



PAPER – 4: COST AND MANAGEMENT ACCOUNTING



QUESTIONS

Case Scenario 1

EcoTrans Logistics Pvt. Ltd. is a regional goods transport company based in the industrial hub of LogiPort, providing daily freight services to and from GreenCity, a fast-growing metropolitan area located 120 kilometers away. The company has been operating for over a decade and has built a reputation for timely deliveries, especially for fast-moving consumer goods (FMCGs), packaged food items, and light industrial components.

To meet increasing demand, EcoTrans has recently expanded its fleet and now operates 24 transport vehicles of varying capacities. The company promises reliable daily service, and each vehicle typically completes one round trip per day, carrying cargo in both directions. EcoTrans emphasizes sustainability and efficiency, with systems in place for fuel monitoring, vehicle maintenance, and cost control.

However, to remain competitive and ensure profitability in a cost-sensitive industry, management has decided to undertake a detailed cost analysis for the month of April 2025. This analysis will guide pricing strategy and assess whether current operations are yielding the desired profit margin of 20% on freight revenue.

The following data has been compiled by the Finance and Operations departments for cost analysis and pricing decision-making.

Fleet Composition:

No. of Vehicles	Capacity per Vehicle (MT)
6	10 MT
8	14 MT
6	18 MT
4	22 MT

Each vehicle operates one round trip per day on average. Vehicles are loaded to 85% capacity on the forward journey and 65% on the return. On average, 12% of the fleet is under maintenance at any time.

The company operated for 26 days in April 2025.

Monthly Expenditure (April 2025)

Description	Amount (₹)
Salary of Transport Manager	75,000
Salary of 32 Drivers @ ₹22,000 each	7,04,000
Wages of 28 Helpers @ ₹13,000 each	3,64,000
Loading & Unloading Charges per Trip	950
Consumable Stores (Fuel Additives, Tools)	1,50,000
Toll Charges	250 per Trip
Insurance (Annual Premium)	9,60,000
Road Licence Fee (Annual)	5,40,000
Diesel Cost per Litre	82
Mileage per Vehicle	4.5 km/litre
Lubricants & Oils	1,30,000
Tyres, Tubes, Spare Parts (Running basis)	4,80,000
GPS & Fleet Tracking Subscription (Monthly Basis)	2,000 per vehicle
Driver Safety & Training Programmes	80,000
Garage Rent (Annual)	10,80,000
Workshop Repairs (Routine & Emergency)	3,40,000

Electricity & Utility Expenses	62,000
Depreciation on Vehicles (Monthly)	6,80,000

The company operates an in-house workshop that handles routine and emergency repairs for both its own fleet and external vehicles. As part of the internal cost allocation, 45% of the Transport Manager's salary is charged to the workshop to reflect time and resources dedicated to overseeing maintenance operations. In return, the transport department has been apportioned ₹95,000 by the workshop for repair and service support during the month.

Being a finance manager of the company, you are required to answer the followings (5 MCQs):

- (i) What is the total fixed cost for April 2025?
 - (A) ₹21,95,000
 - (B) ₹20,89,750
 - (C) ₹22,89,250
 - (D) ₹19,98,250
- (ii) Calculate the total variable cost for April 2025
 - (A) ₹44,71,885
 - (B) ₹31,50,000
 - (C) ₹29,65,920
 - (D) ₹48,45,000
- (iii) What should be the freight rate per ton-km to achieve a 20% profit margin?
 - (A) ₹4.461
 - (B) ₹5.576
 - (C) ₹4.372
 - (D) ₹3.845
- (iv) Calculate the total wages paid to loading and unloading labour in April 2025.
 - (A) ₹10,43,520

- (B) ₹10,42,560
 (C) ₹9,85,000
 (D) ₹10,37,400
- (v) What is the total ton-kilometers (ton-km) generated by EcoTrans Logistics in April 2025?
- (A) 1,31,789 ton-km
 (B) 5,49,120 ton-km
 (C) 15,15,571 ton-km
 (D) 26,00,000 ton-km

Case Scenario 2

In order to provide employment opportunities in rural areas of Madhya Pradesh, State government decided to give interest free loan up to ₹ 30,00,00,000 to Khadi cloth industrialists. In return these industrialists are expected to set up the factory and produce khadi cloth in such rural areas.

