COST ACCOUNTING
(SPRING 2006 TO SPRING 2014)

ICAP PAST PAPERS BANK

AUGUST 7, 2016
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THE INSTITUTE OF CHARTERED ACCOUNTANTS OF PAKISTAN

Intermediate Examinations Spring 2006

March 11, 2006

COST ACCOUNTING

(MARKS 100)

Module D

(3 hours)

Q.1 (a) An important feature in the installation of any accounting or costing system is the proper classification of accounts. The Bottlers Limited, bottlers and distributors of beverages, have recently introduced a new classification which includes the following accounts:

1.	Samples	13.	Freight out
2.	Sugar	14.	Income tax
3.	Factory payroll	15.	Advertising
4.	Foreman's salary	16.	Rent of office building
5.	Conveyance and travelling	17.	Labels
6.	Factory's clerical salaries	18.	Depreciation on machinery
7.	Drivers' wages	19.	Insurance
8.	Gas, oil and grease	20.	Water
9.	Depreciation of furniture & fixtures	21.	Truck tyres
10.	Salesmen's salary and commissions	22.	Bottle breakages
11.	Light and power	23.	Telephone and communication
12.	Legal and audit fee	24.	Stationery

Classify each account under one or more of the following headings:

- Manufacturing
- Selling and Distribution
- Administration

(06)

(b) Distinguish between joint products and by-products, and briefly explain the difference in accounting treatment between them. **(04)**

Q.2 Eastern Limited purchases product Shine for resale. The annual demand is 10,000 units which is spread evenly over the year. The cost per unit is Rs. 160. Ordering costs are Rs. 800 per order. The suppliers of Shine are now offering quantity discounts for large orders as follows:

Ordered Quantity	Unit price Rs.
Upto 999 units	160.00
1000 to 1999 units	158.40
2000 or more units	156.80

The purchasing manager feels that full advantage should be taken of discounts and purchases should be made at Rs. 156.80 per unit, using orders for 2000 units or more. Holding costs for Shine are calculated at Rs. 64 per unit per year, and this figure will not be altered by any change in the purchase price per unit

Required:

Advise Eastern Limited about the best choice available to them. **(10)**

Q.3 Mr. Azad has provided you the following information from his factory ledger for the quarter ended 31 December 2005:

Control Account Balances as on October 1, 2005:	**Rupees**
Materials	49,500
Work in process	60,100
Finished goods	115,400
Materials purchased	108,000
Direct wages	50,200
Payments for factory overheads	30,900
Depreciation of factory building and machines	42,000

Other related information is as under:

- Closing stock of raw materials and finished goods at December 31, 2005 amounted to Rs. 50,300 and Rs. 125,800 respectively.
- Cost of goods produced is Rs. 222,500.
- Factory overheads are absorbed in production @ 160% of direct wages.
- Diesel costing Rs. 2,000 included in the factory overheads was transferred to head office for use in generator.
- A bill for repairs amounting to Rs. 12,000 undertaken at the factory remained unpaid at the end of the quarter.
- Material costing Rs. 2,400 was destroyed by rain.

Required:

Write up the following accounts:

i) Materials
ii) Work in process
iii) Finished goods
iv) Factory overheads
v) Cost of goods sold **(10)**

Q.4 AG Electronics manufactures transistors which are used for assembling flat screen TV. During the current year 5,000 transistors were manufactured at the following costs:

	Rupees
Direct material	1,000,000
Direct wages	560,000
Factory overheads:	
Lease rentals – equipments	90,000
Equipments Insurance	19,000
Equipments maintenance contract	200,000
Other overheads	600,000

The cost of direct materials include abnormal loss of Rs. 30,000.

The following estimates have been made for the next year:

1. The production is estimated to increase by 60%.
2. The cost of direct material will increase by 20%.
3. In view of a government regulation which will become effective from July 1, next year, the rate of wages will increase by 12%.
4. The rate of other overheads is expected to increase by 6% from the start of next year. 40% of the other overheads are fixed costs allocated by head office.

Moon Limited, a specialist in manufacturing transistors has offered to supply the full requirement for the next year, at a price of Rs. 400 per unit. If it is decided to discontinue the production of transistors, the plant currently in use would be returned to the leasing company but the following additional costs would have to be incurred:

Inspection	Rs. 20,000 per annum
Insurance	Rs. 8 per transistor

You are required to advise the company's management whether it should accept the offer of Moon Limited or continue to manufacture the transistors in-house. **(10)**

Q.5 The manufacturing of a chemical is carried out in three continuous processes, P1, P2 and P3. The following data is available in respect of production during February 2006.

Particulars	P1	P2	P3
Output – litres	8,800	8,400	7,000
Costs in rupees:			
Direct Material introduced (10,000 litres)	63,840	-	-
Direct wages	5,000	6,000	10,000
Direct Expenses	4,000	6,200	4,080
Work in process – opening (litres)	200		
Scrap value (Rs. per unit)	1	3	5
Normal loss	10%	5%	10%

At the end of P3, 420 litres of a by-product ZOLO were produced, which was treated further at a cost of Rs. 2 per liter. Selling and distribution expenses of Re.1 per unit were incurred and it was sold at a price of Rs. 9 per litre.

Budgeted overheads for the month were Rs. 84,000. Factory overhead absorption is based on a percentage of direct wages. The work in process at P1 comprised material of Rs. 500 and labour and factory overheads of Rs. 1,000. There were no closing work in process in any of the processes.

Required:

Prepare the following:
(a) Work in process account for each process.
(b) By-product account. **(12)**

(4)

Q.6 Nasib Ltd. has prepared the following budgeted income statement for the year 2006:

Product	Caps	Crowns	Rings	Pallets	Tubes	Total
			(Rupees in thousands)			
Sales	30,800	34,300	45,500	35,700	63,700	210,000
Manufacturing costs						
Materials	1,540	4,620	9,240	7,700	11,550	34,650
Labour	3,500	5,600	10,500	9,800	12,600	42,000
Production overheads:						
Variable	1,750	2,450	2,800	3,500	5,040	15,540
Fixed	2,450	4,200	7,700	7,000	6,650	28,000
	9,240	**16,870**	**30,240**	**28,000**	**35,840**	**120,190**
Transportation	840	2,520	5,040	4,200	4,550	17,150
Packaging	1,400	700	1,400	700	2,100	6,300
	2,240	**3,220**	**6,440**	**4.900**	**6,650**	**23,450**
Administrative costs	4,620	5,145	6,825	5,355	9,555	31,500
Selling and advertising expenses	5,040	3,815	3,675	3,885	5,285	21,700
Total cost	**21,140**	**29,050**	**47,180**	**42,140**	**57,330**	**196,840**
Profit	**9,660**	**5,250**	**(1,680)**	**(6,440)**	**6,370**	**13,160**

The Management Accountant of the company has provided the following additional information which describes the basis on which budgeted income statement has been prepared:

(i) Material costs include purchase cost plus 10% additional charge, which is added in order to recover the fixed costs of storage and stores administration.

(ii) Labour cost is totally variable.

(iii) Fixed production overhead includes both directly attributable fixed costs and general fixed production overheads. The general fixed production overheads amount to Rs. 21 million and have been allocated in proportion to labour costs. The attributable fixed cost is avoidable if the related product is not produced.

(iv) Transport charges include fixed costs of Rs. 3,150,000 which have been allocated to products in proportion to their material costs. Remaining costs are variable.

(v) Selling and advertising expenses include commission of 5% of sales revenue. The remaining amount is the advertising cost which is directly attributable to each product.

(vi) Administrative cost is fixed and is apportioned in the ratio of sales revenue.

(vii) Packaging is a variable cost.

The Managing Director has shown his concern that Rings and Pallets are showing loss and affecting the financial results of the company. A study which has been carried out recently has analyzed as under:

(a) Sales are influenced by advertising and can be increased upto 40% by extensive advertising. However each 10% increase in sale would require a 75% increase in advertising expenditure.

(b) The sale of Caps or Crowns can be increased by reducing the production/sale of the product Ring. However a reduction in sale of Ring by Re.1 would generate a sale of 45 paisas of Caps or 50 paisas of Crowns sales. This substitution will not entail any extra advertising expenditure.

The management is considering the following three options:

(i) To discontinue the product Ring and Pallets.
(ii) To launch an advertising campaign which will increase the sale of each product by 40%.
(iii) To substitute the sale of Rings with the sale of Caps or Crowns.

Required:

Calculate the effect of each of the above options on the profitability of the company. **(25)**

Q.7 A company produces mineral water. Based on the projected annual sales of 40,000 bottles of mineral water, cost studies have produced the following estimates:

	Total annual costs (in rupees)	Variable cost percentage
Material	193,600	100
Labor	90,000	70
Overhead	80,000	64
Administration	30,000	30

The production will be sold through dealers who would receive a commission of 8% of sale price.

Required:

(i) Compute the sale price per bottle which will enable management to realize a profit of 10 percent of sales.
(ii) Calculate the break-even point in rupees if sale price is fixed at Rs. 11 per bottle. **(10)**

Q.8 The standard raw material mix for 2200 kgs of finished product is as follows:

Materials	**Weight (Kgs)**	**Price per Kg (Rs.)**
Salt	1,200	1.50
Ash	600	2.00
Coata	200	3.00
Fog	400	4.00

(6)

Materials used during an accounting period were as follows:

Materials	Weight (Kg)	Price per Kg (Rs.)
Salt	6,000	1.6
Ash	4,800	1.8
Coata	1,600	2.6
Fog	2,500	4.1

Actual production was 12,100 kg. Calculate the following materials variances:

(i) Cost variance
(ii) Price variance
(iii) Usage variance
(iv) Mix variance
(v) Yield variance **(13)**

(THE END)

THE INSTITUTE OF CHARTERED ACCOUNTANTS OF PAKISTAN

Intermediate Examinations Autumn 2006

September 09, 2006

COST ACCOUNTING

(MARKS 100)

Module D **(3 hours)**

Q.1 Hi-way Engineering Limited uses budgeted overhead rate for applying overhead to production orders on a direct labour cost basis for department A and on a machine hour basis in department B.

The company made the following forecasts for August 2006:

	Dept A	Dept B
Budgeted factory overhead (Rs.)	216,000	225,000
Budgeted direct labour cost (Rs.)	192,000	52,500
Budgeted machine hours	500	10,000

During the month, 50 units were produced in Job no. CNG-011. The job cost sheet for the month depicts the following information:

	Dept A	Dept B
Material issued (Rs.)	1,500	2,250
Direct labour cost (Rs.)	1,800	1,250
Machine hours	60	150

Actual data for the month were as follows:

	Dept A	Dept B
Factory overhead (Rs.)	240,000	207,000
Direct labour cost (Rs.)	222,000	50,000
Machine hours	400	9,000

Required:

(a) Compute predetermined overhead rates for each department. **(02)**

(b) Work out the total costs and unit cost of Job no. CNG-011. **(04)**

(c) Compute the over / under applied overhead for each department. **(02)**

Q.2 (a) Optimum inventory level can only be determined after comparing the holding costs with the cost of ordering.

Required:

(i) Briefly discuss the impact of holding and ordering costs on optimum inventory level. **(03)**

(ii) Give three examples of costs which fall under each category. **(03)**

(iii) What are the problems which may arise in determining the above costs? **(02)**

(b) Two-way Engineering Limited has been experiencing stockouts on one of its important product RD-11. Using the EOQ formula, the company places orders of 1,250 units whenever the stock level reduces to 1500 units. The records of the company show the following data relating to the usage of Product RD-11 during lead times:

Usage (Units)	1,800	1,600	1,400	1,200	1,000
Usage Probability (%)	4	6	10	20	60

The company sells RD-11 at a price of Rs. 500 per unit. The annual carrying cost of one unit is Rs. 30. The company estimates that the cost of being out of stock is Rs. 125 for each unit.

