

**PAPER – 3: COST AND MANAGEMENT ACCOUNTING
QUESTIONS**

Material Cost

1. Reliable India Pvt Ltd is a startup company engaged in manufacturing of Agro Tech product from a raw material, which is purchased at ₹190 per kg. The company incurs a handling cost of ₹1,470 plus, freight of ₹770 per order. The incremental carrying cost of inventory of raw material is ₹3 per kg per month. In addition, the cost of working capital finance on the investment in inventory of raw material is ₹20 per kg per annum. The annual production of the product is 1,50,000 units and 3 units are obtained from one kg. of raw material. Assume 360 days in a year.

Required:

- (i) Calculate the economic order quantity of raw materials.
(ii) Determine, how frequently company should order for procurement be placed.
(iii) If the company proposes to rationalize placement of orders on quarterly basis, determine the percentage of discount in the price of raw materials should be negotiated?

Employee Cost

2. Following information are available from the cost records of BMR Limited, CALCULATE Labour turnover rate and Labour flux rate:

No. of Employees as on 01.04.2021 = 9,400

No. of Employees as on 31.03.2022 = 10,600

During the year, 160 Employees left while 640 Employees were discharged and 1,500 Employees were recruited during the year; of these, 400 Employees were recruited because of exits and the rest were recruited in accordance with expansion plans.

Overhead

3. SANDY Ltd. is a manufacturing company having three production departments, 'A', 'B' and 'C' and two service departments 'X' and 'Y'. The following is the budget for December 2022:

	Total (₹)	A (₹)	B (₹)	C (₹)	X (₹)	Y (₹)
Direct material		1,60,000	3,20,000	6,40,000	3,20,000	1,60,000
Direct wages		8,00,000	3,20,000	12,80,000	1,60,000	3,20,000
Factory rent	6,40,000					
Power	4,00,000					
Depreciation	1,60,000					

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Other overheads	14,40,000					
Additional information:						
Area (Sq. ft.)		800	400	800	400	800
Capital value of assets (₹) lakhs)		32	64	32	16	16
Machine hours		1,600	3,200	6,400	1,600	1,600
Horsepower of machines		80	64	32	24	40

Apportionment of expenses of service departments is as under:

	A	B	C	X	Y
Service Dept. 'X'	72	24	48	–	16
Service Dept. 'Y'	96	56	–	8	–

Required:

- (i) PREPARE a statement showing distribution of overheads to various departments.
- (ii) PREPARE a statement showing re-distribution of service departments expenses to production departments using Repeated Distribution method. Also CALCULATE machine hour rate of the production departments 'A', 'B', 'C'.

ABC Costing

4. Hygiene Care Ltd. is a manufacturer of a range of goods. The cost structure of its different products is as follows:

Particulars	Hand Wash	Detergent Powder	Dishwasher
Direct Materials (₹ / Pu)	150	120	120
Direct Labour @₹10/ hour (₹ / Pu)	45	60	75
Production Overheads (₹ / Pu)	40	50	40
Total Cost (₹ / Pu)	235	230	235
Quantity Produced (Units)	30,000	60,000	90,000

Hygiene Care Ltd. was absorbing overheads on the basis of direct labour hours. Management accountant has suggested that the company should introduce ABC system and has identified cost drivers and cost pools as follows:

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Activity Cost Pool	Cost Driver	Associated Cost (₹)
Goods Receiving	Number of Dispatch Order	8,88,000
Inspecting and Testing costs	Number of Production Runs	26,82,000
Dispatching	Number of dispatch order	6,30,000
Storage Cost	Number of Batches of material	36,00,000

The following information is also supplied:

Details	Hand Wash	Detergent Powder	Dishwasher
Batches of material	720	780	900
Number of dispatch order	360	540	600
No. of Production Runs	1,500	2,100	2,400
Number of Dispatch Orders	600	900	1,000

Required:

CALCULATE activity-based production cost of all the three products.

Cost Sheet

5. From the following data of Motilal Ltd., CALCULATE Cost of production:

		(₹)
(i)	Repair & maintenance paid for plant & machinery	9,80,500
(ii)	Insurance premium paid for inventories	26,000
(iii)	Insurance premium paid for plant & machinery	96,000
(iv)	Raw materials purchased	64,00,000
(v)	Opening stock of raw materials	2,88,000
(vi)	Closing stock of raw materials	4,46,000
(vii)	Wages paid	23,20,000
(viii)	Value of opening Work-in-process	4,06,000
(ix)	Value of closing Work-in-process	6,02,100
(x)	Quality control cost for the products in manufacturing process	86,000
(xi)	Research & development cost for improvement in production process	92,600
(xii)	Administrative cost for:	
	- Factory & production	9,00,000
	- Others	11,60,000

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(xiii)	Amount realised by selling scrap generated during the manufacturing process	9,200
(xiv)	Packing cost necessary to preserve the goods for further processing	10,200
(xv)	Salary paid to Director (Technical)	8,90,000

Reconciliation

6. The financial records of Riva Private Limited showed a net profit of ₹1,69,500 for the year ended 31st March, 2022. The cost accounts, however, disclosed a net loss of ₹ 88,500 for the same period. The following information were revealed as a result of scrutiny of the figures of cost accounts and financial accounts:

		(₹)
(i)	(Administrative overhead under recovered	63,750.0
(ii)	Factory overhead over recovered	3,37,500.0
(iii)	Depreciation under charged in Cost Accounts	65,000.0
(iv)	Dividend received	50,000.0
(v)	Loss due to obsolescence charged in Financial Accounts	42,000.0
(vi)	Income tax provided	1,09,000.0
(vii)	Bank interest credited in Financial Accounts	34,000.0
(viii)	Value of opening stock:	
	In Cost Accounts	4,12,500.0
	In Financial Accounts	3,62,500.0
(ix)	Value of closing stock:	
	In Cost Accounts	3,13,750.0
	In Financial Accounts	3,30,000.0
(x)	Goodwill written-off in Financial Accounts	62,500.0
(xi)	Notional rent of own premises charged in Cost Accounts	1,50,000.0
(xii)	Provision for doubtful debts in Financial Accounts	37,500.0

Prepare a reconciliation statement by taking costing net loss as base.

