



## Cost and Management Accounting

### Instructions to examinees:

- (i) Answer all NINE questions.
- (ii) Answer in **black** pen only.

### Section A

- Q.1 Indus Limited produces a product that passes through two processes. The management is worried about the high rate of wastage attributed to workers and has decided to introduce a wage incentive plan to address this issue.

The data collected in this respect is as follows:

	Process A	Process B
Cost of material (Rs. per unit)	1,000	700
Labour hours required per unit	2	3
Labour (Rs. per hour)	200	250
Variable overhead rate (Rs. per hour)	120	120
Wastage percentage in relation to total units produced	10%	5%

The units are inspected at the end of the process.

Each worker works 240 hours every month. Under the incentive plan, the management intends to allocate the cost savings from wastage, among the workers in the form of bonus.

### Required:

Determine the bonus amount to be provided to a worker for every one percent decrease in the wastage percentage. (08)

- Q.2 Noble Industries Limited has two production departments and two service departments. Information regarding its factory overheads for the latest quarter and related details are as follows:

	Production Departments		Service Departments		Total
	A	B	X	Y	
Direct factory overheads <i>Rs. in '000</i>	105,000	85,000	30,000	20,000	240,000
Machine hours	1,890	1,710	-	-	3,600
Floor area <i>Square yards</i>	1,200	1,050	250	150	2,650
Basis of allocation – Department X	50%	40%	-	10%	100%
Basis of allocation – Department Y	45%	40%	15%	-	100%

In addition to direct overheads, there were common overheads of production and service departments, which amounted to Rs. 53 million.

### Required:

Compute the factory overhead rate for the production departments based on machine hours using the repeated distribution method. (07)

Q.3 Toor Industries Limited (TIL) is engaged in the production and sale of product Y, which is used in hi-tech industries. The following are the extracts from TIL's latest accounts:

	Rs. in '000
Sales	450,000
<b>Cost of sales</b>	
Raw material SN37	(171,000)
Labour (Rs. 300 per hour)	(21,600)
Variable overheads (Rs. 325 per hour)	(23,400)
	(216,000)
<b>Contribution margin</b>	<b>234,000</b>

TIL's research department has recently developed a product Z which can be produced through further processing of product Y, with the addition of a new raw material, TS38. Other details are as under:

- (i) Annual demand for Z is estimated at 8,000 kg at a price of Rs. 50,000 per kg.
- (ii) 0.6 kg of raw material TS38 would be added per kg of Y at the start of further processing. Normal wastage, identified at the start of further processing, would be 20% of the input quantity. Currently, TS38 is available at Rs. 19,200 per kg in the market.
- (iii) The price of Y is Rs. 25,000 per kg. The introduction of Z would have no impact on the demand for Y.
- (iv) Further processing would require 2 labour hours per kg of Z produced and can be carried out on the existing machines.
- (v) The total available labour hours for production are 80,000. During the latest year, the plant worked at 90% of the total production capacity in terms of labour hours.
- (vi) There are no opening or closing inventories of both products.

**Required:**

- (a) Assuming that TIL intends to meet the entire demand for the product Z, compute the production quantities of product Y that will be:
  - used in the production of product Z
  - sold without further processing (05)
- (b) Advice whether TIL should produce product Z. (05)

Q.4 Nauman Engineering Works (NEW) is engaged in the manufacturing and sale of electric motors of a single specification, Model EMV33. The production process of EMV33 involves two departments, A and B. Relevant details are as follows:

	Available monthly hours (30 days)		Hours required per unit	
	Machine	Labour	Machine	Labour
Department A	5,400	5,600	6	7
Department B	3,600	7,500	5	10

	Department A	Department B	Total
	----- Rs. per unit -----		
<b>Profit details of EMV33</b>			
Sales price			60,000
Less: Cost of production			
Material	14,000	6,000	20,000
Labour	2,100	3,200	5,300
Fixed overheads	600	900	1,500
Variable overheads (based on machine hours)	1,800	2,000	3,800
Total cost per unit			30,600
<b>Profit</b>			<b>29,400</b>

NEW has recently been approached by a customer interested in purchasing 990 units of a special type of motor, Model LTM78, offering Rs. 105,000 for each unit. However, accepting this order would require suspending the production of EMV33.

The following information has been gathered in relation to the proposed order:

(i) Details relating to each unit of LTM78:

	Department A	Department B
Cost of raw material (Rs. per unit)	20,000	10,000
Machine hours per unit	10	6
Labour hours per unit	8	12

- (ii) The setup time required to prepare for production of LTM78 is 3 days. Another 2 days would be required to revert back to the production of EMV33.
- (iii) Labour is not allowed to work overtime. Further, the labour of each department is specifically trained for tasks within that department and cannot be used in other departments.
- (iv) Idle labour is paid at 85% of the normal wage rate. Idle labour hours related to EMV33 have already been included in fixed overheads.