The loan is refundable after 20 years in lump sum. Madhya Pradesh government kept a stipulation that 40% of cloth production shall be supplied to government at a nominal rate of ₹ 10 per metre. This supply shall be used by the government for making uniforms of class IV employees of state government.

Haryana cloth mill of Hissar took loan of ₹ 30 crores and commenced business in Dindori, a rural district of Madhya Pradesh. Production commenced at Dindori and following are the details:

Production during the year 2023-24	40,00,000 metres of Khadi cloth
Raw cotton used	₹ 1,20,00,000
Direct wages	₹ 1,80,00,000
Freight inwards	₹ 8,00,000
Factory overheads estimated at 30% of prime cost	
Office and administration overheads estimated at 20% of factory cost	

Donations	₹ 2,00,000
Fines & Penalties	₹ 5,00,000
Selling and distribution overhead estimated at	₹ 1,69,52,000

The selling price to be charged from general public is to be fixed in such a way as to earn a profit of 30% on total cost of sales and price should be in multiple of Re.1.

Actual overheads incurred are as under:-

- (1) Factory overheads = ₹ 89,50,000
- (2) Office and administration overheads = ₹ 90,50,000
- (3) Selling and distribution overheads = ₹ 1,70,00,000

The company has been requested to submit a cost audit report to the government detailing the production activities in its factory. As part of this process, the government has provided a draft format containing several key questions that must be addressed within the report. These questions are designed to ensure the accuracy and transparency of the company's production costs, and they play a critical role in shaping the audit report. Before proceeding with the preparation of the final cost audit report, it is essential that the company carefully reviews and works out the answers to these questions.

- (i) Determine cost of sales per metre of cloth produced?
 - (A) ₹ 13.25
 - (B) ₹ 16.25
 - (C) ₹ 18.25
 - (D) ₹ 15.25
- (ii) Determine the loss element per metre in government supply?
 - (A) ₹ 7.25
 - (B) ₹ 5.75
 - (C) ₹ 4.50
 - (D) ₹ 6.25

- (iii) What will be the selling price per metre charged from general public?
- (A) ₹ 29
(B) ₹ 27
(C) ₹ 31
(D) ₹ 33
- (iv) What will be the rate of return on overall sales proceeds as per financial accounts?
- (A) 22.313%
(B) 18.781%
(C) 24.387%
(D) 20.564%
- (v) What will be the net profit in financial accounts from the factory, if government fixed the price of the cloth to be sold to general public at ₹ 28?
- (A) ₹ 1,67,20,000
(B) ₹ 1,66,00,000
(C) ₹ 1,66,20,000
(D) ₹ 1,67,00,000
3. A manufacturing company has set the standard cost for producing one unit of its product as follows:
- Direct Material: 10 kg @ ₹ 5/kg
 - Direct Labour: 4 hours @ ₹ 20/hour
 - Variable Overhead: 4 hours @ ₹ 5/hour
 - Fixed Overhead: ₹ 10 per unit (based on normal output of 5,000 units)
- During a particular month, the company produced 4,800 units. The actual results were:
- Direct Material Used: 49,000 kg costing ₹ 2,45,000

- Direct Labour: 19,200 hours costing ₹ 3,84,000
- Variable Overhead Incurred: ₹ 95,000
- Fixed Overhead Incurred: ₹ 52,000

Based on this information, which of the following statements is most accurate?

- (A) The material usage variance is ₹ 5,000 (Favourable)
- (B) The labour rate variance is ₹ 19,200 (Adverse)
- (C) The labour rate variance is ₹ 19,200 (Favourable)
- (D) The fixed overhead volume variance is ₹ 2,000 (Adverse)
4. A manufacturing firm has produced 10000 units of a standard product by incurring the following expenses:

Material costs	:	₹ 80,000
Labour costs	:	₹ 40,000
Production overhead	:	₹ 30,000
Office overhead	:	20% of factory cost

Estimated selling and distribution overhead is ₹ 4 per unit. If the firm has no inventory at the beginning of the period and expects to maintain 20% of output as closing inventory, at what price per unit the product should be sold to earn a profit of 20% on sales?