Job and Batch Costing

7. A jobbing factory has undertaken to supply 200 pieces of a component per month for the ensuing six months. Every month a batch order is opened against which materials and labour hours are booked at actual. Overheads are levied at a rate per labour hour. The selling price contracted for is ₹ 80 per piece. From the following data.

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COMPUTE the cost and profit per piece of each batch order and overall position of the order for 1,200 pieces.

Month	Batch Output (Pieces)	Material cost	Direct wages	Direct labour
		(₹)	(₹)	(Hours)
January	210	6,500	1,200	240
February	200	6,400	1,400	280
March	220	6,800	1,500	280
April	180	6,300	1,400	270
May	200	7,000	1,500	300
June	220	7,200	1,600	320

The other details are:

Month	Chargeable expenses	Direct labour
	(₹)	Hours
January	1,20,000	4,800
February	1,05,600	4,400
March	1,20,000	5,000
April	1,05,800	4,600
May	1,30,000	5,000
June	1,20,000	4,800

Contract Costing

8. XYZ LLP, contractors and civil engineers, are building a new wing to a school. The quoted fixed price for the contract is ₹30,00,000. Work commenced on 1st January 20X2 and is expected to be completed on schedule by 30 June 20X3.

Data relating to the contract at the year ended 31st March 20X3 is as follows.

	(₹)
Plant sent to site at commencement of contract	2,40,000
Hire of plant and equipment	77,000
Materials sent to site	6,62,000
Materials returned from site	47,000
Direct wages paid	9,60,000
Wage related costs	1,32,000
Direct expenses incurred	34,000

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Supervisory staff salaries	90,000
- Direct	
- Indirect	20,000
Regional office expenses apportioned to contract	50,000
Head office expenses apportioned to contract	30,000
Surveyor's fees	27,000
Progress payments received from school	18,00,000

Additional information:

1. Plant is to be depreciated at the rate of 25 % per annum following straight line method, with no residual value.
2. Unused materials on site at 31st March are estimated at ₹ 50,000.
3. Wages owed to direct workers total ₹ 40,000
4. Budgeted profit on the contract is ₹ 8,00,000
5. Value of work certified by the surveyor is ₹ 24,00,000.
6. The surveyor has not certified the work costing ₹ 1,80,000

You are required to PREPARE the account for the school contract for the fifteen months ended 31st March 20X3, and CALCULATE the notional profit to date.

Process Costing

9. 'Dairy Wala Private limited' is engaged in the production of flavoured milk. Its process involve filtration and boiling of milk after that some sugar, flavour, colour is added and then letting it cool to fill the product into clean and sterile bottles. For Producing 10 litre of flavour milk, 100 litre of Raw milk is required, which extracts only 45 litres of standardized milk.

Following information regarding Process – I has been obtained from the manufacturing department of Dairy Wala Private limited for the month of December 2022:

Items	(₹)
Opening work-in process (13,500 litre)	
Milk	1,50,000
Labour	45,000
Overheads	1,35,000
Milk introduced for filtration and boiling (3,00,000 litre)	15,00,000
Direct Labour	6,00,000
Overheads	18,00,000
Abnormal Loss: 3,000 litres	

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Degree of completion:	
Milk	100%
Labour and overheads	80%
Closing work-in process: 27,000 litres	
Degree of completion:	
Milk	100%
Labour and overheads	80%
Milk transferred for Packing: 1,18,500 litres	
You are required to PREPARE using average method:	
(i) Statement of equivalent production,	
(ii) Statement of cost,	
(iii) Statement of distribution cost, and	
(iv) Process-I Account.	

Joint Product by Product

10. Key Pee Limited produces and sells the following products:

Products	Units	Selling price at split-off point (₹)	Selling price after further processing (₹)
A	500000	42.5	62.5
B	75000	32.5	42.5
C	62500	20	30
D	50000	25	-
E	187500	35	50

Cost of raw material ₹ 89,75,000 and other manufacturing ex-penses cost ₹13,67,500 in the manufacturing process which are absorbed on the products on the basis of their 'Net realisable value'. The further processing costs of A, B, C and E are ₹31,25,000; ₹ 3,75,000; ₹1,25,000 and ₹3,75,000 respectively. Fixed costs are ₹11,82,500.

You are required to PREPARE the following in respect of the coming year:

- Statement showing income forecast of the company assuming that none of its products are to be further processed.
- Statement showing income forecast of the company assuming that products A, B, C and E are to be processed further.

Service Costing

11. PREPARE cost statement of Panipat Thermal Power Station showing the cost of electricity generated per kwh, from the following data.

Total units generated	16,50,000 kWh
	(₹)
Operating labour	21,75,000
Repairs & maintenance	7,25,000
Lubricants, spares and stores	5,80,000
Plant supervision	4,35,000
Administration overheads	29,00,000
Insurance Charges	15,00,000
Fuel Charges	8,00,000

7 kWh. of electricity generated per kg. of coal consumed @ ₹4.75 per kg. Depreciation charges @ 5% on capital cost of ₹3,10,00,000.

Standard Costing

12. XYZ Manufacturing Ltd. had prepared the following estimation for the month of January:

	Quantity	Rate (₹)	(₹)
Raw Material-DF	1,600 kg.	50	80,000
Raw Material-CE	1,200 kg.	35	42,000
Skilled labour	2,000 hours	40	80,000
Semiskilled labour	1,600 hours	25	40,000

Standard loss in the process was expected to be 10% of total input materials and an idle labour time of 5% of expected labour hours was also estimated.