**Required:**

Determine whether NEW should accept the order for supply of LTM78.

(10)

Q.5 Shadman Enterprises Limited (SEL) produces two products, namely A and B. The following figures have been extracted from the draft profit and loss account of SEL for the year ended 31 December 2023:

	Product A		Product B	
	Units	Rupees	Units	Rupees
Sales	48,000	5,040,000	59,000	7,670,000
<b>Cost of sales</b>				
Raw material – opening	5,000	400,000	6,000	500,000
Purchases	30,000	2,700,000	40,000	3,201,000
Raw material – closing	10,000	(900,000)	7,000	(560,000)
Raw material consumed		2,200,000		3,141,000
Direct labour		1,100,000		1,200,000
Factory overheads		1,320,000		1,440,000
Manufacturing costs		4,620,000		5,781,000
Finished goods – opening	10,000	1,000,000	15,000	1,350,000
Finished goods – closing	12,000	(1,108,800)	16,000	(1,541,600)
Cost of sales		(4,511,200)		(5,589,400)
<b>Gross profit</b>		<b>528,800</b>		<b>2,080,600</b>

**Additional information:**

- (i) Raw material Y is used for manufacturing product A, and raw material Z is used for manufacturing product B.
- (ii) SEL uses FIFO method for inventory valuation.
- (iii) Both the products are produced in the same premises and total factory overheads are allocated between them on the basis of cost of direct labour.
- (iv) Both direct and indirect labour are paid at Rs. 400 per labour hour.

During the review by the internal auditors, the following issues have been identified:

- (i) During the year, trade discounts of Rs. 120,000 on the purchase of raw material Y have been erroneously credited to purchase of raw material Z.
- (ii) 250 indirect labour hours were erroneously recorded as direct labour hours of product A.
- (iii) Physical stock check by the auditor revealed that 2,000 units of product A and 1,000 units of product B were in damaged condition. These can be sold at 20% below the normal selling price.

**Required:**

Compute the correct value of closing inventory of finished goods.

(10)

Q.6 Shahid Pakistan Limited (SPL) is engaged in the production of three products: J, K and L. Following is the extract from its latest annual management accounts:

Description	Products			Total
	J	K	L	
	----- Units -----			
Quantity produced and sold	50,000	40,000	30,000	120,000
	----- Rs. in million -----			
Material	100	200	250	550
Labour	50	40	25	115
Factory overheads	80	64	40	184
Sales overheads	60	48	36	144
<b>Total</b>	<b>290</b>	<b>352</b>	<b>351</b>	<b>993</b>

Traditionally, SPL has allocated its factory and sales overheads on the basis of labour hours and sales volume, respectively. However, SPL is currently considering the use of activity based costing for a more accurate allocation of expenses. Following data has been collected in this regard:

		Product J	Product K	Product L
Sales price per unit	<b>Rs.</b>	10,000	12,000	14,000
Machine hours per unit	<b>hours</b>	0.18	0.30	0.50
Batch size	<b>units</b>	2,500	1,000	1,500
Average amount of sales order	<b>Rs. in millions</b>	5	6	7

Break-up of overheads is as follows:

	Rs. in million
<b>Factory overheads</b>	
Repairs and maintenance – machines	27
Set-up costs	24
Fuel and power	99
Other fixed factory overheads	34
	<b>184</b>
<b>Sales overheads</b>	
Sales ordering department's cost	6
Delivery expenses (units are of same size and weight)	54
Commission on sales	70
Other fixed sales overheads	14
	<b>144</b>

The other fixed factory overheads and other fixed sales overheads accumulate from various minor expenses; therefore, the Cost Accountant advised allocating them according to machine hours.

**Required:**

Compare the profitability of each product before and after the implementation of activity based costing.

**Section B**

Q.7 Sultan Industries Limited (SIL) produces three products A, B and C in the same factory. Recently, there has been a surge in raw material cost of product A, in the international market, due to closure of large production sites amid the war in Ukraine. Despite efforts, SIL is unable to pass on the increase in cost to the buyers as close substitutes for product A are available at similar prices. SIL's research department is hopeful of finding a substitute for the raw material within the next 12 months. Until then, the management is considering to discontinue the production and sale of product A.