- (A) ₹ 27.50
- (B) ₹ 23.00
- (C) ₹ 26.40
- (D) ₹ 28.75
5. Product AB has a standard cost of ₹ 32, ₹ 6 of which relates to direct materials. Budgeted production for the month was 1600 units. During the month, 1500 units of AB were produced and materials worth ₹ 9,000 were purchased. There was no opening stock of materials but closing stock, which was valued at standard cost, amounted to ₹ 1,500. What is the total variance for materials?
- (A) ₹ 500 (F)

- (B) ₹ 500 (A)
- (C) ₹ 1500 (F)
- (D) ₹ 1500 (A)
6. Rinki Ltd. has two divisions, A and B. Target profit of A is ₹ 100 lakh. A has capacity to produce 20,000 units of product P but only 15,000 units are produced and sold in the market at ₹ 3,000 per unit. B received an order for which P would be required as input. B approaches A for purchase of 5000 units of P. What price should A charge from B per unit of P so as to meet its target profit? (Other details of A are: Fixed cost is ₹ 90 lakh; Variable cost per unit of P is ₹ 2,000)
- (A) ₹ 3,000
- (B) ₹ 2,800
- (C) ₹ 2,500
- (D) ₹ 2,000
7. A company plans to produce 44,000 units during the budget period. The company requires 4 units of raw material to produce 1 unit of finished goods. The company currently has 1,00,000 units of raw material on hand and wishes to have an inventory of 1,10,000 units of raw material on hand at the end of the budget period. The number of raw material units to be purchased during the budget period is
- (A) 1,76,000 units
- (B) 1,67,000 units
- (C) 1,86,000 units
- (D) 1,68,000 units

Material Cost

8. XYZ Enterprises manufactures different types of beverages. The monthly demand pattern for these beverages is as follows:
- Orange Juice: 60,000 litres
 - Apple Juice: 20,000 litres
 - Grape Juice: 5,000 litres

To produce one litre of Apple Juice, Orange Juice, and Grape Juice, 6 kg of apples, 3 kg of oranges, and 5 kg of grapes are required, respectively. There is no opening or closing stock of raw materials.

XYZ Enterprises can source the raw materials either from local farmers (import in case of grapes) or from wholesale suppliers. The company has the flexibility to purchase any quantity of materials from the wholesale suppliers, but when buying from the farmers or in case of import, it must adhere to a minimum quantity that is specified for each type of material. Below is a summary of the purchasing conditions:

Material	Wholesale Supplier	Farmers
Oranges	Minimum purchase: Any quantity	7,20,000 kg
	Price per kg: ₹ 18.00	Price per kg: ₹ 15.00
	Transportation: ₹ 5,000	Transportation: ₹ 20,000
	-	Sorting and piling cost: ₹ 1,500
	Loading cost: ₹ 10/50 kg	Loading cost: ₹ 5/50 kg
	Unloading cost: ₹ 2/50 kg	Unloading cost: ₹ 2/50 kg
Apples	Minimum purchase: Any quantity	3,60,000 kg
	Price per kg: ₹ 12.00	Price per kg: ₹ 10.00
	Transportation: ₹ 11,000	Transportation: ₹ 15,000
	-	Sorting and piling cost: ₹ 1,200
	Loading cost: ₹ 10/50 kg	Loading cost: ₹ 3/50 kg
	Unloading cost: ₹ 2/50 kg	Unloading cost: ₹ 2/50 kg
	Wholesale Supplier	Import
Grapes	Minimum purchase: Any quantity	1,50,000 kg
	Price per kg: ₹ 32.00	Price per kg: ₹ 25.00
	Transportation: ₹ 3,000	Transportation: ₹ 15,000
	Loading cost: ₹ 10/50 kg	Loading cost: ₹ 25/50 kg
	Unloading cost: ₹ 2/50 kg	Unloading cost: ₹ 2/50 kg

Transportation and Sorting and piling cost is given for per purchase order.

8% import duty is applicable is purchase of grapes for which ITC is not available.

XYZ Enterprises is also paying an annual interest rate of 15% on cash credit facility and ₹1,000 per 1,000 kg of rent to its warehouse.

You are required to:

1. Calculate the total purchase cost for each material (Apple, Orange, and Grape) under the following two options:
 - (a) Purchase from Wholesale Supplier
 - (b) Purchase from Farmers/Import
2. Calculate the Economic Order Quantity (EOQ) for each material under both options.
3. Provide a Recommendation on the best purchase option for the "Grapes" material if minimum purchase quantity for import is 1,50,000 kg.