Required:
The management of the company asks you to establish an optimal safety stock for this material and also ascertain the probability of being out of stock on your proposed safety stock level. **(10)**

Q.3 Tram-way Hardware Store has been owned by Mr. Petrol. He had himself made all investment in the business and had not obtained any financing. He appointed a junior accountant to maintain the manual accounting records. During the month of August, he asked his accountant to provide certain information including estimates as he was planning to withdraw some amount for his personal use.

After the failure of his accountant to provide the required information, he has hired your services for this purpose. You have gathered the following information from the records:

(i) Sales for August 2006 amounted to Rs. 5,000,000.
(ii) Sales forecast for the next three months was as follows:

	Rs.
September	6,000,000
October	5,000,000
November	5,500,000

(iii) Based on past experience, collections are expected to be 56 percent in the month of sale and 43 percent in the month following the sale. One percent remains uncollected
(iv) Gross margin on sales is 20% and cost of goods sold comprises of purchase cost only.
(v) 80 percent of the goods are purchased in the month prior to the month of sale and 20 percent are purchased in the month of sale. Payment for goods is made in the month following the purchase.
(vi) Other monthly recurring expenses which are paid in cash amount to Rs. 40,700.
(vii) Annual depreciation on fixed assets is Rs. 555,600.
(viii) Annual staff salaries are budgeted at Rs. 600,000.
(viii) Bad debts provision as at August 31, 2006 stands at Rs. 190,400.
(ix) Balances of some other accounts as at August 31, 2006 are as follows:

	Rs.
Fixed assets	9,940,000
Acc. depreciation	1,900,500
Owner's capital	2,800,000
Profit and loss	8,380,000
Cash and bank	1,980,940

Required:
(a) Prepare a balance sheet as at August 31, 2006. **(06)**
(b) Calculate the projected balance in accounts payable as on September 30, 2006. **(02)**
(c) Prepare a projected income statement for the month of September 2006. **(03)**

Q.4 One-way Limited is engaged in manufacturing and sale of socks. The sales of the company are mostly to USA and European Countries. At the end of the first quarter, the results of operations of the company are as follows:

	Rs.
Sales (Rs. 40 per unit)	5,300,000
Less: Material	1,987,500
Wages	795,000
Variable overhead	397,500
Fixed overhead	848,000
	4,028,000
Gross profit	1,272,000

The factory was working at 40% capacity in the first quarter. Management of the company has estimated that the quantity sold could be doubled next quarter if the selling price was reduced by 15%. The variable costs per unit will remain the same, but certain administrative changes to cope with the additional volume of work would increase the fixed overhead by Rs. 15,000.

Required:

(a) Evaluate the management's proposal. **(05)**

(b) What quantity would need to be sold next quarter in order to yield a profit of Rs. 2,000,000 if the selling price was reduced as proposed, variable cost per unit remains the same and fixed overheads increased as estimated above? **(02)**

(c) Calculate the selling price needed to achieve a profit of Rs. 2,000,000 if the quantity sold last quarter cannot be increased, material prices increase by 12%, wage rates increased by 15%, variable overheads are higher by 10% and fixed overheads increase by Rs. 15,000. **(04)**

Q.5 Mid-way Services Limited received an urgent order for installation of 4 machines in a textile mill. Immediately after receiving the order, the company deputed four engineers on the job. Each engineer was responsible for installation of one machine. The standard time to complete this job was 50 hours.

It is the policy of the company to pay its engineers on job to job basis. The minimum amount the company pays is based on standard hours. The payment is made at the rate of Rs. 100 per hour.

In order to speed up the installation work, the company offered the engineers 'Time Saving Bonus' (TSB) under which they would be entitled for the following incentives:

Percentages of time saved to time allowed	TSB
0% to 10%	10% of time saved x hourly rate
11% to 20%	20% of time saved x hourly rate
20% to 30%	30% of time saved x hourly rate

In addition to the agreed amount, the customer has agreed to pay the company Rs. 150 for every hour saved on installation of each machine.

The jobs were completed successfully and the time spent by each engineer is as follows:

Engineers	A	B	C	D
Hours spent	41	36	46	50

Required:

(i) Calculate the total earning of each engineer and their earning per hour. **(08)**
(ii) Compute the net additional revenue earned by the company. **(03)**

Q.6 Broad-way Manufacturing Limited produces two products DL-1 & DL-2. The production involves two processes, I and II. The following data is available in respect of production during the month of August 2006.

	Process I Rs.	Process II Rs.
Material issued	375,000	100,000
Direct wages paid	150,000	200,000
Direct expenses incurred	100,000	100,000

During the month of August, materials issued to Process I and Process II were 1,250 tons and 230 tons respectively. The cost of output of Process – I is charged to Process – II. Incidental to production, two by-products i.e. PT-1 and PT-2 are generated in the first process and treated as a credit to Process-I.

Following additional information is also available:

Product	Sales		Packing Cost
	Tons	Rs.	
DL-1	100	600,700	20,070
DL-2	900	1,203,500	100,350
PT-1	200	10,000	-
PT-2	50	2,500	-

A shortfall occurs in Process II due to evaporation which is considered as normal loss. There were no opening or closing stocks.

Required:

(a) Calculate joint processing costs and apportion them between DL-1 and DL-2 on the basis of sales value. **(08)**
(b) Prepare summary trading account for the month showing net profit of each product. **(02)**

Q.7 Run-way Pakistan Limited has provided you the following information about its sales, production, inventory and variable/ fixed costs etc. for the second quarter of the year 2006.

	Rupees
Sales	75,000,000
Operating profit	5,171,100
Variable manufacturing costs per unit	10
Fixed factory overhead per unit	11
Marketing & administrative expenses (Fixed Rs. 250,000)	450,000

	Units
Sales	3,000,000
Actual production	2,420,100
Budgeted production	3,000,000
Ending inventory	320,200
Normal capacity	3,500,000
Production in quarter – I	3,100,150
Sales in quarter – I	2,200,050

The Sales Manager claims that the operating profit of the quarter has been wrongly calculated and is much higher than Rs. 5,171,100.

It is the policy of the company to compute applied factory overhead on the basis of quarterly budgeted production volume and charge over or under applied factory overhead to the cost of goods sold account at the end of each quarter.

Required:

(a) You are required to prepare income statements under the present method being used by the company and also under marginal costing method for the satisfaction of Sales Manager. **(09)**

(b) Reconcile the difference in operating profit under the two methods. **(04)**

Q.8 Sub-way Furnishers (Pvt.) Limited manufactures three garden furniture products – Chairs, Benches and Tables. The budgeted data of each of these items is as under:

	Chairs	Benches	Tables
Budgeted sales volume	4,000	2,000	1,500
Selling price per unit (Rs.)	3,000	7,500	7,200
Cost of Timber per unit (Rs.)	750	2,250	1,800
Direct labour per unit (Rs.)	600	1,500	1,600
Variable overhead per unit (Rs.)	450	1,125	1,200
Fixed overhead per unit (Rs.)	675	844	1,350

The budgeted volume was worked out by the sales department and the management of the company is of the view that the budgeted volume is achievable and equal to the demand in the market.

The fixed overheads are allocated to the three products on the basis of direct labour hours. Production department has provided the following information:

Direct labour rate	Rs. 40 per hour
Cost of timber	Rs. 300 per cubic meter

A memo from Purchase Manager advises that because of the problem with the supplier only 25,000 cubic meters of timber shall be available.

The Sales Director has already accepted an order for the following quantities which if not supplies would incur a financial penalty of Rs. 200,000.

Chairs	500
Benches	100
Tables	150

These quantities are included in the overall budgeted volume.

Required:

Work out the optimum production plan and calculate the expected profit that would arise on achievement of this plan. **(14)**

Q.9 Smart-ways Manufacturing Limited makes a product called LPG. Most of the manufacturing expenses incurred during the production of LPG are directly identifiable as fixed or variable. However, some of the expenses are partly fixed and partly variable. The management of the company wants to determine the fixed and variable element of these overheads.

The total of such overheads which are partly fixed and partly variable, during each of the last 10 months and the related production is given hereunder:

Month	No. of Units	Factory Overhead (Rs.)
1	3,000	7,200
2	4,000	9,000
3	6,000	12,150
4	5,000	11,250
5	6,000	11,700
6	5,000	10,800
7	7,000	12,600
8	6,000	11,250
9	5,000	10,350
10	3,000	7,200
	50,000	**103,500**

Required:

Determine the fixed and variable element of the above overheads on the basis of high low method and define the relationship in terms of cost volume formula. **(04)**

(THE END)

THE INSTITUTE OF CHARTERED ACCOUNTANTS OF PAKISTAN

Intermediate Examinations Spring 2007

March 07, 2007

COST ACCOUNTING

(MARKS 100)

Module D

(3 hours)

Q.1 The marketing department of Moon Engineering Limited has prepared the following projected profit and loss account:

	2007	2008
	Rupees in million	
Sales	750.0	800.0
Less:		
Direct materials	187.5	200.0
Direct labour	112.5	120.0
Production overhead	135.0	144.0
	435.0	464.0
Contribution margin	315.0	336.0
Less: Fixed costs	297.8	312.7
Net Profit	17.2	23.3

The marketing director is not happy with the sales growth shown in the forecasts. Similarly, the finance director has shown his concern on the lower profitability. They have also pointed our certain factors which were ignored while developing the above projections. Consequently, a comprehensive study was carried out at all levels which has resulted in the following revisions:

(i) Sales forecast for 2007 has been projected at Rs. 1.0 billion.
(ii) Sales prices are projected to remain the same in 2008. However, the total sales have been projected to increase by 20% over the year 2007.
(iii) Material prices and costs of production overheads in 2008 will be higher by 10% as compared to 2007;
(iv) Fixed costs will remain the same except for an expenditure of Rs. 12 million to be incurred on a special advertising campaign during the year 2008.

Required:

(a) Revise the projected profit and loss account for both years; **(05)**
(b) Calculate breakeven sales and margin of safety% for 2007 and 2008; **(04)**
(c) Draw a profit volume chart in respect of each year. **(04)**

Q.2 (a) The production and cost data of Planet Manufacturing (Pvt.) Limited for the year 2006 and projections for the year 2007 are as follows:

	2006	2007
Production (units)	175,000	225,000
Total costs (Rs.)	11,900,000	16,518,600

The rate of inflation in 2007 has been estimated at 15%.

Required:

Calculate the fixed and variable costs for 2007 in 'real' terms. **(05)**

(b) What is a 'cost unit' and 'cost center'? Give two examples of each. **(04)**

Q.3 Star Chemicals Limited uses three processes to manufacture a product "ST". After the third process the product is transferred to finished goods warehouse.

The following data for the month of January 2007 is available:

	PROCESS		
	I	II	III
	----------Rs. in thousands-------		
Raw material – A	1,500	-	-
Other direct materials	2,500	3,200	4,000
Direct wages	5,000	6,000	8,000
Direct expenses	1,600	1,885	2,020

Following additional information is also available:

(i) Production overheads are absorbed @ 80% of direct wages;
(ii) 20,000 units of raw material 'A' having a cost of Rs. 1,500,000 were initially put in process-I.
(iii) In each process, an amount of Rs. 500,000 has been wrongly classified as direct wages, instead of indirect wages.
(iv) The actual output obtained during the month was as under:

Process I	18,500 units
Process II	16,000 units
Process III	16,000 units

(v) Normal loss in each process is 10%, 10% and 5% respectively. Scrap value per unit is Rs. 100 for process-I, Rs. 200 for process-II and Rs. 300 for process-III.
(vi) There was no stock at the start or at the end of any process.