At the end of the month the following information has been collected from the cost accounting department:

The company has produced 2,960 kg. finished product by using the followings:

	Quantity	Rate (₹)	(₹)
Raw Material-DF	1,800 kg.	40	72,000
Raw Material-CE	1,300 kg.	30	39,000
Skilled labour	2,400 hours	35	84,000
Semiskilled labour	1,720 hours	20	34,400

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You are required to CALCULATE:

(a)	Material Cost Variance;
(b)	Material Price Variance;
(c)	Material Mix Variance;
(d)	Material Yield Variance;
(e)	Labour Cost Variance;
(f)	Labour Efficiency Variance and
(g)	Labour Yield Variance

Marginal Costing

13. The following data are available from the budget records of Finesign Women's Handbag Company for the forthcoming budget period.

	₹
Selling Price per unit	1000
Variable cost per unit:	
Cost of Material used	750.00
Sales commission	50.00
Total Variable Cost	800.00
Annual fixed expenses:	
Rent	7,00,000
Salaries	11,00,000
Other fixed expenses	5,00,000
Total Fixed Cost	23,00,000

Although the firm manufactures Bags with different styles, they have identical purchase costs and selling price.

Requirement:

- What is the annual break-even point both in terms of units and value?
- If the store manager is paid 1 per cent commission on sales, what would be the annual break-even point both in terms of units and value?
- If the firm decides to pay a fixed salary of ₹ 9,00,000 in lieu of sales commission, what would be the annual break-even point in terms of units and value.

Considering break-even point in requirement (a), If the stores manager is paid 2 per cent commission on each bag sold in excess of the break-even point, what would be the profit if 20000 bags were sold.

Budget and Budgetary Control

14. EDF Ltd. produces two products using Skilled labour and two types of materials. Shown below the information for the next month's budget:

	Product- A	Product-B
Budgeted sales (in units)	4,080	6,120
Budgeted material consumption per unit (in kg):		
Material-X	8.5	5.1
Material-Y	6.8	10.2
Standard labour hours allowed per unit of product	5.1	8.5

Material-X and Material-Y cost ₹8 and ₹10 per kg and labours are paid ₹30 per hour. Overtime premium is 75% and is payable, if a worker works for more than 45 hours a week. There are 400 direct workers.

The target efficiency ratio for the productive hours worked by the direct workers in actually manufacturing the products is 85%. In addition the non-productive down-time is budgeted at 15% of the productive hours worked.

There are four 6-days weeks in the budgeted period and it is anticipated that sales and production will occur evenly throughout the whole period.

It is anticipated that stock at the beginning of the period will be:

Product-A	550 units
Product-B	350 units
Material-X	1,200 kgs.
Material-Y	600 kgs.

The anticipated closing stocks for budget period are as below:

Product-A	5 days sales
Product-B	5 days sales
Material-X	10 days consumption
Material-Y	5 days consumption

Required:

CALCULATE the Material Purchase Budget and the Wages Budget for the direct workers, showing the quantities and values, for the next month.

Miscellaneous

15. (a) SUGGEST the unit of cost for following industries:
- (a) Transport
 - (b) Power
 - (c) Hotel
 - (d) Hospital
 - (e) Steel
 - (f) Coal mining
 - (g) Professional Services
 - (h) Gas
 - (i) Engineering
 - (j) Oil
- (b) DISCUSS the difference between Job costing and Batch costing.
- (c) EXPLAIN what are the essential pre-requisite for Integrated Accounting system?
- (d) DISCUSS the difference between cost control and cost reduction.

ANSWERS

1. (i) Calculation of Economic Order Quantity (E.O.Q)

Annual requirement (usage) of raw material in kg. (A) = $\frac{1,50,000 \text{ units}}{3 \text{ units per kg.}} = 50,000 \text{ kg.}$

Ordering Cost (Handling & freight cost) (O) = ₹1,470 + ₹770 = ₹2,240

Carrying cost per unit per annum (C) i.e. inventory carrying cost + working capital cost = (₹3 × 12 months) + ₹20 = ₹56 per kg.

$$\text{E.O.Q} = \sqrt{\frac{2AO}{C}} = \sqrt{\frac{2 \times 50,000 \text{ kg.} \times ₹ 2,240}{₹ 56}} = 2,000 \text{ kg.}$$

(ii) Frequency of placing orders for procurement :

Annual consumption (A) = 50,000 kg.

Quantity per order (E.O.Q) = 2,000 kg.

No. of orders per annum = $\frac{A}{\text{E.O.Q}} = \frac{50,000 \text{ kg.}}{2,000 \text{ kg.}} = 25 \text{ orders}$

$$\text{Frequency of placing orders (in days)} = \frac{360\text{days}}{25\text{orders}} = 14.4 \text{ Days}$$

(iii) Percentage of discount in the price of raw materials to be negotiated:

Particulars	On Quarterly Basis	On E.O.Q Basis
1. Annual Usage (in Kg.)	50,000 kg.	50,000 kg.
2. Size of the order	12,500 kg.	2,000 kg.
3. No. of orders (1 ÷ 2)	4	25
4. Cost of placing orders or Ordering cost	₹ 8,960	₹ 56,000
(No. of orders × Cost per order)	(4 order × ₹ 2,240)	(25 orders × ₹ 2,240)
5. Inventory carrying cost	₹3,50,000	₹56,000
(Average inventory × Carrying cost per unit)	(12,500 kg. × ½ × ₹ 56)	(2,000 kg. × ½ × ₹ 56)
6. Total Cost (4 + 5)	₹ 3,58,960	₹ 1,12,000