Employee Cost

9. Tommy HL Ltd. pays the following to a skilled worker engaged in production works. The following are the employee benefits paid to the employee:

(a)	Basic salary per day	₹1,000
(b)	Dearness allowance (DA)	20% of basic salary
(c)	House rent allowance	16% of basic salary
(d)	Transport allowance	₹50 per day of actual work
(e)	Overtime	Twice the hourly rate (considers basic and DA), only if works more than 9 hours a day otherwise no overtime allowance. If works for more than 9 hours a day then overtime is considered after 8 th hours.

(f)	Work of holiday and Sunday	Double of per day basic rate provided works atleast 4 hours. The holiday and Sunday basic is eligible for all allowances and statutory deductions.
(h)	Earned leave & Casual leave	These are paid leave.
(h)	Employer's contribution to Provident fund	12% of basic and DA
(i)	Employer's contribution to Pension fund	7% of basic and DA

The company normally works 8-hour a day and 26-day in a month. The company provides 30 minutes lunch break in between.

During the month of August 2025, Mr. Shyam works for 23 days including 15th August and a Sunday and applied for 3 days of casual leave. On 15th August and Sunday he worked for 5 and 6 hours respectively without lunch break.

On 5th and 13th August he worked for 10 and 9 hours respectively.

During the month Mr. Shyam worked for 100 hours on Job no. AB100.

You are required to CALCULATE:

- (i) Earnings per day
- (ii) Effective wages rate per hour of Mr. Shyam.
- (iii) Wages to be charged to Job no. AB100.

Overheads: Absorption Costing method

10. BrightTech Appliances Ltd. is a leading manufacturer of smart home devices such as the SmartCool AC, PowerLite Inverter, and EcoDry Dryer. Amid increasing operational complexity, the company's finance controller has initiated a review of overhead allocations to gain better control over departmental efficiency and product profitability.

The company operates through four major departments:

1. **Production** – handles manufacturing across three plants using advanced machinery including stores management.

2. **Administration** – supports HR, finance, legal, and compliance.
3. **Sales & Distribution** – manages retail tie-ups, e-commerce, and logistics.
4. **General Management** – oversees strategy, innovation, and executive-level operations.

The extract from the budget for the next financial year is as follows:

Particulars	Amount (₹)	Notes
Raw Material Cost	5,75,00,000	Consumed in a ratio of 3:4:3 for the three products
Indirect Material Cost	12,50,000	Manufacturing ₹7,20,000, Stores ₹25,000, General admin ₹3,80,000, Personnel ₹95,000, Sales ₹30,000
Salary & Wages	4,20,00,000	Includes direct wages of ₹1,60,00,000 (temporary contract workers)
Rent & Property Tax	₹1,20,000	₹90,000 Warehouse Rent, ₹30,000 Property Tax
Depreciation on Non-Current Assets	₹25,00,000	Factory/office building ₹10,50,000, ACs ₹2,00,000, Machinery ₹12,50,000
Power & Fuel	₹4,90,000	₹4,70,000 for manufacturing, ₹20,000 for delivery vans
Machinery Insurance Premium	₹5,00,000	At 4% of WDV of machinery
Group Employee Insurance	₹3,10,000	Based on gross salary (excluding direct workers and top management)
Printing & Stationery	₹8,20,000	Manufacturing ₹21,000, Finance ₹5,50,000, Legal ₹28,000, Sales ₹2,21,000
Audit Fees	₹1,40,000	Statutory and internal audit

Electricity Expense	₹4,00,000	Metered use: Production 5,600, Admin 10,000, Sales & Distribution 4,000, General Management 1,600 units
Telephone & Mobile	₹4,95,000	Production ₹1,25,000, Personnel ₹50,000, General Mgmt ₹30,000, Sales ₹75,000, Customer Support ₹2,15,000
Travelling Expenses	₹24,00,000	Production ₹5,50,000, General Mgmt ₹12,00,000, Sales ₹6,50,000
Meal Coupon Subsidy	₹2,25,000	₹3,000 per employee on roll
Software License Renewals	₹16,50,000	Stores Management ₹8,50,000, Finance ₹1,50,000, Stores ₹30,000, Customer Support ₹6,20,000
Misc. Expenditures	₹9,50,000	Allocated based on direct expenses