Required:
Prepare the following in the books of Star Chemicals Limited:
(a) Ledger account for each process; **(12)**
(b) Abnormal gain/(loss) account. **(04)**

Q.4 Venus Pharmaceutical Company Limited faced a very high labour turnover during the last year. The issue has now been settled after the announcement of an attractive payment plan.

Following data relating to last year has been made available to you:

(i) Sales during the last year was Rs. 726 million and contribution margin was 10% of sales;
(ii) Total number of actual direct labour hours was 510,000;
(iii) As a result of delays by the Personnel Department in filling vacancies, 10,000 potential productive hours were lost. All these potential lost hours could have been sold at the prevailing rate;
(iv) The actual direct labour hours included 40,000 hours attributable to training new recruits, out of which 25% of the hours were unproductive;
(v) The labour turnover resulted in following additional costs:

	Rupees
Recruitment costs	284,000
Selection costs	128,500

Required:
Calculate the profit foregone by the company during the last year on account of labour turnover. **(05)**

Q.5 The production engineering staff of Skyline Company Limited, has set the following standard mix for the production of one unit of Product X:

	Weight (Kg)	Rate Per Kg (Rs.)	Amount (Rs.)
Material A	0.50	10.00	5.00
Material B	0.30	5.00	1.50
Material C	0.20	2.00	0.40
	1.00		6.90
Standard loss (10%)	0.10		-
	0.90		6.90

Actual costs incurred on the production of 927,000 units were as follows:

	Weight (Kg)	Rate Per Kg (Rs.)
Material A	530,000	10.00
Material B	280,000	5.30
Material C	190,000	2.20

Required:

(a) Calculate the mix and yield variances. **(06)**

(b) Reconcile actual material costs with the standard costs. **(05)**

Q.6 The following figures have been extracted from the budget of Uranus Limited for the year ended June 30, 2007:

	Rupees
Direct labour	35,000,000
Electricity	25,000,000
Repairs and maintenance	5,200,000
Depreciation	14,200,000
Other expenses	8,000,000

Budgeted annual production is 40,000 units. It is the policy of the company to charge factory overhead on the basis of direct labour costs. Following additional information is available for the first six months:

Direct material consumed (Rs.)	16,250,000
Direct labour cost (Rs.)	17,500,000
Factory overhead applied (Rs.)	?
Good units produced	20,000
Spoiled units (considered abnormal)	750

Spoiled units were sold for Rs. 1,200 per unit. Actual direct labour cost includes the cost of bringing certain defective units to saleable condition, amounting to Rs. 100,000.

Required:

Prepare journal entries to record the transactions that took place during the first six months of the year and support your answer with computation. **(17)**

Q.7 Sun Fashions (Pvt.) Limited, a chain of retail garments store, has planned to introduce a new fancy dress for babies at all its seven outlets in the country.

The company is also considering to introduce a matching crown scarf and handbag with the new dress. Currently they are expecting to sell 15,000 dresses in the first six months but the management feels that this sale can be increased by 30% if matching crown scarf and handbag are marketed together.

The data relating to sales and production of dress, crown scarf and handbag are as follows:

(i) Each dress requires three and half meter of cloth which is easily available in the market at a price of Rs. 100 per meter. Part of the material left unused can be used to manufacture a crown scarf and handbag.
(ii) The cost of cutting the dress, crown scarf and handbag is Rs. 35, Rs. 15 and Rs. 20 respectively.
(iii) The leftover pieces can be sold as under:
  - if only the dress is manufactured, Rs. 20 per dress;
  - if crown scarf and handbag is also manufactured, Rs. 5 per set.
(iv) The company has a contract with a designer firm at a monthly fee of Rs. 1,500,000. However, in the case of handbag and crown scarf, the company will have to pay a one time additional amount of Rs. 150,000 to the designer firm.
(v) Each handbag will require a metal hook which is available in the market at Rs. 10 per hook. However, the company has sufficient number of metal hooks in stock which was purchased at Rs. 6 per hook. If the company does not opt for the manufacturing of handbags, these hooks can be sold at Rs. 8 per hook.
(vi) The dresses, crown scarves and handbags are expected to be sold according to the following mix:

Complete set	60%
Dress and crown scarf only	10%
Dress and handbag only	20%
Dress only	10%

(vii) The selling price and variable costs (besides those mentioned above) of each product are as follows:

	Selling Price per unit (Rs.)	**Variable Costs (besides those mentioned above)**
Dress	2,000	40% of selling price
Crown scarf	400	55% of selling price
Handbag	500	60% of selling price

Required:
Calculate the incremental profit or loss as a result of manufacturing handbags and crown scarves with the dress. **(16)**

Q.8 Jupiter Manufacturing Company Limited consists of two manufacturing departments and one service department. The company applies factory overhead on the following basis:

Manufacturing Department	
A-1	70% of direct labour cost
A-2	Rs. 40 per direct labour hour

(5)

Following relevant information is available:

	Manufacturing Dept.		Service Department
	A-1	A-2	
Direct materials (Rs.)	433,000	313,000	
Direct labour (Rs.)	388,800	259,200	
Direct labour hours	3,500	4,000	
Number of employees	140	220	40
Floor space (Sq. ft.)	1500	1500	750

The other expenses are as under:

	Rupees
Indirect labour	217,400
Factory office expenses	43,200
Depreciation of computer	45,000
Factory building expenses	54,000
Service department's expenses	112,800

Indirect labour and service department's expenses are apportioned on the basis of direct labour cost. Factory expenses and computer depreciation are allocated in the ratio of number of employees to all the departments including service department.

Required:
Prepare a factory overhead distribution statement showing over / under applied FOH for each department. **(13)**

(THE END)

THE INSTITUTE OF CHARTERED ACCOUNTANTS OF PAKISTAN

Intermediate Examinations Autumn 2007

September 07, 2007

COST ACCOUNTING

(MARKS 100)

Module D

(3 hours)

Q.1 Binary Limited manufactures three joint products viz. Aay, Bee and Cee in one common process. Following this process, product Aay and Bee are sold immediately while product Cee is subjected to further processing. Following information is available for the period ended June 30, 2007:

(i)

	Aay	Bee	Cee
Opening stock in kg	Nil	Nil	Nil
Production in kg	335,000	295,000	134,000
Sales in kg	285,000	212,000	-
Sales price per kg (Rs.)	30.85	40.38	-

(ii) Total costs of production were Rs 17,915,800.

(iii) 128,000 kg of Cee were further processed during the period and converted into 96,000 kg of Zee. The additional cost of further processing were as follows:

Direct labour	Rs. 558,500
Production overhead	Rs. 244,700

(iv) 94,000 kg of Zee was sold during the period, with total revenue of Rs. 3,003,300. Opening stock of Zee was 8,000 kg, valued at Rs 172,800. FIFO method is used for pricing transfers of Zee to cost of sales.

(v) 8,000 kg of a bye-product Vee was also produced during further processing and sold @ Rs. 10 per kg. Sales proceeds of bye-product are adjusted against production cost of product Zee.

(vi) The cost of production is apportioned among Aay, Bee and Cee on the basis of weight of output.

(vii) Selling and administration costs of Rs. 2,500,000 were incurred during the period. These are allocated to all the main products based on sales value.

Required:

Prepare a profit and loss account for the period, identifying separately the profitability of each of the three main products. **(19)**

Q.2 Hexa (Private) Limited is engaged in the supply of a specialized tool used in the automobile industry. Presently, the company is incurring high cost on ordering and storage of inventory. The procurement department has tried different order levels but has not been able to satisfy the management.

The Chief Financial Officer has asked you to evaluate the current situation. He has provided you the following information:

(i) The annual usage of inventory is approximately 8,000 cartons. The supplier does not accept orders of less than 800 cartons. The cost of each carton is Rs. 2,186.

(ii) The average cost of placing an order is estimated at Rs 14,000 and presently two orders are placed in each quarter.

(iii) The sales are made on a regular basis and on average, half of the quantity ordered is held in inventory. The cost of storage is considered to be 16% of the value of inventory.

Required:

(a) Determine the following:
- Economic Order Quantity (EOQ).
- Number of orders to be placed, based on EOQ.

(b) Compute the ordering costs and storage costs in the existing situation. How much cost can be saved if quantity ordered is equal to EOQ as determined in (a) above. **(10)**

Q.3 Octa Limited manufactures a single product under the brand name "Pak Pure". The latest estimates related to the current year are as follows:

Production and sales (units)	25,000
Cost per unit	
Direct material (Rs.)	40
Direct labour (Rs.)	20
Fixed overhead (Rs.)	15
Variable overhead (Rs.)	5
Total cost per unit (Rs.)	80

During the next year, the costs per unit are expected to increase as under:

	%
Direct material	20
Direct labour	10
Fixed overhead	5
Variable overhead	20

It is the policy of the company to set the selling price at the time of budget preparation at cost plus 50%. The Sales Manager is worried about the implications of this policy. According to his estimate, demand for the product will vary with price as follows:

Price (Rs.)	100	105	110	115
Demand (thousand units)	25	23	21	20

The Production Manager has informed that a different type of raw material is also available in the market at a cost of Rs. 42.30 per unit. He believes that the new material will give an acceptable quality of output. However, as a result of using cheaper material, a process of inspection will have to be introduced which will cost Rs. 30,000 per annum. The chances of rejection are 2% and 3% for raw material and finished goods respectively.

Required:

(a) Determine the price which will maximize the profit.

(b) Decide whether the company should continue to use the present type of raw material or switch over to the new one. **(10)**

(Round off all the figures to two decimal places).

Q.4 Nooruddin Ahmed is planning to start a new business. He will invest his saving amounting to Rs. 3,500,000 and intends to make borrowing arrangements with a bank to meet the working capital requirements. His planning is based on the following estimates:

(i) He has identified a factory cum office premises at a monthly rent of Rs. 80,000 which will be payable in advance at the beginning of each month. However, he needs to give three months rent as security deposit to the landlord before occupying the space. Other fixed overheads excluding depreciation are estimated at Rs. 120,000 per month which will be paid in the same month.

(ii) He has signed a contract for supply of machinery costing Rs. 1,800,000. The payment will be made at the time of delivery in January 2008. This machinery has an estimated life of five years with no residual value.

(iii) Production will start in January 2008 and 60% of the next month's sales will be manufactured in January 2008. Thereafter, the production will consist of 40% of the current month's sales and 60% of the next month's sales.

(iv) He estimates the following sales for the first five months:

Month	Unit	Rupees
January	-	-
February	2,400	3,120,000
March	3,200	4,160,000
April	4,000	5,200,000
May	4,800	6,240,000

(v) Sales will be made on credit basis. A 5% cash discount will be allowed for payments in the current month. It is estimated that 35%of each month's sales will qualify for this discount. Balance 65% will be recovered in the next month.

(vi) Variable production cost per unit has been estimated as:

	Rupees
Direct material	600
Direct labour	200
Variable overhead	100
Total variable cost per unit	900

(vii) Raw materials costing Rs. 1,600,000 will be purchased in January 2008 in cash. Thereafter, he intends to follow a policy of purchasing 50% of the monthly requirement in the same month and 50% of the next month's requirement. All purchases after January shall be made on 30 days credit.

(viii) Salaries shall be paid in the first week of subsequent month.

(ix) 70% of the variable overheads shall be paid in the same month and 30% in the next month.