When order is placed on quarterly basis the ordering cost and carrying cost increased by ₹2,46,960 (₹3,58,960 - ₹1,12,000). So, discount required = ₹ 2,46,960

$$\text{Total annual purchase} = 50,000 \text{ kg.} \times ₹190 = ₹95,00,000 \text{ So, Percentage of discount to be negotiated} = \frac{₹ 2,46,960}{₹ 95,00,000} \times 100 = 2.60\%$$

2. Employee turnover rate:

It comprises of computation of Employee turnover by using following methods:

$$(i) \text{ Separate Method: } = \frac{\text{Number of employees seperated during the period}}{\text{Average number of employees during the period on roll}} \times 100$$

$$\text{OR, } = \frac{\text{Number of employees left} + \text{Number of employees discharged}}{\text{Average number of employees during the period on roll}} \times 100$$

$$= \frac{(160 + 640)}{(9,400 + 10,600) \div 2} \times 100$$

$$= \frac{800}{10,000} \times 100 = 8\%$$

$$(ii) \text{ Replacement Method } = \frac{\text{Number of employees replaced during the period}}{\text{Average number of employees during the period on roll}} \times 100$$

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$$= \frac{400}{10,000} \times 100 = 4\%$$

$$\begin{aligned} \text{(iii) New Recruitment} &= \frac{\text{Number of employees joining in a period (excluding replacement)}}{\text{Average number of employees during the period on roll}} \times 100 \\ &= \frac{\text{Number of Recruitments} - \text{Number of Replacements}}{\text{Average number of employees during the period on roll}} \times 100 \\ &= \frac{1500 - 400}{10,000} \times 100 \\ &= \frac{1,100}{10,000} \times 100 = 11\% \end{aligned}$$

$$\begin{aligned} \text{Flux Method} &= \frac{\text{Number of separation} + \text{Number of replacement} + \text{Number of new joining}}{\text{Average number of employees during the period on roll}} \times 100 \\ &= \frac{(800 + 400 + 1,100)}{(9,400 + 10,600) \div 2} \times 100 \\ &= \frac{2,300}{10,000} \times 100 = 23\% \end{aligned}$$

3. (i) Overhead Distribution Summary

	Basis	Total (₹)	A (₹)	B (₹)	C (₹)	X (₹)	Y (₹)
Direct materials	Direct	–	–	–	–	3,20,000	1,60,000
Direct wages	Direct	–	–	–	–	1,60,000	3,20,000
Factory rent (2:1:2:1:2)	Area	6,40,000	1,60,000	80,000	1,60,000	80,000	1,60,000
Power (10:16:16:3:5)*	H.P. × Machine Hrs.	4,00,000	80,000	1,28,000	1,28,000	24,000	40,000
Depreciation (2:4:2:1:1)	Capital value of assets	1,60,000	32,000	64,000	32,000	16,000	16,000
Other overheads (1:2:4:1:1)	Machine hrs.	14,40,000	1,60,000	3,20,000	6,40,000	1,60,000	1,60,000
Total		26,40,000	4,32,000	5,92,000	9,60,000	7,60,000	8,56,000

$$\text{*}\{(1600 \times 80) : (3200 \times 64) : (6400 \times 32) : (1600 \times 24) : (1600 \times 40)\}$$

$$(1,28,000 : 2,04,800 : 2,04,800 : 38,400 : 64,000)$$

$$(10:16:16:3:5)$$

(ii) **Redistribution of service department's expense using repeated distribution Method:**

	A (₹)	B (₹)	C (₹)	X (₹)	Y (₹)
Total overheads	4,32,000	5,92,000	9,60,000	7,60,000	8,56,000
Dept. X overhead apportioned in the ratio (72:24:48:—:16)	3,42,000	1,14,000	2,28,000	-7,60,000	76,000
Dept. Y overhead apportioned in the ratio (96:56:—:8:—)	5,59,200	3,26,200	-	46,600	-9,32,000
Dept. X overhead apportioned in the ratio (72:24:48:—:16)	20,970	6,990	13,980	-46,600	4,660
Dept. Y overhead apportioned in the ratio (96:56:—:8:—)	2,796	1,631	-	233	-4,660
Dept. X overhead apportioned in the ratio (72:24:48:—:16)	105	35	70	-233	23
Dept. Y overhead apportioned in the ratio (96:56:—:8:—)	15	8	-	-	-23
	13,57,086	10,40,864	12,02,050	-	-

Calculation of machine hour rate

		A	B	C
A	Total overheads (₹)	13,57,086	10,40,864	12,02,050
B	Machine hours	1,600	3,200	6,400
C	Machine hour rate (₹) [A ÷ B]	848.18	325.27	187.82

4. 1. The Total Production Overhead are 78,00,000

Items	Labour Hour	Overheads allocation on the basis of direct Labour Hour (₹)
Labour Hour Ratio	(4.5:6:7.5)	
Hand Wash	1,35,000	9,00,000
Detergent Powder	3,60,000	24,00,000

Dishwasher	6,75,000	45,00,000
Total	11,70,000	78,00,000

2. On the basis of ABC analysis this amount will be apportioned as follows:

Statement Showing "Activity Based Production Cost"

Activity Cost Pool	Cost Driver	Ratio	Total Amount (₹)	Hand Wash (₹)	Detergent Powder (₹)	Dishwasher (₹)
Goods Receiving	Dispatch order	06:09:10	8,88,000	2,13,120	3,19,680	3,55,200
Inspecting and Testing costs	Production Runs	05:07:08	26,82,000	6,70,500	9,38,700	10,72,800
Dispatching	Dispatch Order	06:09:10	6,30,000	1,51,200	2,26,800	2,52,000
Storage Cost	Batches of material	12:13:15	36,00,000	10,80,000	11,70,000	13,50,000
Total Activity Cost				21,14,820	26,55,180	30,30,000
Quantity Produces				30,000	60,000	90,000
Unit Cost (Overheads)				70.49	44.25	33.67
Add: Conversion Cost (Material + Labour)				195	180	195
Total				265.49	224.25	228.67