Additional Information:

- **Employee Count:** Production 22, Admin 20, Sales & Distribution 28
- **Average Gross Salary:** Production ₹6,30,000, Admin ₹4,20,000, Sales & Distribution ₹3,50,000, General Mgmt ₹2,80,000
- **Floor Area:** Production 9,900 m², Admin 3,600 m², Sales & Distribution 2,700 m², General Mgmt 1,800 m²
- **AC Tonnage:** Production 6,000 RT, Admin 3,000 RT, S&D 3,000 RT, General Mgmt 1,500 RT
- **Depreciation Rates:** Building 5%, AC 15%, Machinery 10%
- **Department Roles:**
 - General Mgmt: 70% Sales strategy, 20% Production/Marketing, 10% Admin
 - Admin: 50% Production, 50% Sales.

Required:

- (i) Prepare a schedule of Cost Allocation for Production Dept., Administration Dept., Sales & Distribution Dept. and General Management.
- (ii) Prepare a schedule of Cost Apportionment (Primary Distribution) for Production Dept., Administration Dept., Sales & Distribution Dept. and General Management.
- (iii) Prepare a schedule of Secondary distribution of Administration Dept. and General Management costs.

Activity Based Costing

11. Edward Ltd. manufactures weighing machines of standard size and sells its products to two industrial customers namely MT Ltd. and KG Ltd. and to a dealer MG Bros. having shops in different cities. The maximum retail price per unit of weighing machine is ₹ 11,000 and per unit average cost of production is ₹ 5,500 (40% is general fixed overhead cost).

The Finance Officer has been asked to undertake a customer profitability analysis and calculate and compare the profit margin per customer (before deducting general fixed overhead) to know about the real customer profitability.

Following are the additional overhead information:

Delivery costs	₹ 200 per kilometer
Emergency delivery cost (in addition to delivery cost)	₹ 21,000 per delivery
Order processing cost	₹ 6,000 per order
Specific discount and sales commission	As per negotiation
Product Advertisement cost	Actual cost

The following data are available for each customer.

	MT Ltd.	KG Ltd.	MG Bros.
Sales (in units)	2,000	1,000	800
Total delivery kilometer travelled	1,000	800	900
No. of emergency delivery	2	1	0
No. of orders processed	4	2	8
Specific Discount (percentage of sales revenue)	25%	20%	15%
Sales commission (percentage of sales revenue)	15%	10%	5%
Advertisement costs (₹)	8,75,000	6,15,000	4,30,000

You are required to analyse the profitability for each customer, which customer is the most profitable.

Cost Accounting Systems

12. XYZ Limited manufactures a standard product in a competitive market. During the year, the company experienced operational changes, including partial automation and fluctuations in input costs. Although the company continued using traditional costing methods, discrepancies were observed between financial and cost profits. Management has requested a detailed analysis to understand the variance and assess the accuracy of overhead absorption.

The following is the Trading and Profit & Loss Account of XYZ Limited:

Dr.	₹	Cr.	₹	₹
To Raw Materials	32,50,000	By Sales (40,000 units)	92,00,000	
To Direct Wages	21,75,000	By Closing Finished Goods (2,000 units)	3,90,000	
To Production Overheads	11,20,000	By Work-in-Progress:		
To Administration Overheads	6,25,000	Materials	72,000	

To Selling & Distribution Overheads	4,60,000	Wages	34,000	
To Preliminary Expenses Written Off	30,000	Production Overheads	26,500	1,32,500
To Goodwill Written Off	55,000	By Dividend Received	5,25,000	
To Fines	10,000	By Interest from Bank Deposits	1,20,000	
To Interest on Term Loan	18,000			
To Loss on Sale of Equipment	20,000			
To Tax	2,25,000			
To Net Profit for the Year	23,79,500			
Total	1,03,67,500		Total	1,03,67,500

XYZ Limited manufactures a standard product and uses traditional costing systems for internal reporting.

The Cost Accounting records of XYZ Ltd. show the following:

1. Production Overheads have been absorbed into work-in-progress at 25% on Prime Cost.
2. Administration Overheads have been charged at ₹14.75 per unit of finished goods produced.
3. Selling and Distribution Overheads have been charged at ₹11.50 per unit sold.
4. The under- or over-absorption of overheads has not been adjusted in the Costing Profit & Loss Account.