Required:
Prepare a cash budget for the months January 2008 to April 2008 showing the balance of cash / running finance at the end of each month. **(20)**

Q.5 Quadra Electronics assembles and sells three products – W, X and Y. The cost per unit for each product is as follows:

	W	X	Y
	Rupees	Rupees	Rupees
Direct materials	4,880	1,600	1,000
Direct labour	4,000	2,000	700
Variable overheads	1,360	480	348
Fixed production overheads	1,172	1,290	960
Total cost per unit	11,412	5,370	3,008

The fixed overheads are worked out on the basis of normal production levels i.e 15,000; 45,000; and 60,000 units per annum for W, X and Y respectively.

The fixed selling and administrative costs for the next year are expected to be Rs. 71,270,400.

Management estimates that the ratio of sales quantities of W, X and Y shall be 1:3:4 and selling price per unit shall be Rs. 12,800; Rs. 6,000 and Rs. 3,600 respectively.

Required:

(a) Calculate the number of units of W, X and Y to be sold in order to achieve break even.

(b) Calculate the break even sales in terms of Rupees. **(16)**

Q.6 Ternary Packages is located at a remote site in an industrial estate which is far away from the center of the city. Management of the company is now considering to provide pick and drop facility to its employees. A two member committee has reviewed the available options and has come up with a proposal to purchase three vans and run them on three different routes i.e. A, B and C. The information for each van is as follows:

	Rupees
Purchase price	1,200,000
Expected trade-in value after 4 years	200,000
Insurance per annum	50,000
Quarterly service including change of lubricants	4,000
Replacement of spare parts per 20,000 km	15,000
Vehicle License fee per annum	8,000
Tyre replacements after 40,000 km	14,000
Cost of diesel per litre	40

Annual running for each van will be as follows:

	km
Van on route A	80,000
Van on route B	120,000
Van on route C	160,000

The committee has estimated that average running will be 16 km per litre.

Required:

(a) Prepare a schedule to be presented to the management showing following costs in respect of each van for the first year of operation:

- Total variable cost
- Total fixed cost
- Total cost
- Variable cost per km
- Fixed cost per km
- Total cost per km

(b) Briefly explain why the cost per km is different in each case. **(15)**

Q.7 Decimal World (Pvt) Limited is engaged in the manufacturing of standard and scientific calculators. The company operates a bonus scheme for all its factory workers. A performance bonus is incorporated into the wages by adding 75% of the efficiency ratio in excess of 100% to the basic hourly rate. The following information is available for the month of July 2007:

Basic rate of pay per hour (Rs.)	125
Standard production per hour (units)	4
Production during the period (units)	226,176
Actual hours spent	45,600

Required:

(a) Calculate the hourly wage rate inclusive of performance bonus.

(b) Calculate the total labour cost variance. **(10)**

(THE END)

THE INSTITUTE OF CHARTERED ACCOUNTANTS OF PAKISTAN

Intermediate Examinations Spring 2008

March 7, 2008

COST ACCOUNTING

(MARKS 100)

Module D

(3 hours)

Q.1 Mirza Limited is engaged in the manufacturing of spare parts for automobile industry. The company records the purchase and issue of materials in a store ledger which is not integrated with the financial ledger. It is the policy of the company to value inventories on weighted average basis. The valuation is carried out by the Finance Department using stores memorandum record. A physical stock count is carried out after every six months. Any shortage/excess is then adjusted in the financial as well as stores ledger.

On December 31, 2007, physical stock count was conducted by the Internal Auditor of the company. He submitted the following statement to the Finance Department:

Item Code	Balance (in units)			Cost per unit (Rs.)	
	Store Ledger	Financial Records	Physical	Average	Current
010-09	20,500	20,500	20,000	2.00	2.25
013-25	10,000	10,000	10,000	4.00	1.50
017-10	5,500	5,500	5,000	1.00	1.10
022-05	4,000	4,500	5,500	2.00	2.00
028-35	1,200	1,200	1,000	2.75	2.50
035-15	640	600	600	3.00	3.50

On scrutinizing the details, Finance Department was able to ascertain the following reasons:

Item Code	Reasons
010-09	500 units were defective and therefore the Internal Auditor excluded them while taking the physical count.
013-25	This item is not in use and is considered obsolete. The net realizable value is Rs. 0.60 per unit.
017-10	Shortage is due to theft.
022-05	A receipt of 1,000 units was not recorded. The remaining difference is due to errors in recording the quantity issued.
028-35	200 units returned to a supplier were not recorded. The invoiced cost was Rs. 3 per unit.
035-15	Discrepancy is due to incorrect recording of a Goods Receipt Note.

Required:

(a) Prepare necessary Journal entries to record the adjustments in the financial ledger.

(b) State how would you make the necessary adjustments in the stores ledger? **(14)**

Q.2 (a) Explain the treatment of under-absorbed and over-absorbed factory overheads. Give three reasons for under-absorbed / over absorbed factory overheads. **(06)**

(b) On December 1, 2007 Zia Textile Mills Limited purchased a new cutting machine for Rs. 1,300,000 to augment the capacity of five existing machines in the Cutting Department. The new machine has an estimated life of 10 years after which its scrap value is estimated at Rs. 100,000. It is the policy of the company to charge depreciation on straight line basis.

The new machine will be available to Cutting Department with effect from February 1, 2008. It is budgeted that the machine will work for 2,600 hours in 2008. The budgeted hours include:

- 80 hours for setting up the machine; and
- 120 hours for maintenance.

The related expenses, for the year 2008 have been estimated as under:

(i) Electricity used by the machine during the production will be 10 units per hour @ Rs. 8.50 per unit.
(ii) Cost of maintenance will be Rs. 25,000 per month.
(iii) The machine requires replacement of a part at the end of every month which will cost Rs. 10,000 on each replacement.
(iv) A machine operator will be employed at Rs. 9,000 per month.
(v) It is estimated that on installation of the machine, other departmental overheads will increase by Rs. 5,000 per month.

Cutting Department uses a single rate for the recovery of running costs of the machines. It has been budgeted that other five machines will work for 12,500 hours during the year 2008, including 900 hours for maintenance. Presently, the Cutting Department is charging Rs. 390 per productive hour for recovery of running cost of the existing machines.

Required:
Compute the revised machine hour rate which the Cutting Department should use during the year 2008. **(08)**

Q.3 Ayub Sports Limited produces boxing gloves which are in great demand in the local as well as international market. Because of better quality and lesser competition in the market, the company's profit has approximately doubled in 2007. A summary of company's expenses and profit for the year 2006 and 2007 are as under:

	2007	2006
	Rupees	Rupees
Materials consumed	140,000	100,000
Wages	120,000	80,000
Overheads – Fixed	32,000	30,000
Overheads – Variable	34,000	24,000
Net profit	20,500	10,000

In 2007, sales prices were increased by 10% as compared to 2006. The material prices and rate of wages increased by 10% and 20% respectively in 2007.

In a meeting held to evaluate the performance of various departments, significant differences arose among the departmental heads. Therefore the Managing Director of the company asked the CFO to analyse the financial performance objectively.

Required:
Being the CFO of the company carry out an analysis to determine the increase/decrease in profit in 2007, due to sales price, sales volume, material price, material consumption, labour efficiency, labour rate, variable overheads and fixed overheads. **(17)**

Q.4 Fazal Industries Limited is currently negotiating a contract to supply its products to K-Mart, a large chain of departmental stores. K-Mart finally offered to sign a one year contract at a lump sum price of Rs. 19,000,000.

The Cost Accountant of Fazal Industries Limited believes that the offered price is too low. However, the management has asked you to re-assess the situation. The cost accountant has provided you the following information:

Statement of Estimated Costs (Project: K-Mart)

	Notes	Rupees
Material:		
X (at historical cost)	(i)	1,500,000
Y (at historical cost)	(ii)	1,350,000
Z	(iii)	2,250,000
Labour:		
Skilled	(iv)	4,050,000
Unskilled	(v)	2,250,000
Supervisory	(vi)	810,000
Overheads	(vii)	8,500,000
Total cost		**20,710,000**

You have analysed the situation and gathered the following information:

(i) Material X is available in stock. It has not been used for a long time because a substitute is currently available at 20% less than the cost of X.

(ii) Material Y was ordered for another contract but is no longer required. Its net realizable value is Rs. 1,470,000.

(iii) Material Z is not in stock.

(iv) Skilled labour can work on other contracts which are presently operated by semi-skilled labour who have been hired on temporary basis at a cost of Rs. 325,000 per month. The company will need to give them a notice of 30 days before terminating their services.

(v) Unskilled labour will have to be hired for this contract.

(vi) Two new supervisors will be hired for this contract at Rs. 15,000 per month. The present supervisors will remain employed whether the contract is accepted or not.

(vii) These include fixed overheads absorbed at the rate of 100% of skilled labour. Fixed production overheads of Rs. 875,000 which would only be incurred if the contract is accepted, have been included for determining the above fixed overhead absorption rate.

Required:

Prepare a revised statement of estimated costs using the opportunity cost approach, for the management of Fazal Industries and state whether the contract should be accepted or not. **(14)**

Q.5 Ishaq Limited manufactures plastic bottles for pharmaceutical companies. It has recently introduced a 100% weekly group bonus plan with a guaranteed wage of Rs. 150 per hour. Standard production per hour is 50 bottles. Each worker is supposed to work 8 hours a day from Monday to Friday and 5 hours on Saturday. Presently, there are 20 workers who are entitled for this plan. Production for the first week under the 100% bonus plan was:

Days	Mon	Tue	Wed	Thu	Fri	Sat
No. of bottles	8,700	7,350	9,750	7,500	8,950	4,550

Most of the workers have raised objection on the company's bonus plan. They are of the view that bonus calculation should be based on daily production instead of weekly production. The management of the company has asked you to determine the impact of such a change.

Required:
Prepare statements showing labour cost per unit under each of the two options. Give reasons for the differences, if any. **(10)**

Q.6 Yahya Limited produces a single product that passes through three departments, A, B and C. The company uses FIFO method for process costing. A review of department A's cost records for the month of January 2008 shows the following details:

	Units	Material Rs.	Labour Rs.
Work in process inventory as at January 1, 2008 (75% complete as to conversion costs)	16,000	64,000	28,000
Additional units started in January 2008	110,000	-	-
Material costs incurred	-	430,500	-
Labour costs incurred	-	-	230,000
Work in process inventory as at January 31, 2008 (50% complete as to conversion costs)	18,000	-	-
Units completed and transferred in January 2008	100,000	-	-

Overhead is applied at the rate of 120% of direct labour. Normal spoilage is 5% of output. The spoiled units are sold in the market at Rs. 6 per unit.

Required:
Compute the following for the month of January:
(a) Equivalent production units.
(b) Costs per unit for material, labour and factory overhead.
(c) Cost of abnormal loss (or gain), closing work in process and the units transferred to the next process. **(16)**

Q.7 Zulfiqar Limited makes and sells a single product and has the total production capacity of 30,000 units per month. The company budgeted the following information for the month of January 2008:

Normal capacity (units)	27,000
Variable costs per unit:	
Production (Rs.)	110
Selling and administration (Rs.)	25
Fixed overheads:	
Production (Rs.)	756,000
Selling and administration (Rs.)	504,000

The actual operating data for January 2008 is as follows:

Production	24,000 units
Sales @ Rs. 250 per unit	22,000 units
Opening stock of finished goods	2,000 units

During the month of January 2008, the variable factory overheads exceeded the budget by Rs. 120,000.

Required:
(a) Prepare profit statement for the month of January using:
- marginal costing; and
- absorption costing.