Note: This question can also be solved by using cost driver rate

5. Calculation of Cost of Production of Motilal Ltd for the period.....

Particulars	(₹)
Raw materials purchased	64,00,000
Add: Opening stock	2,88,000
Less: Closing stock	(4,46,000)
Material consumed	62,42,000
Wages paid	23,20,000
Prime cost	85,62,000
Repair and maintenance cost of plant & machinery	9,80,500
Insurance premium paid for inventories	26,000
Insurance premium paid for plant & machinery	96,000
Quality control cost	86,000

Research & development cost	92,600
Administrative overheads related with factory and production	9,00,000
	1,07,43,100
Add: Opening value of W-I-P	4,06,000
Less: Closing value of W-I-P	(6,02,100)
	1,05,47,000
Less: Amount realised by selling scrap	(9,200)
Add: Primary packing cost	10,200
Cost of Production	1,05,48,000

Notes:

- (i) Other administrative overhead does not form part of cost of production.
- (ii) Salary paid to Director (Technical) is an administrative cost.

6. Statement of Reconciliation

SI. No.	Particulars	(₹)	(₹)
	Net loss as per Cost Accounts		(88,500)
	Additions		
1	Factory O/H over recovered	3,37,500	
2	Dividend Received	50,000	
3	Bank Interest received	34,000	
4	Difference in Value of Opening Stock (4,12,500 – 3,62,500)	50,000	
5	Difference in Value of Closing Stock (3,30,000 – 3,13,7500)	16,250	
6	Notional Rent of own Premises	1,50,000	6,37,750
	Deductions		
1	Administration O/H under recovered	63,750	
2	Depreciation under charged	65,000	
3	Loss due to obsolescence	42,000	
4	Income tax Provided	1,09,000	
5	Goodwill written-off	62,500	
6	Provision for doubtful debts	37,500	(3,79,750)
	Net Profit as per Financial A/c.		1,69,500

7.

Particulars	Jan. (₹)	Feb. (₹)	March (₹)	April (₹)	May (₹)	June (₹)	Total (₹)
Batch output (in pieces)	210	200	220	180	200	220	1,230
Sale value @ ₹80	16,80	16,00	17,60	14,40	16,00	17,60	98,40
Material cost	6,500	6,400	6,800	6,300	7,000	7,200	40,20
Direct wages	1,200	1,400	1,500	1,400	1,500	1,600	8,600
Chargeable expenses*	6,000	6,720	6,720	6,210	7,800	8,000	41,45
Total cost	13,70	14,52	15,02	13,91	16,30	16,80	90,25
Profit per batch	3,100	1,480	2,580	490	(300)	800	8,150
Total cost per piece	65.2	72.6	68.3	77.3	81.5	76.4	73.4
Profit per piece	14.8	7.4	11.7	2.7	(1.5)	3.6	6.6

Overall position of the order for 1,200 pieces

Sales value of 1,200 pieces @ ₹ 80 per piece	₹ 96,000
Total cost of 1,200 pieces @ ₹ 73.4 per piece	<u>₹ 88,080</u>
Profit	<u>₹ 7,920</u>

* $\frac{\text{Chargeable expenses}}{\text{Direct labour hour for the month}} \times \text{Direct labour hours for batch}$

8. **School Contract Account**

Particulars	(₹)	Particulars	(₹)
To Plant	2,40,000	By Material returned	47,000
To Hire of plant	77,000	By Plant c/d	1,65,000
To Materials	6,62,000	By Materials c/d	50,000
To Direct wages 9,60,000		By WIP c/d:	
Add: Accrued <u>40,000</u>	10,00,000	Value of work certified	24,00,000
To Wages related costs	1,32,000	Cost of work not certified	1,80,000
To Direct expenses	34,000		
To Supervisory staff:			
Direct 90,000			

Indirect	<u>20,000</u>	1,10,000	
To Regional office expenses		50,000	
To Head office expenses		30,000	
To Surveyors' fees		27,000	
To Notional profit c/d		4,80,000	
		28,42,000	28,42,000

9. (i) **Statement of Equivalent Production**

Particulars	Input Units	Particulars	Output Units	Equivalent Production			
				Milk		Labour & O.H.	
				%	Units	%	Units
Opening WIP	13,500	Completed and transferred to Process-II	1,18,500	100	1,18,500	100	1,18,500
Units introduced	3,00,000	Normal Loss (55%* of 3,00,000)	1,65,000	--	--	--	--
		Abnormal loss	3,000	100	3,000	80	2400
		Closing WIP	27,000	100	27,000	80	21,600
	3,13,500		3,13,500		1,48,500		1,42,500

* 100 litre of milk extracts only 45 litre of standardized milk. Thus, normal loss = $100 - 45 = 55\%$

(ii) **Statement showing cost for each element**

Particulars	Milk (₹)	Labour (₹)	Overhead (₹)	Total (₹)
Cost of opening work-in-process	1,50,000	45,000	1,35,000	3,30,000
Cost incurred during the month	15,00,000	6,00,000	18,00,000	39,00,000
Total cost: (A)	16,50,000	6,45,000	19,35,000	42,30,000
Equivalent units: (B)	1,48,500	1,42,500	1,42,500	
Cost per equivalent unit: (C) = (A ÷ B)	11.111	4.526	13.578	29.216

(iii) **Statement of Distribution of cost**

	(₹)	(₹)
1. Value of units completed and transferred (1,18,500 units × ₹ 29.216)		34,62,096