You are required to:

1. Prepare a Proforma Costing Profit and Loss Account, showing the net profit as per cost accounts.

2. Prepare control accounts for:
 - Production Overheads
 - Administration Overheads
 - Selling & Distribution Overheads
3. Reconcile the profit as per cost accounts with the profit shown in the financial accounts.

Job & Batch Costing

13. A manufacturing company follows a job costing system. The following data is extracted from its books for the year ended 31st March, 2025:

Particulars	Amount (₹)
Direct Materials	12,50,000
Direct Wages	9,80,000
Selling & Distribution Overheads (Variable: 60%, Fixed: 40%)	6,30,000
Administration Overheads (Fixed)	5,40,000
Factory Overheads (70% Fixed, 30% Variable)	5,75,000
Profit	8,25,000

Additional Information:

1. **Overhead Recovery:**
 - Factory overheads are absorbed as a % of Direct Wages.
 - Selling & Distribution and Administration overheads are recovered as a % of Cost of Production.
2. In 2025-26, the company received a new job order. It is estimated that direct materials required will be ₹ 3,20,000 and direct labour will cost ₹ 2,10,000

Additional Information:

- Selling & Distribution overheads have increased by 20% (with variable portion now being 65%).
- Factory overheads have decreased by 10% due to efficiency improvements.

- The company wants to maintain the same profit % on sales as in the previous year.

You are required to prepare:

- Prepare a Job Cost Sheet showing Prime Cost, Cost of Production, Cost of Sales, Sales Value
- Determine the price to be quoted for the new job in 2025-26, considering Revised overhead structure and the company's profit objective.

(Assume relevant cost rates are based on previous year's data unless specified otherwise.)

Process Costing

- Following data are available for a product for the month of April, 2025:

Particulars	Process- I (₹)	Process- II (₹)
Opening work-in- progress	Nil	Nil
Costs incurred during the month:		
- Direct materials	6,00,000	
- Labour	1,20,000	1,60,000
- Factory overheads	2,40,000	2,00,000
Units of production:		
Received in process	40,000	36,000
Completed and transferred	36,000	32,000
Closing work-in-progress	2,000	?
Normal loss in process	2,000	1,500

Production remaining in process has to be valued as follows:

Materials 100% Labour 50% Overheads 50%

There has been no abnormal loss in Process- II.

The company follows weighted average method for valuing inventory.

Prepare Process Accounts after working out the missing figures and with detailed workings.

Joint Product and By-Product

15. A company processes a raw material in its Department 1 to produce three products, viz. P, Q and C at the same split-off stage. During a period 1,80,000 kgs of raw materials were processed in Department 1 at a total cost of ₹ 12,88,000 and the resultant output of P, Q and C were 18,000 kgs, 10,000 kgs and 54,000 kgs respectively. P and Q were further processed in Department 2 at a cost of ₹1,80,000 and ₹1,50,000 respectively.

C was further processed in Department 3 at a cost of ₹1,08,000. There is no waste in further processing. The details of sales affected during the period were as under:

	P	Q	C
Quantity Sold (kgs.)	17,000	5,000	44,000
Sales Value (₹)	12,24,000	2,50,000	7,92,000

There were no opening stocks. If these products were sold at split-off stage, the selling prices of P, Q and C would have been ₹ 50, ₹ 40 and ₹ 10 per kg respectively.

Required:

- Prepare a statement showing the apportionment of joint costs to P, Q and C.
- Present a statement showing the cost per kg of each product indicating joint cost and further processing cost and total cost separately.
- Prepare a statement showing the product wise and total profit for the period.
- State with supporting calculations as to whether any or all the products should be further processed or not

Standard Costing

16. A company produces a product X, using raw materials A and B. The standard mix of A and B is 1: 1 and the standard loss is 10% of input. You are required to COMPUTE the MISSING INFORMATION indicated by "?" based on the data given below:

	A	B	Total
Standard price of raw material (₹ / kg.)	24	30	
Actual input (kg.)	?	70	
Actual output (kg.)			?
Actual price ₹ / kg.	30	?	
Standard input quantity (kg.)	?	?	
Yield variance (sub usage)	?	?	270(A)
Mix variance	?	?	?
Usage variance	?	?	?
Price variance	?	?	?
Cost variance	0	?	1,300(A)

Marginal Costing

17. Jupiter Ltd, a 'Fast-Moving Consumer Goods (FMCG)' company intends to diversify the product line to achieve full utilisation of its plant capacity. As a result of considerable research made, the company has been able to develop a new product called 'EXE'.

