units can be met by sub-contracting to an outside supplier. The cost of buying each finished product of Alpha, Beta and Gamma would be equivalent to Rs. 5000, Rs. 4500 and Rs. 7500 respectively. However, the order considered as 'high priority' would be manufactured by YL itself.
- (iv) All other information unless otherwise specified would remain the same for Country X.

YL operates a just-in-time system and has no inventories of chemical or finished goods.

**Required**

Recommend whether YL should continue manufacturing in the existing country or start manufacturing from Country X. Your recommendation should be based on profit maximizing production schedules. (15)



- (b) Discuss the non-financial factors that management would need to consider before deciding to sub-contract the manufacturing of its products. (04)

Q.3 Following information pertains to one of the products 'Violet' of Blue Limited (BL), for the month of August 2021:

- (i) Production for the month was budgeted at 12,000 units. The standard cost per unit of Violet is as follows:

	Rupees
Direct materials:	
Alpha – 4 kg	800
Beta – 6 kg	900
Direct labour – 2 hours	300
*Production overheads – 2 direct labour hours	260

*\*Fixed production overheads were estimated at Rs. 1.2 million based on budgeted direct labour hours*

- (ii) Direct materials are added at the beginning of the production process. BL accounts for material price variance at the time of issuance of material to production and uses FIFO method for inventory valuation. Following information has been extracted from the stock cards of Alpha and Beta:

Date	Description	Alpha		Beta	
		kg	Cost per kg (Rs.)	kg	Cost per kg (Rs.)
1-Aug	Opening balance	2,000	220	4,000	140
		4,000	190	4,000	150
2-Aug	Purchase returns	(1,000)	190	-	-
3-Aug	Purchases	75,000	195	86,000	155
5-Aug	Purchase returns	-	-	(500)	140
7-Aug	Issues to production	(60,000)	-	(70,000)	-

- (iii) Conversion costs are incurred evenly throughout the process. Conversion costs incurred for August 2021 are as under:

	Rupees
Direct labour paid for 26,730 hours (including 10% idle hours due to machine break-down)	4,000,000
Variable production overheads	2,000,000
Fixed production overheads	1,400,000

- (iv) Actual sales for the month of August 2021 were 12,500 units. Details of opening and closing inventories are hereunder:

	Opening	Closing
Finished goods	1,200 units	1,500 units
Work in process	1,000 units (60% complete)	500 units (80% complete)

- (v) BL uses standard absorption costing system.

**Required:**

- (a) Prepare a statement of equivalent production units. (02)
- (b) Compute the following variances:
- (i) Material price, mix and yield variances (09)
- (ii) Variable production overhead rate and efficiency variances (04)
- (iii) Fixed production overhead expenditure, efficiency and capacity variances (05)



- Q.4 Green Limited (GL) produces a chemical that passes through two processes before being transferred to warehouse. Following information pertains to Process II for the month of August 2021:

	Production (kg)	Cost (Rs. in '000)
Opening work in process	7,500	3,000
Transferred from Process I	45,000	27,000
Material added in Process II	22,500	11,250
Conversion costs incurred in Process II	-	1,500
Finished goods transferred to warehouse	60,000	-
Closing work in process	9,000	-

In Process II, material is added at start of the process and conversion costs are incurred evenly throughout the process. Process loss is determined on inspection which is carried out on 60% completion of the process. Process loss is estimated at 10% of the inspected quantity and is sold for Rs. 200 per kg.

The details of opening and closing work in processes are as follows:

Opening work in process		Closing work in process	
kg	Completion %	kg	Completion %
5,250	80%	5,400	70%
2,250	40%	3,600	30%

GL uses FIFO method for inventory valuation.

**Required:**

Prepare Process II account for the month of August 2021.

(10)

- Q.5 Red Limited (RL) manufactures and sells plastic chairs. The relevant details at different demand levels are as follows:

Demand in units	16,000	14,000	11,800	9,300
	----- Rupees -----			
Sale price (net of 3% distributor commission) per unit	2,850	2,945	3,040	3,135
Material	20,520,000	18,900,000	15,930,000	12,555,000
Conversion cost	11,403,600	10,750,000	9,374,000	8,299,000
Operating expenses	3,500,000	3,500,000	3,500,000	3,500,000

The management is considering manufacturing either 14,000 chairs or 16,000 chairs. In the above table, fixed conversion cost increases by 10% if number of chairs manufactured exceeds 13,000. Further, material cost and variable conversion costs reduce by 5% and 3% respectively, if number of chairs manufactured exceeds 15,000.

In order to achieve the desired level of sales, RL is also considering to offer 5% sale discount on bulk order of 25 chairs and 10% sale discount on bulk order of 50 chairs. The sales mix after introduction of discount is estimated to be in the ratio of 60:30:10 for normal sale, 5% sale discount and 10% sale discount respectively. It is estimated that introduction of discount would result in increase in distributor commission by 1% on bulk sale of 25 chairs and 2% on bulk sale of 50 chairs.

**Required:**

- (a) Determine the breakeven revenue and margin of safety units at the demand level of 14,000 and 16,000 chairs.
- (b) Briefly discuss any conclusion which may be drawn from your calculation in (a) above.

(14)

(02)

- Q.6 (a) Identify any **four** situations under which the cost of inventories may exceed its net realisable value. (02)
- (b) Orange Limited (OL) manufactures four products. The information related to its inventory of each product for the year ended 30 June 2021 is as follows:

	A	B	C	D
Closing inventory <b>(units)</b>	15,000	25,000	5,000	8,000
Cost per unit using weighted average method <b>(Rs.)</b>	800	700	900	1,275
Retail price per unit inclusive of 10% sales tax <b>(Rs.)</b>	1,144	990	1,320	1,980
Variable selling cost per unit <b>(Rs.)</b>	80	75	100	110
Defective units (included in closing inventory)	2,400	4,000	-	-
Rework cost per defective unit <b>(Rs.)</b>	260	320	-	-

**Additional information:**

- During physical inventory count of Product C, a discrepancy of 900 completed units was observed. On investigation, it was found that 5,600 units supplied to a customer were erroneously recorded as 6,500 units.
- The defective units can be sold in the market at 60% of the current retail price without incurring any rework and selling costs.
- Due to decrease in raw material prices, the products similar to B and D, offered by the competitors, are available in the market at a discount of 15% and 20% respectively, of OL's current retail price. OL would have to adjust its sales prices accordingly.

**Required:**

- (i) Prepare entries to record the adjustments that need to be incorporated for correct valuation of inventory. (10)
- (ii) Determine the adjusted value of inventory as at 30 June 2021. (03)

(THE END)