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2. Value of Abnormal Loss: -		
Milk (3,000 units × ₹ 11.111)	33,333	
Labour (2400 units × ₹ 4.526)	10,863	
Overheads (2400 units × ₹ 13.579)	32,590	76,786
3. Value of Closing W-I-P:		
Milk (27,000 units × ₹ 11.111)	299997	
Labour (21,600 units × ₹ 4.526)	97,762	
Overheads (21,600 units × ₹ 13.579)	2,93,306	6,91,065

(iv) Process-I A/c

Particulars	Units	Amount (₹)	Particulars	Units	Amount (₹)
To Opening W.I.P:			By Normal Loss	1,65,000	--
Milk	13,500	1,50,000	By Abnormal Loss (₹.44 difference due to approximation)	3,000	76,839
Labour	--	45,000	By Process-II A/c	1,18,500	34,62,096
Overheads	--	1,35,000	By Closing WIP	27,000	6,91,065
To Milk introduced	3,00,000	15,00,000			
To Direct Labour		6,00,000			
To Overheads		18,00,000			
	3,13,500	42,30,000		3,13,500	42,30,000

10. Working Note:

Apportionment of joint costs on the basis of Net Realisable Value method

Products	Sales Value (₹)	Post separation Cost (₹)	Net Realisable Value (₹)	Apportioned Cost (₹)
A	3,12,50,000 (5,00,000 units x ₹ 62.50)	31,25,000	2,81,25,000	67,74,563
B	31,87,500 (75,000 units x ₹ 42.5)	3,75,000	28,12,500	6,77,456
C	18,75,000 (62,500 units x ₹ 30)	1,25,000	17,50,000	4,21,528
D	12,50,000 (50,000 units x ₹ 25)	---	12,50,000	3,01,092

E	93,75,000 (1,87,500 units x ₹ 50)	3,75,000	90,00,000	21,67,860
			4,29,37,500	1,03,42,500

Total joint cost = Raw material costs + Manufacturing expenses = ₹89,75,000 + ₹13,67,500 = ₹1,03,42,500

Apportioned joint cost = (Total Joint Cost/ Total Net Realisable value of each X Net Realisable value of each product)

Apportioned joint cost for Product A = (1,03,42,500 / 4,29,37,500 X 2,81,25,000) = ₹67,74,563.32

Similarly, the apportioned joint cost for products B, C, D and E are ₹6,77,456, ₹4,21,528, ₹3,01,092 and ₹21,67,860 respectively.

(a) Statement showing income forecast of the company assuming that none of its products are further processed.

	Products					Total (₹)
	A (₹)	B (₹)	C (₹)	D (₹)	E (₹)	
Sales revenue	2,12,50,000 (₹42.5 × 5,00,000)	24,37,500 (₹ 32.5 × 75,000)	12,50,000 (₹ 20 × 62,500)	12,50,000 (₹ 25 × 50,000)	65,62,500 (₹ 35 × 1,87,500)	3,27,50,000
Less: Apportioned Costs (Refer Working note)	67,74,563	6,77,456	4,21,528	3,01,092	21,67,860	1,03,42,500
	1,44,75,437	17,60,044	8,28,472	9,48,908	43,94,640	2,24,07,500
Less: Fixed Cost						11,82,500
Profit						2,12,25,000

(b) Statement showing income forecast of the company: assuming that products A, B, C and E are further processed (Refer to working note)

	Products					Total (₹)
	A (₹)	B (₹)	C (₹)	D (₹)	E (₹)	
A. Sales revenue	3,12,50,000	31,87,500	18,75,000	12,50,000	93,75,000	4,69,37,500
B. Apportioned Costs	67,74,563	6,77,456	4,21,528	3,01,092	21,67,860	1,03,42,500
C. Further processing cost	31,25,000	3,75,000	1,25,000	-	3,75,000	40,00,000

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D. Total processing cost (B+ C)	98,99,563	10,52,456	5,46,528	3,01,092	25,42,860	1,43,42,500
E. Excess of sales revenue (A-D)	2,13,50,437	21,35,044	13,28,472	9,48,908	68,32,140	3,25,95,000
F. Fixed Cost						11,82,500
G. Profit (E - F)						3,14,12,500

11. Total units generated 16,50,000 kWh.

Cost Statement of Panipat Thermal Power Station

	Per annum (₹)	Per kWh. (₹)
Fixed costs:		
Plant supervision	4,35,000	
Administration overheads	29,00,000	
Insurance Charges	15,00,000	
Depreciation (5% of ₹ 3,10,00,000 p.a.)	15,50,000	
Total fixed cost: (A)	63,85,000	3.87
Variable costs:		
Operating labour	21,75,000	
Fuel Charges	8,00,000	
Lubricants, spares and stores	5,80,000	
Repairs & maintenance	7,25,000	
Coal cost (Refer to working note)	11,19,643	
Total variable cost: (B)	53,99,643	3.27
Total cost [(A) + (B)]	1,17,84,643	7.14

Working Note:

Coal cost (16,50,000 kWh. ÷ 7 kWh) × ₹4.75 per kg. = ₹11,19,643

12. Material Variance

Raw Material	SQ (kg.)	SP	SQ × SP	RSQ (WN-2) (kg.)	RSQ × SP	AQ	AQ × SP	AP	AQ × AP
	(WN-1)	(₹)	(₹)	(kg.)	(₹)		(₹)	(₹)	(₹)
DF	1879	50	93,950	1771	88,550	1800	90,000	40	72,000
CE	1410	35	49,350	1329	46,515	1300	45,500	30	39,000
	3289		1,43,300	3,100	1,35,065	3100	1,35,500		1,11,000