The following information has been gathered to evaluate whether to discontinue the production of product A:

**Projected profit and loss account for the next year**

	Product A	Product B	Product C	Total
	----- Rs. in '000 -----			
Sales	24,000	36,000	60,000	120,000
Cost of sales				
Material	(12,000)	(6,480)	(12,000)	(30,480)
Labour	(4,800)	(5,400)	(11,400)	(21,600)
Factory overheads	(7,200)	(10,800)	(18,000)	(36,000)
Sales & distribution expenses	(2,400)	(3,600)	(6,000)	(12,000)
Administrative expenses	(1,200)	(1,800)	(3,000)	(6,000)
Financial charges	(2,400)	(3,600)	(6,000)	(12,000)
<b>Net (loss) / profit</b>	<b>(6,000)</b>	<b>4,320</b>	<b>3,600</b>	<b>1,920</b>
Sales in units	80,000	140,000	180,000	400,000

**Additional information:**

- (i) 80% of all sales are made on credit. The normal credit period is 30 days.
- (ii) All expenses, other than material and labour, have been allocated on the basis of sales value.
- (iii) The material cost included in projected profit and loss account for the next year takes into account the price increases due to the war in Ukraine.
- (iv) SIL employs a direct labour team of 30 employees, each with the ability to engage in the production process for any of the three products. Each employee works an average of 200 hours per month and is paid @ Rs. 240 per hour. Overtime is worked at Rs. 300 per hour. Overtime hours are equally allocated between the three products. According to the union agreement, labour cannot be terminated before the expiry of the agreement, which is 18 months from now. However, idle hours, if any, are paid at 80% of the normal rate.
- (v) 40% of the factory overheads are fixed. Variable factory overheads include generator fuel amounting to Rs. 6 million. When the generator is used, it operates at full capacity, irrespective of the level of production.
- (vi) Sales & distribution expenses include delivery expenses of Rs. 5 per unit sold and a commission of 5% of sales. 70% of the remaining sales & distribution expenses are fixed.
- (vii) Administrative expenses are generally fixed. However, 2% of the costs can be saved for every 10% reduction in the total sales volume.
- (viii) Financial charges include interest on running finance facility obtained for financing the working capital and on certain leased assets. All leases are non-cancellable. Rate of financing is 24% per annum.
- (ix) SIL follows a policy of maintaining 60 days' inventory for raw material as well as finished goods.

**Required:**

Assess whether the management should discontinue the production of product A.

Q.8 Cruise Manufacturing Limited (CML) produces a product that passes through two processes. The details of processing during the month of February 2024 are as follows:

	Process A		Process B	
	Cost of material	Conversion costs	Cost of material	Conversion costs
<b>Costs of production</b>	----- Rs. in '000 -----			
Opening work in process	16,000	6,000	30,000	10,000
Cost incurred during the month	110,000	40,000	225,000	70,000
	Units	Process completion	Units	Process completion
<b>Quantitative analysis</b>				
Opening work in process	8,000	60%	5,000	30%
Units started in/transferred from Process A	50,000	-	45,000	-
Units rejected on inspection	2,500	-	3,000	-
Units transferred to Process B/Warehouse	45,000	-	40,000	-
Closing work in process	10,500	80%	7,000	50%

**Additional information:**

- (i) CML uses weightage average method for inventory valuation.
- (ii) Material G36 is added at the start of the Process A, and another material, H148, is added at the start of the Process B.
- (iii) Inspection occurs when Process A is 70% complete and again when Process B is 80% complete. Units rejected in Process A are disposed of at a cost of Rs. 500 per unit whereas, units rejected in Process B can be sold for Rs. 2,000 per unit. 5% of units are normally rejected at each stage of inspection.
- (iv) Units rejected during Process B were sold during the month but units rejected during Process A were still in the factory at the month's end.

**Required:**

- (a) Compute equivalent production units. (07)
- (b) Compute the cost of finished goods produced, closing inventory and abnormal gains/losses, if any. (08)

Q.9 Smart Limited (SL) has provided you the following standard and actual data for the year ended 31 December 2023:

		Standard	Actual
Production and sales	Units	10,000	11,000
Sales	Rs.	37,500,000	42,000,000
Material	Rs.	22,800,000	25,210,000
Labour	Rs.	6,760,000	6,965,000
Overheads			
Fixed	Rs.	3,100,000	2,900,000
Variable	Rs.	3,540,000	3,949,000

As per standard, each unit of finished product requires 10 kg of material and 2 hours of labour. SL follows the policy to absorb overheads at a predetermined rate per labour hour.

The finance department has conducted an analysis of the variation between the standard and actual figures, and identified that on the cost side, a positive development was observed in the procurement of materials, which saw a 10% reduction in prices compared to the standard estimates. Conversely, labour cost did not follow this trend and instead experienced a 8% increase over the standard rates, indicating higher expense in this area.

**Required:**

Compute the following:

- Sales price and volume variances
- Labour rate and efficiency variances
- Variable overhead expenditure and efficiency variances
- Material price and usage variances
- Fixed overhead spending and volume variances

(THE END)

(15)