(b) Reconcile the difference in profits under the two methods. **(15)**

(THE END)

THE INSTITUTE OF CHARTERED ACCOUNTANTS OF PAKISTAN

Intermediate Examinations Autumn 2008

September 5, 2008

COST ACCOUNTING (MARKS 100)
Module D (3 hours)

Q.1 Binary Ltd. (BL) manufactures three products, A, B and C. It is the policy of the company to apportion the joint costs on the basis of estimated sales value at split off point. BL incurred the following joint costs during the month of August 2008:

	Rs. in '000
Direct material	16,000
Direct labour	3,200
Overheads (including depreciation)	2,200
Total joint costs	21,400

During the month of August 2008 the production and sales of Product A, B and C were 12,000, 16,000 and 20,000 units respectively. Their average selling prices were Rs. 1,200, Rs. 1,400 and Rs.1,850 per unit respectively.

In August 2008, processing costs incurred on Product A after the split off point amounted to Rs. 1,900,000.

Product B and C are sold after being packed on a specialized machine. The packing material costs Rs. 40 per square foot and each unit requires the following:

Product	Square feet
B	4.00
C	7.50

The monthly operating costs associated with the packing machine are as follows:

	Rupees
Depreciation	480,000
Labour	720,000
Other costs	660,000

All the above costs are fixed and are apportioned on the basis of packing material consumption in square feet.

Required:

(a) Calculate the joint costs to be apportioned to each product. **(13)**

(b) BL has received an offer from another company to purchase the total output of Product B without packaging, at Rs. 1,200 per unit. Determine the viability of this offer. **(03)**

Q.2 Alpha Motors (Pvt.) Ltd. uses a special gasket for its automobiles which is purchased from a local manufacturer. The following information has been made available by the procurement department:

Annual requirement (no. of gaskets)	162,000
Cost per gasket (Rs.)	1,000
Ordering cost per order (Rs.)	27,000
Carrying cost per gasket (Rs.)	300

(2)

The gaskets are used evenly throughout the year. The lead time for an order is normally 11 days but it can take as much as 15 days. The delivery time and the probability of their occurrence are given below:

Delivery time (in days)	Probability of Occurrence
11	68%
12	12%
13	10%
14	6%
15	4%

Required:

(a) Compute the Economic Order Quantity (EOQ) and the total Ordering Costs based on EOQ. **(04)**

(b) What would be the safety stock and re-order point if the company is willing to take:
- a 20% risk of being out of stock?
- a 10% risk of being out of stock? **(08)**

Note: Assume a 360 day year.

Q.3 (a) Hexa Limited uses a standard costing system. The following profit statement summarizes the performance of the company for August 2008:

		Rupees
Budgeted profit		3,500
Favorable variance:		
Material price	16,000	
Labour efficiency	11,040	27,040
Adverse variance:		
Fixed overheads	(16,000)	
Material usage	(6,000)	
Labour rate	(7,520)	(29,520)
Actual profit		1,020

The following information is also available:

Standard material price per unit (Rs.)	4.0
Actual material price per unit (Rs.)	3.9
Standard wage rate per hour (Rs.)	6.0
Standard wage hours per unit	10
Actual wages (Rs.)	308,480
Actual fixed overheads (Rs.)	316,000
Fixed overheads absorption rate	100% of direct wages

Required:

Calculate the following from the given data:

(a) Budgeted output in units
(b) Actual number of units purchased
(c) Actual units produced
(d) Actual hours worked
(e) Actual wage rate per hour **(15)**

(b) State any two possible causes of favourable material price variance, unfavourable material quantity variance, favourable labour efficiency variance and unfavourable labour rate variance. **(04)**

Q.4 Decimal World Limited manufactures and sells modems. It manufactures its own circuit boards (CB), an important part of the modem. The present cost to manufacture a CB is as follows:

	Rupees
Direct material	440
Direct labour	210
Variable overheads	55
Fixed overheads	
Depreciation	60
General overheads	30
Total cost per unit	795

The company manufactures 400,000 units annually. The equipment being used for manufacturing CB has worn out completely and requires replacement. The company is presently considering the following options:

(A) Purchase new equipment which would cost Rs. 240 million and have a useful life of six years with no salvage value. The company uses straight-line method of depreciation. The new equipment has the capacity to produce 600,000 units per year. It is expected that the use of new equipment would reduce the direct labour and variable overhead cost by 20%.
(B) Purchase from an external supplier at Rs.730 per unit under a two year contract.

The total general overheads would remain the same in either case. The company has no other use for the space being used to manufacture the CBs.

Required:
(a) Which course of action would you recommend to the company assuming that 400,000 units are needed each year? (Show all relevant calculations) **(07)**
(b) What would be your recommendation if the company's annual requirements were 600,000 units? **(06)**
(c) What other factors would the company consider, before making a decision? **(03)**

Q.5 Octa Electronics produces and markets a single product. Presently, the product is manufactured in a plant that relies heavily on direct labour force. Last year, the company sold 5,000 units with the following results:

	Rupees
Sales	22,500,000
Less: Variable expenses	13,500,000
Contribution margin	9,000,000
Less: Fixed expenses	6,300,000
Net income	2,700,000

Required:
(a) Compute the break-even point in rupees and the margin of safety. **(04)**
(b) What would be the contribution margin ratio and the break-even point in number of units if variable cost increases by Rs. 600 per unit? Also compute the selling price per unit if the company wishes to maintain the contribution margin ratio achieved during the previous year. **(05)**
(c) The company is also considering the acquisition of a new automated plant. This would result in the reduction of variable costs by 50% of the amount computed in (b) above whereas the fixed expenses will increase by 100%. If the new plant is acquired, how many units will have to be sold next year to earn net income of Rs. 3,150,000. **(03)**

Q.6 Ternary Engineering Limited produces front and rear fenders for a motorcycle manufacturer. It has three production departments and two service departments. Overheads are allocated on the basis of direct labour hours. The management is considering to change the basis of overhead allocation from a single overhead absorption rate to departmental overhead rate. The estimated annual overheads for the five departments are as under:

	Production Departments			Service Departments	
	Fabrication	Phosphate	Painting	Inspection	Maintenance
	Rs. in 000				
Direct materials	6,750	300	750		
Direct labour	1,200	385	480		
Indirect material				30	75
Other variable overheads	200	70	100	30	15
Fixed overheads	480	65	115	150	210
Total departmental expenses	8,630	820	1,445	210	300
Maximum production capacity	20,000	25,000	30,000		
Direct labour hours	24,000	9,600	12,000		
Machine hours	9,000	1,000	1,200		
Use of service departments:					
Maintenance - Labour hours	630	273	147		
Inspection - Inspection hours	1,000	500	1,500		

Required:

(a) Compute the single overhead absorption rate for the next year. **(06)**

(b) Compute the departmental overhead absorption rates in accordance with the following:

- The Maintenance Department costs are allocated to the production department on the basis of labour hours.
- The Inspection Department costs are allocated on the basis of inspection hours.
- The Fabrication Department overhead absorption rate is based on machine hours whereas the overhead rates for Phosphate and Painting Departments is based on direct labour hours. **(10)**

Q.7 Unity Electronics Limited manufactures and supplies condenser fans used in the production of Refrigerators to Sigma Corporation. The company earns a contribution margin of Rs. 600 on each unit sold before charging the labour cost. Following information is available from the company's records.

Number of employees	180
Standard working hours (9 hours/day)	54
Standard hours per unit (at 100% efficiency)	3
Standard labour rate per hour (Rupees)	30

Due to the rise in demand for Refrigerators, Sigma Corporation has increased the size of its order. However, the management is concerned about the productivity of its labour force. An analysis of the employees performance report has revealed that the company is suffering on account of the following:

- A tendency to waste time as a result of which approximately 9 working hours are lost per week per employee.
- A tendency to work inefficiently, as a result of which the production efficiency is only 74%.

In order to meet the increased demand, the management is considering an increase in wages by Rs. 5 per hour. The increase is likely to motivate the employees and reduce the wastage of time by 5 hours and will also improve the production efficiency to 88%.

Required:

Advise whether Unity Electronic Limited should revise the wages. Show all necessary supporting calculations. **(09)**

(THE END)

THE INSTITUTE OF CHARTERED ACCOUNTANTS OF PAKISTAN

Intermediate Examinations Spring 2009

March 6, 2009

COST ACCOUNTING

(MARKS 100)

Module D

(3 hours)

Q.1 ABC has recently established a new unit in Multan. Its planning for the first year of operation depicts the following:

(i)	Cash sales	600,000 units
(ii)	Credit sales	1,200,000 units
(iii)	Ending inventory	Equivalent to 15 days sales
(iv)	Number of working days in the year	300
(v)	Expected purchase price	Rs. 450 per unit

(vi) Manufacturer offers 2% discount on purchase of 500 units or more as bulk quantity discount. The company intends to avail this discount.

(vii) Carrying costs include:
- Financial cost of investment in inventory @ 16% per annum.
- Godown rent of Rs. 10,000 per month.

(viii) Ordering costs are Rs. 300 per order.

Required:

Compute the Economic Order Quantity (EOQ) and the estimated carrying costs and ordering costs for the first year of operation. **(10)**

Q.2 The following information pertains to a week's work for three employees of a company:

Employees	L	M	N
Total hours worked	60	65	70
Hours of indirect work (included in total hours)	20	10	5
Basic hourly wage rate (Rupees)	60	80	50
Output in units	192	175	150
Time allowed per unit (hours)	0.25	0.4	0.60

Bonus is paid @ 60% of basic wage rate for all time saved. The normal working week is 45 hours. The first five hours of overtime are paid at basic rate plus 40% and the rest at basic rate plus 60%.

Required:

You are required to calculate the following for each employee.

(a) Basic wages including overtime.

(b) Amount of bonus earned and gross wages.

(c) Direct wages per unit, when overtime is worked:
- (i) due to labour shortage.
- (ii) specifically at the customer's request, to expedite delivery. **(15)**

Q.3 A chemical is manufactured by passing through two processes X and Y using two types of direct material, A and B. In process Y, a by-product is also produced which is then transferred to process Z where it is completed. For the first week of a month, the actual data has been as follows:

		Process		
		X	Y	Z
Output of main product	(kgs)	9,400	8,000	
Output of byproduct	(kgs)		1,400	1,250
Direct material - A **(9,500 units)**	(Rs.)	123,500		
Direct material - B added in process	(kgs)	500	300	20
Direct material - B added in process	(Rs.)	19,500	48,100	1,651
Direct wages	(Rs.)	15,000	10,000	500
Scrap value	(Rs. per unit)	5	10	6
Normal loss of units in process	(%)	4	5	5

The factory overheads are budgeted @ 240% of direct wages and are absorbed on the basis of direct wages. Actual factory overheads for the week, amounted to Rs. 65,000. Estimated sales value of the by-product at the time of transfer to process Z was Rs. 22 per unit.

Required:
Prepare the following:
(a) Process accounts for X, Y and Z.
(b) Abnormal loss and abnormal gain accounts.
(c) Factory overhead account. **(17)**

Q.4 Following information has been extracted from the financial records of ATF Limited:

Production during the year	units	35,000
Finished goods at the beginning of the year	units	3,000
Finished goods at the end of the year	units	1,500
Sale price per unit	Rs.	200
Fixed overhead cost for the year	Rs.	1,000,000
Administration and selling expenses	Rs.	200,000
Annual budgeted capacity of the plant	units	40,000

The actual cost per unit, incurred during the year, was as follows:

	Rupees
Material	70
Labour	40
Variable overheads	30

Company uses FIFO method for valuation of inventory. The cost of opening finished goods inventory determined under the absorption costing method system was Rs. 450,000. Fixed overhead constituted 16% of the total cost last year.