WN-1: Standard Quantity (SQ):

$$1879.365 \text{ or } 1879 \text{ kg.} = \left(\frac{1,600 \text{ kg.}}{0.9 \times 2,800 \text{ kg.}} \times 2,960 \text{ kg.} \right)$$

$$\text{Raw Material DF} = \left(\frac{1,200 \text{ kg.}}{0.9 \times 2,800 \text{ kg.}} \times 2,960 \text{ kg.} \right)$$

$$\text{Raw Material CE} = 1409.52 \text{ or } 1410 \text{ kg.} \quad \left(\frac{1,200 \text{ kg.}}{2,800 \text{ kg.}} \times 3,100 \text{ kg.} \right)$$

WN- 2: Revised Standard Quantity (RSQ):

$$\text{Raw Material DF} = 1,771.43 \text{ or } 1,771 \text{ kg.} \quad \left(\frac{1,200 \text{ kg.}}{2,800 \text{ kg.}} \times 3,100 \text{ kg.} \right)$$

$$\text{Raw Material CE} = 1,328.57 \text{ or } 1,329 \text{ kg.}$$

- (a) Material Cost Variance (A + B) = {(SQ × SP) – (AQ × AP)}
 $\{1,43,300 - 1,11,000\} = 32,300(\text{F}) (\text{F})$
- (b) Material Price Variance (A + B) = {(AQ × SP) – (AQ × AP)}
 $\{1,35,500 - 1,11,000\} = 24,500(\text{F})$
- (c) Material Mix Variance (A + B) = {(RSQ × SP) – (AQ × SP)}
 $\{1,35,065 - 1,35,500\} = 435 (\text{A})$
- (d) Material Yield Variance (A + B) = {(SQ × SP) – (RSQ × SP)}
 $\{1,43,300 - 1,35,065\} = 8,235 (\text{F})$

Labour Variances:

Labour	SH	SR	SH × SR	RSH	RSH × SR	AH	AH × SR	AR	AH × AR
	(WN-3)	(₹)	(₹)	(WN-4)	(₹)		(₹)	(₹)	(₹)
Skilled	2232	40	89,280	2289	91,560	2,400	96,000	35	84,000
Semiskilled	1785	25	44,625	1831	45,775	1720	43,000	20	34,400
	4,017 hrs		1,33,905	4,120	1,37,335	4,120	1,39,000		1,18,400

WN- 3: Standard Hours (SH):

$$\text{Skilled labour} = 2,231.746 \text{ or } 2,232 \text{ hrs} \left(\frac{0.95 \times 2,000 \text{ hr}}{0.90 \times 2,800 \text{ kg}} \times 2,960 \text{ kg} \right)$$

$$\text{Semiskilled labour} = 1785.397 \text{ or } 1785 \text{ hrs} \left(\frac{0.95 \times 1600 \text{ hr}}{0.90 \times 2,800 \text{ kg}} \times 2,960 \text{ kg} \right)$$

WN- 4: Revised Standard Hours (RSH):

$$\text{Skilled labour} = 2,288.889 \text{ or } 2,289 \text{ hrs.} = \left(\frac{2,000 \text{ hrs}}{3,600 \text{ kg}} \times 4,120 \text{ hrs} \right)$$

$$\text{Semiskilled labour} = 1831.11 \text{ or } 1831 \text{ hrs.} = \left(\frac{1,600 \text{ hrs}}{3,600 \text{ kg}} \times 4,120 \text{ hrs} \right)$$

$$\begin{aligned} \text{(e) Labour Cost Variance (Skilled + Semiskilled)} &= \{(\text{SH} \times \text{SR}) - (\text{AH} \times \text{AR})\} \\ &= \{1,33,905 - 1,18,400\} = 15,505 \text{ (F)} \end{aligned}$$

$$\begin{aligned} \text{(f) Labour Efficiency Variance (Skilled + Semiskilled)} &= \{(\text{SH} \times \text{SR}) - (\text{AH} \times \text{SR})\} \\ &= \{1,33,905 - 1,39,000\} = 5,095 \text{ (A)} \end{aligned}$$

$$\begin{aligned} \text{(g) Labour Yield Variance (Skilled + Semiskilled)} &= \{(\text{SH} \times \text{SR}) - (\text{RSH} \times \text{SR})\} \\ &= \{1,33,905 - 1,37,335\} = 3,430 \text{ (A)} \end{aligned}$$

$$13. \text{ (a) P/V ratio: } \frac{\text{Sales per unit} - \text{Variable Cost per unit}}{\text{Selling price per unit}} \times 100$$

$$= \frac{1000 - 800}{1000} \times 100$$

$$= \frac{200}{1000} \times 100 = 20\%$$

$$\text{Annual BEP in units: } \frac{\text{Annual fixed cost}}{\text{Contribution per unit}}$$

$$= \frac{\text{₹ } 23,00,000}{\text{₹ } 200} = 11,500 \text{ units}$$

$$\text{Annual BEP in value: } \frac{\text{Annual fixed cost}}{\text{P/V ratio}}$$

$$\frac{\text{₹ } 23,00,000}{\text{₹ } 20\%} = \text{₹ } 1,15,00,000$$

(b) Revised P/V ratio and BEP :

$$\text{commission on sales per unit} = 1\% \text{ of } 1,000 = \text{₹ } 10$$

$$\text{So, P/V ratio : } \frac{1000 - (750 + 50 + 10)}{1000}$$

$$= \frac{190}{1000} \times 100 = 19\%$$

$$\text{BEP in terms of units: } \frac{\text{Annual fixed cost}}{\text{Contribution per unit}}$$

$$= \frac{23,00,000}{190} = 12,106 \text{ units}$$

$$\text{BEP in terms of value: } \frac{\text{Annual fixed cost}}{\text{P/V}}$$

$$= \frac{23,00,000}{19\%} = ₹1,21,05,263$$

(c) Break-even point under fixed salary plan:

$$\text{P/V ratio} = \frac{\text{Contribution per unit}}{\text{Selling price per unit}} = \frac{1000 - 750}{1000} \times 100 = \frac{250}{1000} \times 100 = 25\%$$