Required:
(a) Prepare profit statements for the year, under absorption and marginal costing systems.
(b) Prepare reconciliation between the net profits determined under each system. **(12)**

Q.5 The expenses of the production and service departments of a company for a year are as follows:

Department	Expenses before distribution of service department costs Rs. '000'	Service provided (%age)	
		Deptt. X	Deptt. Y
Production department – A	500	50	40
– B	400	30	50
Service department – X	100	-	10
– Y	60	20	-

Required:
Allocate the service departments expenses to production departments by:

- Repeated distribution method
- Simultaneous equation method **(13)**

Q.6 A soft drink company is planning to produce mineral water. It is contemplating to purchase a plant with a capacity of 100,000 bottles a month. For the first year of operation the company expects to sell between 60,000 to 80,000 bottles. The budgeted costs at each of the two levels, are as under:

	Rupees	
Particulars	**60,000 bottles**	**80,000 bottles**
Material	360,000	480,000
Labour	200,000	260,000
Factory overheads	120,000	150,000
Administration expenses	100,000	110,000

The production would be sold through retailers who will receive a commission of 8% of sale price.

Required:
(a) Compute the break-even point in rupees and units, if the company decides to fix the sale price at Rs. 16 per bottle.
(b) Compute the break-even point in units if the company offers a discount of 10% on purchase of 20 bottles or more, assuming that 20% of the sales will be to buyers who will avail the discount. **(16)**

Q.7 A company produces three products using the same raw material. The raw material is in short supply and only 3,000 kilograms shall be available in April 2009, at a cost of Rs. 1,500 per kilogram.

The budgeted costs and other data related to April 2009 are as follows:

Products		X	Y	Z
Maximum demand	(units)	1,000	800	1,200
Selling price per unit	(Rs.)	3,750	3,500	4,500
Material used per unit	(kg)	1.6	1.2	1.8
Labour hours per unit	(Rs. 75 per hour)	12	16	15

Required:

(a) Determine the number of units that should be produced by the company to earn maximum profit

(b) Determine the number of units to be produced if finished products are also available from an external supplier at the following prices per unit:

	Rupees
X	3,450
Y	3,100
Z	3,985

(17)

(THE END)

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:

	JOBS			
	A	B	C	D
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:

	Departments				
	Production			Service	
	P-1	P-2	P-3	S-1	S-2
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)**

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)**

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:

	Rupees
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, theses 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:

	Rupees
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:

	Rupees
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.

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
Total	**75.00**

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)

COST ACCOUNTING
Suggested Answers
Intermediate Examinations – Autumn 2009

Ans.1

Ahmer and Company
General Journal entries

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

COST ACCOUNTING
Suggested Answers
Intermediate Examinations – Autumn 2009

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		
TOTAL	1,608	2,497	2,194		

(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
Intermediate Examinations – Autumn 2009

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
Less: Variable costs			
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	
Note 1: Variable & fixed overheads:			
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
Total cost	Rs.	9,884,000	9,688,000	9,472,000	9,308,000	9146,000

(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.	738,000

(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
Intermediate Examinations – Autumn 2009

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	9,000*0.80	9,900*0.80	9,091*0.80	
based on next month sales	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

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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	Quantity schedule:				
	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	Equivalent units, FIFO method:			Material	Conv. Cost
	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
	Equivalents units produced during the month			50,000	48,600
3	Variances:		Qty.	Rate	Amount
	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
			Favourable		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
			Adverse		(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
			Adverse		(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
			Adverse		(35,000)
	5) Factory overhead spending variance				
	Actual fixed & variable overheads				600,000
	Budgeted overheads:				
	Fixed overheads	45,000/2	22,500	13.00	292,500
	Variable OH based on actual hrs at std. rate		25,000	15.00	375,000
					667,500
			Favourable		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	364,500
			Adverse		(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	315,900
			Adverse		(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	292,500
			Favourable		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)**

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 Sulpher 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)

(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:

	AW	AX	AY	AZ
Estimated annual demand (units)	5,000	10,000	7,000	8,000
Sales price per unit (Rs.)	150	180	140	175
Material consumption:				
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
Machine hours required:				
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:

	Hours	Rs.
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)**

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:

	Direct labour	Total factory overheads
	Hours in 000	Rs. in 000
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
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Ans.1

		A	B	C	D
		---------- Units ----------			
Opening stock		10,000	15,000	20,000	25,000
Production during the period	A	50,000	60,000	75,000	100,000
Goods available for sale	B	60,000	75,000	95,000	125,000
Closing Stock	C	(5,000)	(10,000)	(15,000)	(24,000)
Sale	D	55,000	65,000	80,000	101,000
Cost of goods available for sale:		---------- Rupees ----------			
Opening stock valuation at lower of cost and NRV)		70,000	110,000	180,000	300,000
Cost of production for the period	E	400,000	600,000	825,000	1,200,000
Cost of goods available for sale	F	470,000	710,000	1,005,000	1,500,000
Closing stock cost					
A & B (W/Avg.): F / B × C	G {	39,167	94,667		
C & D (FIFO): E / A × C	G {			165,000	288,000
Selling expenses - current year	H	60,000	80,000	90,000	100,000
Sales price - per unit	I	10.0	12.0	12.0	12.5
Total sales price of closing stock C × I		50,000	120,000	180,000	300,000
Selling costs H / D × C × 1.1		(6,000)	(13,538)	(18,563)	(26,139)
Repair cost of damaged units		(900)	(1,200)	(2,000)	(5,250)
NRV of Closing stock		43,100	105,262	159,438	268,611
Value of closing stock (At lower of cost and NRV)		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
Ordering costs per purchase order		
Annual purchases of CALTIN (tons) [240,000 x 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
Carrying costs per ton (22,125 / 1.25 x 1%)	Rs. Per Ton	177

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

		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 x Rs. 177)	**Rupees**	846,945	929,250
Total costs	**Rupees**	1,339,745	1,351,650
Savings on adoption of EOQ	**Rupees**	11,905	

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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
Cost of abnormal loss (Department B)	**Units**	**Rs.**	**Rs.**	**Units**	**Rs.**	**Rs.**
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
			-			**368,216**
WIP-closing costs						
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
			1,056,000			**2,269,900**

(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	**49,224,884**

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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
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Ans.4

Actual quantity purchased:	**Material X**		**Material Y**	
Standard consumption quantities	50,000×6	300,000	50,000×3	150,000
Quantity used in excess of standard usage (adverse quantity variance)		0	150,000/30	5,000
Ending inventory	300,000×20/365	16,438	150,000×20/365	8,219
Opening stock	300,000×25/365	(20,548)	150,000×25/365	(10,274)
Actual purchase quantity	kg	**295,890**	kg	**152,945**
Actual cost of purchase:				
Actual quantity purchased at standard rate	295,890×50	14,794,500	152,945×30	4,588,350
Price paid above / (below) the standard rate {adverse / (favorable) price variance}		95,000	4,588,350×.06	(275,301)
Actual cost of purchase	Rs.	**14,889,500**	Rs.	**4,313,049**

Labour and overhead variances:

	Skilled labour		**Unskilled labour**	
Labour rate variance:				
Actual hours at standard rate	168,000×3/7×150	10,800,000	168,000×4/7×100	9,600,000
Rate variance 10% & 5%	**Adverse**	(1,080,000)	**Adverse**	(480,000)
Labour efficiency variance:				
Standard hours for 50,000 units at standard rate	50,000×1.5×150	11,250,000	50,000x2x100	10,000,000
Actual hours for 50,000 units at standard rate	168,000×3/7×150	10,800,000	168,000×4/7×100	9,600,000
	Favourable	450,000	**Favourable**	400,000
Overheads spending variance:				
Actual hours at standard rate-skilled	168,000x3/7x100	7,200,000		
Actual hours at standard rate-unskilled	168,000x4/7x80	7,680,000		
Fixed overheads as budgeted		4,000,000		
		18,880,000		
Actual variable overheads		16,680,000		
Actual fixed overheads	4,000,000x1.06	4,240,000		
		20,920,000		
Spending variance	**Adverse**	(2,040,000)		
Overheads efficiency variance:				
Standard hours for 50,000 units at standard rate				
Skilled	50,000*1.5*100	7,500,000		
Unskilled	50,000*2*80	8,000,000		
		15,500,000		
Actual hours for 50,000 units at standard rate				
Skilled	168,000*3/7*100	7,200,000		
Unskilled	168,000*4/7*80	7,680,000		
		14,880,000		
	Favourable	620,000		

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Ans.5

		AW	AX	AY	AZ	Total
Sale price		150.00	180.00	140.00	175.00	
Less: Variable cost						
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	
Contribution margin per unit	Rs	**22.50**	**29.25**	**22.00**	**17.00**	
Annual demand	Units	5,000	10,000	7,000	8,000	
Possible production under each machine:						
Processing machine:						
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	
Hours required	**Hours**	**25,000**	**60,000**	**56,000**	**9,000**	**150,000**
Contribution margin	**Rs.**	**112,500**	**292,500**	**154,000**	**15,300**	**574,300**
Production for product 'Z' has to be restricted to 900 units due to limited number of machine hours.						
Packing machine:						
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	
Hours required	**Hours**	**10,000**	**30,000**	**14,000**	**32,000**	**86,000**

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.

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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^2)
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

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

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

(THE END)

The Institute of Chartered Accountants of Pakistan

Cost Accounting

Intermediate Examinations – Autumn 2010 | September 3, 2010
Module D | 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:

	Rupees
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)

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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	
Total machine hours		***1**	**72,000**	**160,000**	**450,000**	**682,000**
Units inspected			600	400	1,350	2,350
Per unit inspection hours			2	3	4	
Total no. of hours for units inspected		***2**	**1,200**	**1,200**	**5,400**	**7,800**
Overhead allocation:						
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
Total overheads	**B**	**Rs.**	**2,773,714**	**2,339,500**	**4,374,786**	**9,488,000**
Cost per unit	**(B/A)**	**Rs.**	**231.14**	**116.98**	**97.22**	

A.2 **Journal entries:**

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

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	(Defective units sold as scrapped)		
18-Jun-2010	Account payable	212,500	
	Raw material		212,500
	(Defective material returned to the supplier)		
19-Jun-2010	Work in process	430,050	
	Raw material		430,050
	(Replacement of defective material to production by the store)		
20-Jun-2010	Raw material	212,500	
	Account payable (2,500 x 85)		212,500
	(Goods returned were replaced by the supplier)		
21-Jun-2010	Work in process	12,900,000	
	Raw material		12,900,000
	(Issue of raw material to production)		
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
	(Cost of obsolete and shortages charged to factory overheads)		

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
	Balance	**250,000**	**83.00**	**20,750,000**
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
	Balance	**255,000**	**86.00**	**21,930,000**
17-Jun-2010	Defective goods sold	(2,500)	86.00	(215,000)
18-Jun-2010	Returned to supplier	(2,500)	85.00	(212,500)
	Balance	**250,000**	**86.01**	**21,502,500**
19-Jun-2010	Replacement to production	(5,000)	86.01	(430,050)
20-Jun-2010	Replacement by supplier	2,500	85.00	212,500
	Balance	**247,500**	**86.00**	**21,284,950**

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
			2,400.20

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	**7,463,077**

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

A.4

	Units	Marginal Costing Cost per unit	Absorption Costing Cost per unit	Marginal Costing Rupees	Absorption Costing Rupees
Sales	21,000	1,100		23,100,000	23,100,000
Cost of goods sold					
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	
Contribution margin / Gross profit				**6,169,135**	**3,031,056**
Selling and administration costs			{(21,000x157.89} + 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	
Net loss				**(7,610,865)**	**(7,284,634)**
Profit reconciliation:					
In absorption costing fixed costs:					
- 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	
				(7,284,634)	**(7,284,634)**

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
		806.39

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
		6,780,000

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

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

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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)
Contribution margin	**45.00**	**51.00**	**87.00**
Machine hours	2.00	4.00	5.00
Contribution margin per hour	22.50	12.75	17.40
Priority based on contribution per machine hour	**1**	**3**	**2**

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
Units in excess of minimum production in CM priority:				
Small size - Units	110,000			220,000
Large size - Units			80,000	400,000
Medium size – Units		20,000		80,000
Total	**210,000**	**120,000**	**180,000**	**1,800,000**

A.6

	Description	Quantity			Variance Fav./(Adv.)
		Qty. in '000	Rate	Amount	
				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
	Decrease in profit				**3,600**
	Profit variation due to Favourable/(Adverse) variances:				+/(-) in profit
1	**Sales price variance**				
	Actual sales at actual price			295,000	
	Actual sales at standard price	480	600	288,000	7,000
2	**Sales volume variance**				
	Actual units sold at standard profit	480	215	103,200	
	Budgeted units sold at standard profit	500	215	107,500	(4,300)
3	**Material price variance**				
	Actual quantity used at actual rate			55,000	
	Actual quantity used at standard rate	950	50	47,500	(7,500)
4	**Material usage variance**				
	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	**Labour rate variance**					
	Actual hours used at actual rate				105,000	
	Actual hours used at standard rate		990	100	99,000	(6,000)
6	**Labour efficiency variance**					
	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	**Factory overheads spending variance**					
	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	**Variable overheads efficiency variance**					
	Actual hours used at standard rate		990	25	24,750	
	Standard hours used at standard rate	(480×2)	960	25	24,000	(750)
9	**Fixed overheads efficiency variance**					
	Actual units produced		480	10	4,800	
	Standard production in actual hours	(990/2)	495	10	4,950	(150)
10	**Fixed overheads capacity variance**					
	Capacity used at standard	(990/2)	495	10	4,950	
	Capacity available		500	10	5,000	(50)
	Decrease in profit					**(3,600)**

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

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(To record disbursement of payroll and payment of liabilities)

		Machining	Assembly	Tool room	Stores	Total
		WIP		Overheads		
		Rupees in '000				
Cost						
Payroll cost	A	1,000.00	400.00	25.00	75.00	1,500.00
Overtime		75.00	40.00	5.00	15.00	135.00
		1,075.00	**440.00**	**30.00**	**90.00**	**1,635.00**
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
		1,338.88	**545.56**	**36.60**	**109.79**	**2,030.83**
Deductions from employees:						
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
		108.33	**48.33**	**2.08**	**6.25**	**193.00**

(THE END)

The Institute of Chartered Accountants of Pakistan

Cost Accounting

Intermediate Examination – Spring 2011 | March 11, 2011
Module D | 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	
Budgeted	A	80	200,000	400,000
	B	150	500,000	125,000
	C	120	250,000	350,000
Actual	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
	Rs in '000	
Sales revenue	493,000	464,400
Cost of Goods sold		
Material	(197,200)	(183,600)
Labour	(98,600)	(91,800)
Factory overheads	(84,660)	(80,580)
	(380,460)	(355,980)
Gross Profit	112,540	108,420
Selling and distribution expenses	(26,500)	(25,500)
Administrative expenses	(23,500)	(23,500)
	(50,000)	(49,000)
Net Profit	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) **Computation of budgeted gross profit**

	Rupees
Sales (180,000 units × 12 × Rs. 110)	237,600,000
Less: Cost of sales	
Material "A" (2.16 million × 75% × 1/80% x 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)
Budgeted Gross Profit	10,925,000

(b) **Computation of revised budgeted gross profit**

	Rupees
Sales (180,000 units × 12 × Rs. 110)	237,600,000
Less: Cost of sales	
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)
Revised Budgeted Gross Profit	40,292,000

W-1 Computation of revised labour cost

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.2 (a) **Budgeted overhead rate for department-A**

	Rs. in million
Budgeted Overhead rate per machine hour (OHD/MH Rs.5m/400,000)	Rs. 12.5

Budgeted overhead rate for department-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

Budgeted overhead rate for department-C

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	120.0 0
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
Total Actual Cost per unit (Rs.)		**137.39**	

(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	10,000

Labour cost

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

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	6,630,000

Option - 2

Labour hours available (250 × 200)	50,000
Overtime hours (10,000 × 40%)	4,000
Total labour hours	54,000
Standard hours allowed for the bonus plan (40,000 × 1.4)	56,000
Guaranteed wages (56,000 × 48)	2,688,000
Variable overhead (54,000 × 75)	4,050,000
Total conversion cost	6,738,000

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 × 200)+(53,125 × 225) + 80,000	W-1	17,033,125
Labour (20,000 ×45 × 40%) + (210,625 × 45)	W-2	9,838,125
Variable overhead (230,625 × Rs. 25)		5,765,625
Incremental fixed cost (22m / 10 ×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%) × 0.5	78,125

W-2: Labour

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

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

		Rs. in '000
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	A	80,580,000	25,500,000
Difference	B	4,080,000	1,000,000
Variable cost per unit	C	102	25
Fixed cost [A – (540,000 × C)]		25,500,000	12,000,000

W – 2: Computation of variable cost per unit

	Rupees
Material (183,600 / 540,000) × 1000	340
Labour (91,800 / 540,000) × 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 Debit	Factory Ledger Credit	Particulars	General Ledger Debit	General Ledger Credit
❖	Material X	2,500,000		Factory Ledger	7,750,000	
	Material Y	5,250,000		Trade Creditors		7,750,000
	General Ledger		7,750,000			
	(Purchase of material)					
❖	Payroll	2,000,000		Factory Ledger	2,000,000	
	General Ledger		2,000,000	Selling and administrative expenses	1,000,000	
				Accrued Payroll		2,760,000
	(Payroll accrual)			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)

COST ACCOUNTING
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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
Cost Allocated			
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^2)
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 x 110 = Rs. 1,227

(b) **Allocation of wages between direct and indirect labour**

	Direct	Indirect	Total
	Rupees		
Normal wages (47 × Rs. 25)	1,175	-	1,175
Overtime wages (4 × Rs. 25)(4 x 25 × 0.45)	100	45	145
Idle time wages (3 × 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:**

Materials	*Quantity (kg)*	*Price Per Kg(Rs.)*	*Amount*
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:**

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

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

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

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

Materials	*Quantity (kg)*	*Price Per Kg(Rs.)*	*Amount*
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 = Rs. 388 adverse

Direct Material Price Variance
AQ (SP-AP) = (iii) – (ii) = 8,000 – 7,684 = Rs. 316 favourable

Direct Material Usage Variance
SP (AQ-SQ) = (iii) – (i) = 8,000 – 7,296 = Rs. 704 adverse

Direct Material Mix Variance
SP (SQ-AQ) = (iv) – (iii) = 8,014.55 – 8,000 = Rs. 14.55 favourable

Direct Material Yield Variance
SR (SY-AY) = (iv) – (i) = 8,014.55 – 7,296 = Rs. 718.55 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
Prime Cost		195,000	196,350
Production Overhead:			
Variable		70,000	80,080
Fixed		45,000	45,000
Total cost		310,000	321,430

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
Equivalent Units		43,000	43,000

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

COST ACCOUNTING
Suggested Answers
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Cost Accounted for as Follows:			
Transferred to department-C	(39,500 × Rs 2.98)		117,710
Work in process - ending inventory:			
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	24,290
Total cost accounted for			142,000

W-1: Units in Process

	Equivalent
50% were 40% completed	0.20
20% were 30% completed	0.06
30% were 24.5% completed	0.0735
Weighted average	0.3335

W-2 : Unit cost based on equivalent units

		Labour	FOH
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

		(Sq. ft.)
Maximum Leather available		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
Total Contribution			803,100
Less: Fixed costs (Note 1)			(66,000)
Profit			737,100

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
Total Fixed Costs				66,000

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

		Rupees in '000		
Particulars	Existing	PI	PII	PIII
Sales	300,000	422,500	527,500	620,000
Cost of goods sold W-1	(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
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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 + ½ (reorder quantity)

As minimum level is not given it will be computed a follows:
Re-order level = maximum usage × maximum lead time
Re-order level = 300 × 6 = 1,800 units.
Minimum level = Re-order level – (average usage × average lead time)
Minimum level = 1,800 – (225 × (6+2/2) = 900 units.
Therefore, Average stock level = 900 + (½ 750) = 1,275 units.

(THE END)

THE INSTITUTE OF CHARTERED ACCOUNTANTS OF PAKISTAN

EXAMINERS' COMMENTS

SUBJECT	SESSION
Cost Accounting	Intermediate Examination - Autumn 2011

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.

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
Production departments:	
A	56,000
B	50,000
C	38,000
Service departments:	
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
Actual:	
January 2012	85,000
February 2012	95,000
Forecast:	
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:

Volumes:	
Sales	100,000 units
Production	120,000 units
Standard costs:	
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**

Carrying cost per unit:	**Rupees**
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
COSTS ASSOCIATED WITH EACH ORDER	
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 × 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:

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

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

Small pack of product-B

Required Contribution Margin

	Rupees
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
	Units
Break-even sales in units [Rs. 20,700,000 / Rs. 90)	230,000

Working Notes

Product-A

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

	Rupees
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 **A** and **B**	105,240,000
Less: Contribution margin of both packs of Product-**A** and large pack of **B**	(70,500,000)
Contribution margin from Product-**B**	34,740,000
Contribution margin per unit of the small pack of product-**B**	90
Required number of units of small pack of product-**B** to earn desired income	386,000

COST ACCOUNTING
Suggested Answers
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(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
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(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			85,000
Feb Sales			95,000
	Mar	Apr	May
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

(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

SUBJECT	SESSION
Cost Accounting	Intermediate Examination - Spring 2012

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 $2/5^{th}$ of the variable cost of the large pack, instead of $2/3^{rd}$. 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 x $\frac{100}{75}$. 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.

(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	Receipt		Issue
	Litre	Rate	Litre	Litre	Rate	Litre
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 12th May and 150 litres of chemical Gee purchased on 24th 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
Income excluded from cost accounts:	
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)
Expenses excluded from cost accounts:	
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
Total Cost	38,000 + 18000x + 20000y	40,000 + 24000x + 16000y

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)
Total Cost	52,000	56,000

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

18000x + 20000y = 14,000
18000x ± 12000y = 12,000
–
8000y = 2,000
or y = 0.25 or 25%

Putting value of y in equation (i), we get
18000x + 20000 × 0.25 = 14,000
or 18000x = 14,000 – 5,000
or 18000x = 9,000
or x =0.5 or 50%
As the percentage of :
Factory overheads on direct labour = 50 % and
The percentage of administrative overheads on manufacturing cost = 25%

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

Chemical Bee:	**Litres**
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

Chemical Gee:	
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

Cost of chemical Bee:	
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

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Rate	**(W-1)**	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
Rate	**(W-2)**	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	107000
Less: Issued on 5-5-12 and 9-5-12 (650+300)	950	112.63	107000
	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 **W-1**	
Direct labour (1 hour @ Rs. 0.60/hour)	0.6
Machine hours (2 hours @ Rs. 0.20/hour)	0.4
Total	**26.0**

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

Quantities		
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
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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 × 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
A	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 × Rs. 1.5)	(12,375)	-
B	624,750	253,875
Total cost to be accounted for (624,750 + 253,875)		878,625
Rate per unit of equivalent product **B ÷ A**	7.00	3.00
Total per unit cost Rs. (7 + 3)		10

Cost accounted for:	**Rs.**
Transferred out (75,000 × Rs. 10)	750,000
Abnormal loss:	
- Material (4,250 × Rs. 7)	29,750
- Conversion cost (2,125 × Rs. 3)	6,375
	36,125
Closing work in process	
- Material (10,000 × Rs. 7)	70,000
- Conversion cost (10,000 × 75% × 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	$\frac{300,000 \times 5 \times 70\%}{12}$	$\frac{300,000 \times 7 \times 92\%}{12}$
	=87,500 units	=161,000 units
	Rs.	**Rs.**
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)
Overheads		
Fixed (5:7)	(312,500)	(437,500)
Variable @ Rs. 6 per unit	(525,000)	(966,000)
Semi variable **(W-1)**	(262,500)	(472,500)
Total Cost	(2,900,000)	(5,096,000)
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 = $\frac{\textit{Total sales required for last 7 months}}{\textit{Units produced during last 7 months}}$

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

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
Total relevant cost		**14,860**

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	
SUBJECT Cost Accounting	**SESSION** 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.