Revised fixed cost :

Original fixed cost	₹ 23,00,000
Proposed fixed salary	<u>₹ 9,00,000</u>
Total	₹ 32,00,000

$$\text{BEP in terms of units: } \frac{\text{Annual fixed cost}}{\text{Contribution per unit}} = \frac{32,00,000}{250} = 12,800 \text{ units}$$

$$\text{BEP in terms of value: } \frac{\text{Annual fixed cost}}{\text{P/v ratio}} = \frac{32,00,000}{25\%} = 1,28,00,000$$

(d) Annual break-even point under requirement (a) is 11,500 units.

Margin of safety at sales volume of 20,000 unit of bags (20,000 – 11,500) = 8500 units

Contribution on sales beyond break-even sales:

$$\text{Revised contribution per unit: } 200 - (2\% \text{ of } 1000) = 180$$

Profit = Margin of safety (in units) × Contribution per unit

$$= 8500 \times 180 = ₹ 15,30,000$$

14. Number of days in budget period = 4 weeks × 6 days = 24 days

Number of units to be produced

	Product-A (units)	Product-B (units)
Budgeted Sales	4,080	6,120
Add: Closing stock	850	1275
	$\left(\frac{4,080 \text{ units}}{24 \text{ days}} \times 5 \text{ days} \right)$	$\left(\frac{6,120 \text{ units}}{24 \text{ days}} \times 5 \text{ days} \right)$
Less: Opening stock	550	350
	4,380	7,045
(i) Material Purchase Budget		
	Material-X (Kg.)	Material-Y (Kg.)
Material required:		
Product-A	37,230	29,784
	(4,380 units × 8.5 kg.)	(4,380 units × 6.8 kg.)
Product-B	35,930	71,859
	(7,045 units × 5.1 kg.)	(7,045 units × 10.2 kg.)
	73,160	1,01,643
Add: Closing stock	30,483	21,176
	$\left(\frac{73,160 \text{ kgs.}}{24 \text{ days}} \times 10 \text{ days} \right)$	$\left(\frac{1,01,643 \text{ kgs.}}{24 \text{ days}} \times 5 \text{ days} \right)$
Less: Opening stock	1,200	600
Quantity to be purchased	1,02,443	1,22,219
Rate per kg. of Material	8	10
Total Cost	8,19,541	12,22,186
(ii) Wages Budget		
	Product-A (Hours)	Product-B (Hours)
Units to be produced	4,380	7,045
Standard hours allowed per unit	5.1	8.5
Total Standard Hours allowed	22,338	59,883

Productive hours required for production	$\frac{22,338 \text{ hours}}{85\%} \times 26,280$	$\frac{59,883 \text{ hours}}{85\%} \times 70,450$
Add: Non-Productive down time hours	3942 (15% of 26,280 hours)	10568 (15% of 70,450 hours)
Hours to be paid	30,222	81,018
Total Hours to be paid =	1,11,240	
Hours to be paid at normal rate (4 weeks × 45 hours × 400 workers) =	72000	
Hours to be paid at premium rate	39,240	
Total wages to be paid = (72,000 hours × ₹30 + 39,240 hours × ₹ 52.5)	= ₹ 21,60,000 + ₹ 20,60,100 = ₹ 42,20,100	

15. (a) Cost units are as follows:

Industry or Product	Cost Unit Basis
Transport	Passenger- kilometer
Power	Kilo-watt hour (kWh)
Hotel	Room
Hospitals	Patient day
Steel	Ton
Coal mining	Tonne/ton
Professional services	Chargeable hour, job, contract
Gas	Cubic feet
Engineering	Contract, job
Oil	Barrel, tonne, litre

(b) Differences between Job costing and Batch costing:

Sr. No	Job Costing	Batch Costing
1.	Method of costing used for non-standard and non-repetitive products produced as per customer	Homogeneous products produced in a continuous production flow in lots.

	specifications and against specific orders.	
2.	Cost determined for each Job.	Cost determined in aggregate for the entire Batch and then arrived at on per unit basis.
3.	Jobs are different from each other and independent of each other. Each Job is unique.	Products produced in a batch are homogeneous and lack of individuality.

(c) **Essential pre-requisites for Integrated Accounts:** The essential pre-requisites for integrated accounts include the following steps-

1. The management's decision about the extent of integration of the two sets of books. Some concerns find it useful to integrate up to the stage of prime cost or factory cost while other prefers full integration of the entire accounting records.
2. A suitable coding system must be made available so as to serve the accounting purposes of financial and cost accounts.
3. An agreed routine, with regard to the treatment of provision for accruals, prepaid expenses, other adjustment necessary for preparation of interim accounts.
4. Perfect coordination should exist between the staff responsible for the financial and cost aspects of the accounts and an efficient processing of accounting documents should be ensured.

(d)

S. No.	Cost Control	Cost Reduction
1	Cost control aims at maintaining the costs in accordance with the established standards.	Cost reduction is concerned with reducing costs. It challenges all standards and endeavours to improvise them continuously
2	Cost control seeks to attain lowest possible cost under existing conditions.	Cost reduction recognises no condition as permanent, since a change will result in lower cost.
3	In case of cost control, emphasis is on past and present	In case of cost reduction, it is on present and future.
4	Cost control is a preventive function	Cost reduction is a corrective function. It operates even when an efficient cost control system exists.
5	Cost control ends when targets are achieved.	Cost reduction has no visible end and is a continuous process.