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/ Incidential 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.

(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:

$\sqrt{2 \times A \times OC \times CC} = Rs.3{,}000$
$\sqrt{2A \times Rs.50 \times 0.10 \times Rs.150} = Rs.3{,}000$
$\sqrt{1{,}500A} = Rs.3{,}000$
$1{,}500A = 3{,}000^2$
$A = 6{,}000$
$\therefore$ *Annual cosumption 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:

$$Re-order\ Level = Normal\ Lead\ Time \times Normal\ Usage$$

Where,

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

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

Therefore, Reorder level $= 12 \times 20 = 240$ 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
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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
Direct material usage variance [SP (AQ-SQ)] [6.75 (80,640 – 75,600]	Adv.	Rs. (34,020)
Direct material price variance [AQ (SP-AP)] [80,640 (6.75-6.25)]	Fav.	Rs. 40,320
Labour Variances		
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
Direct labour efficiency variance [SR (SH-AH] [150 (13,500 – 14,850)]	Adv.	Rs. (202,500)
Direct labour rate variance [AH (AR-SR] [14,850 (160-150)]	Adv.	Rs. (148,500)
Variable overhead variances		**Rupees**
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
Variable OH efficiency variance [VOH at AH – VOH at SH] [(ii) – (iii)]	Adv.	(16,200)
Fixed overhead variances		
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
Fixed overheads efficiency variance [FOH at AH – FOH at SH] **[(v) – (vi)]**	Adv.	(24,300)
Factory overhead spending variance:		
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
Idle capacity variance / Production volume variance [(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
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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 (100,000 hrs.)*	*After Suggestion (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

	(Rs.)
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

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

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

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
W 1.1		**Hours**
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:**

	Dept. A
	Rupees in '000
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

Apportionment of joint costs:	
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

Statement showing apportionment of joint costs:	**Pollen**	**Stigma**
	Rupees in '000	
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:**

Computation of output of Seeds:	
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

Statement showing profit earned from Seeds:		**Seeds**
		Rs. in '000
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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If Pollen is sold without further processing, then the profitability would be as under:

Net realisable value at split off point [(42,900 × 90) – 135,000]	3,726
Less: Joint costs	(3,240)
Profit from Pollen	486

Advise: The company's profit has increased by Rs. 1,428,000 (i.e. Rs. 1,914,000 – Rs. 486,000) on further processing of Pollen into Seeds. Therefore, it is advisable to CL to further process Pollen into Seeds.

W-1: Cost incurred in Department B

	Dept. B Rupees in '000
Material Y [12,000 × Rs. 25]	300
Labour [3,600 × Rs. 150]	540
Variable overheads [3,600 × Rs. 65]	234
Fixed overheads [3,600 × Rs. 50]	180
Total cost	1,254

Ans.6

Break even sales in quantity for the month of February 2013:		
Units produced [175,000 ÷ 0.80]		218,750
Less: Defective units [218,750 – 175,000] OR [218,750 × 20%]		(43,750)
Good units produced		175,000
Less: closing inventory		(30,000)
Number of units sold		145,000
	Per Unit*	**Rupees***
Variable Costs:		
Direct material (218,750 × 5 × 2)	10.00	2,187,500
Direct labour (218,750 × 2)	2.00	437,500
Variable overheads (218,750 × 4)	4.00	875,000
Less: Defective units sold (43,750 × 5) 5 × 20%	(1.00)	(218,750)
Total variable cost of production	15.00	3,281,250
Variable cost per good unit (3,281,250 ÷ 175,000)	15 ÷ 0.8	18.75
Calculation of variable selling expenses per unit [using high-low method]:		
$= \frac{42,000}{(180,000 - 145,000)}$		1.20
Fixed costs		
- Fixed overheads (175,000 × 3.5)		612,500
- Selling expenses 295,000 – (145,000 × 1.2)		121,000
- Administration expenses		101,400
Total fixed costs		834,900
Contribution margin per unit (26 – 18.75 – 1.2)		6.05
Break even quantity (834,900 ÷ 6.05)		138,000

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

Computation of limiting factor:	
Estimated labour hours available each month	25,500
Divided by : labour hours required per box [(30 × 1)+(15 × 4)+(18×5)] ÷ 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)] ÷ 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 [1×200],[4×300],[5×400]	200	1,200	2,000
Direct labor [400×30÷60×1],[400×15÷60×4],[400×18÷60×5]	200	400	600
Variable overhead [5×30],[4×75],[3.75×120]	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 × 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×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

SUBJECT	SESSION
Cost Accounting	Intermediate Examination - Spring 2013

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 un-favourable 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
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A.1 (a)

	Units (x)	Overheads Rs.000' (y)	(xy)	(x^2)
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 x 1,800 = 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		150 hours
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

Option 1:	
Additional profit from the introduction of packaged products:	
Quantity of packaged products:	**Units**
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
	Rupees
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
Option 2:	
Additional profit from Salsa	
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
Receipts:			
Collection from hospitals and schools **W-1**	842.40	830.70	976.95
Payments:			
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
	614.25	532.35	696.15	655.20	573.30
Collection from hospitals- **A**			614.25	532.35	696.15
Sales to schools – 30%	225	195	255	240	210
Add: sales tax @17%	38.25	33.15	43.35	40.80	35.70
	263.25	228.15	298.35	280.80	245.70
Collection from schools - **B**			228.15	298.35	280.8
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 ÷ 650 × 100]	4%

COST ACCOUNTING
Suggested Answers
Intermediate Examination - Autumn 2013

A.5

Purchases for the month of August 2013:	**Rs. in '000**
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
Direct labor for the month of August 2013:	
Direct labor as per cost card	41,000
Add: Direct labour booked as indirect in cost cards	2,900
Direct labour	43,900
Unabsorbed overheads	
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)
Actual profitability of completed jobs for the month of August 2013:	
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

W-1:	
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 $\frac{Rs.2,000,000}{500} \times 400 \times 12$	Rs. 19,200,000
Selling price per unit = $\frac{Rs.\ 12,000,000}{80,000}$	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 = $\frac{5,000 \times Rs.49 + 30,000 - 5,000 \times 10\% \times Rs.19}{[5,000 - 5,000 \times 10\%]}$

$= \frac{Rs.265,500}{4,500} = Rs.\ 59$

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	Distri-bution
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	
SUBJECT Cost Accounting	**SESSION** 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
Costs:	---------- Rs. in 000 ----------				
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
Other data:					
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^2)	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
Intermediate Examinations – Spring 2014

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)	**kg.**	3,600
Ordering costs per order:		
Inspection		20,000
Transportation cost		25,000
	Rs.	45,000
Holding costs per kg per annum:		
Financing cost (15% of 16,000)		2,400
Warehousing cost		100
	Rs.	2,500

$$EOQ = \sqrt{\frac{2 \times Annual\ requried\ units \times costs\ per\ order}{Holding\ costs\ per\ kg\ per\ annum}}$$

$$= \sqrt{\frac{2 \times 3{,}600 \times 45{,}000}{2{,}500}}$$

$$= \sqrt{129{,}600} \qquad = 360kg$$

(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	kg.	**210**
Total holding cost	(2,500×210)	525,000
Total ordering costs	(45,000×10)	450,000

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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.
	31	13	9	(53)	-	20% based on the floor area.
	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**
Bonus amount			
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**

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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
(Payroll for the month of February 2014)		
Co's contribution to provident fund	35,000	
Trustees- provident fund payable		35,000
(Being Co. contribution to PF for February 2014)		
Contribution to the Government organization	21,000	
Account payable - Government organization		21,000
(Amount payable to a government organisation at 5% of basic salary for February 2014)		

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
Cost of sales:		
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)
Net contribution margin		**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)
Net profit	**5,120,000**	**5,176,000**

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
Production rate for **marginal costing** **(A)**	**951**	**900**
Production overheads - fixed (220×40%=88), (88/1.1=80)	88	80
Production rate for **absorption costing** **(B)**	**1,039**	**980**

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(b) Reconciliation of net profit under Marginal and Absorption costing:

	Rupees
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	**5,120,000**

Ans.5

Projected contribution margin(CM) for 2014			A	B	C	Total
Projected CM on sales for 2014 (after advertising) *Rs. in million*		C×K	3,120	2,827	3,058	9,005
CM on normal sales growth rate of 5% *Rs. in million*		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 *Rs. in million*						**336**
Working:						
Sale price per unit	*Rs.*	A	10,000	8,000	5,000	
CM per unit	*Rs.*		5,000	3,000	2,000	
Variable cost per unit	*Rs.*	B	**5,000**	**5,000**	**3,000**	
Revised sales price with 14% increase	*Rs.*	(A×1.14)	11,400	9,120	5,700	
Revised variable cost with 8% increase	*Rs.*	(B×1.08)	(5,400)	(5,400)	(3,240)	
Projected CM per unit for 2014	*Rs.*	C	6,000	3,720	2,460	
Sales quantities for 2013 and 2014:						
Sales volume ratio		D	2	3	5	10
Sales ratio		E (A×D)	20,000	24,000	25,000	69,000
Total sales	*Rs. in million*	F(E÷69×15.6)	4,522	5,426	5,652	15,600
Total sales quantities for 2013	*Units in million*	G (F÷A)	**0.452**	**0.678**	**1.130**	
Sales quantities for 2014 at estimated normal growth of 5%	*Units in million*	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	*Units in million*	K [G×(1+J)]	**0.520**	**0.760**	**1.243**	

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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)
Net sales	A	1,272.00	1,208.40
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)
Contribution margin	B	324.00	260.40
Fixed costs including Rent	(150+75), (150+50) C	(225.00)	(200.00)
Profit		**99.00**	**60.40**
Contribution margin %	D (B÷A)	25.47%	21.55%
Break-even sales	(C÷D)	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
Variable costs				
Material A	4×25	3×25	(100)	(75)
Material B	3.5×60	2.6×60	(210)	(156)
Labour skilled	2.4×250	2×250	(600)	(500)
Labour semi skilled	5×120	2.5×120	(600)	(300)
Overheads			(125)	(60)
			(1,635)	(1,091.00)
Contribution margin per unit		A	**330**	**319**
Contribution margin per limiting factor:				
▪ Material B		(A÷3.5), (A÷2.6)	94.29	122.69
▪ Skilled labour		(A÷2.4), (A÷2.0)	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----------	
1st priority for export sales		25,000	24,000
Local sales	Product C031: (40,000-25,000)	15,000	50,000
		40,000	**74,000**

(THE END)

THE INSTITUTE OF CHARTERED ACCOUNTANTS OF PAKISTAN EXAMINERS' COMMENTS	
SUBJECT Cost Accounting	**SESSION** 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 adverting 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