'EXE' is packed in *cans* of 100 ml capacity and is sold to the wholesalers in cartons of 24 *cans* at ₹120 per carton. Since the company uses its spare capacity for the manufacture of 'EXE', no additional fixed expenses will be incurred. However, accountant has allocated a share of ₹1,12,500 per month as fixed expenses to be absorbed by 'EXE' as a fair share of the company's present fixed costs to the new product for costing purposes.

The company estimates the production and sale of 'EXE' at 1,50,000 *cans* per month and on this basis the following cost estimates (per carton) have been developed:

	₹
Direct Materials	54
Direct Wages	36
All Overheads	<u>27</u>
Total Costs	117

After a detailed market survey the economy is confident that the production and sales of 'EXE' can be increased to 1,75,000 *cans* per month and ultimately to 2,25,000 *cans* per month.

The company at present has a capacity for the manufacture of 1,50,000 empty *cans* and the cost of the empty *cans* if purchased from outside will result in a saving of 20% in direct material, 10% in direct wages and 10% in variable overhead costs of 'EXE'. The price at which the outside firm is willing to supply the empty *cans* is ₹0.675 per empty *can*. If the company desires to manufacture empty *cans* in excess of 1,50,000 *cans*, a machine involving an additional fixed overhead of ₹7,500 per month will have to be installed.

Required:

- State by showing your workings whether the company should make or buy the empty *cans* at each of the three volumes of production of 'EXE' namely, 1,50,000, 1,75,000 and 2,25,000 *cans*.
- At what volume of sales will it be economical for the company to install the additional equipment for the manufacture of empty *cans*?
- Evaluate the profitability on the sale of 'EXE' at each of the aforesaid three levels of output based on your decision and showing the cost of empty *cans* as a separate element of cost.

Budget and Budgetary Control

- SIAM Ltd. manufactures two products using one type of material and one grade of labour. Shown below is an extract from the company's working papers for the next period's budget.

Particulars	Product A	Product B
Budgeted Sales (Units)	1,800	2,400

Budgeted Material Consumption per Product (Kg.)	5	3
[Budgeted Material Cost ₹12 per Kg.]		
Standard Hours Allowed per product	5	4
[Budgeted Wage Rate ₹8 per hour]		

Overtime premium is 50% and is payable, if a worker works for more than 40 hours a week. There are 45 direct workers.

The target productivity ratio (or efficiency ratio) for the productive hours worked by the direct workers in actually manufacturing the products is 80%; in addition the non-productive downtime is budgeted at 20% of the productive hours worked.

There are twelve 5-day weeks in the budget 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 510 units; Product B 1,200 units; Raw material 2,150 Kg.

The target closing stock, expressed in terms of anticipated activity during budget period are - Product A 15 days sales; Product B 20 days sales; Raw material 10 days consumption.

Required:

- the material purchases budget, and
- the wages budget for the direct workers, showing the quantities and values, for the next period.

Miscellaneous

- Standard costs, marginal costs are some of the types of cost which helps the management in decision making. DISCUSS any five types of costs categorised based on its use in Managerial Decision Making.
 - Provide EXAMPLE(S) of the cost driver for the following cost pools:

Cost Pool
Quality Control

Research and Development
Machine Maintenance
Employee Training Costs
Customer Service

- (c) Besides having advantages of Budgetary Control System being a powerful instrument used by business entity for the control of their expenditure, it has certain limitations as well. ELABORATE any four limitations of Budgetary Control System.
- (d) Cost control emphasis is on past and present, while cost reduction emphasis is on present and future. DISCUSS some more differences between Cost control and Cost reduction.



SUGGESTED ANSWERS/HINTS

1. (i) (C) ₹22,89,250
 (ii) (A) ₹44,71,885
 (iii) (B) ₹5.576
 (iv) (D) ₹10,37,400
 (v) (C) 15,15,571 ton-km

Operating Cost Sheet for the month

Particulars	Amount (₹)
A. Fixed Charges:	
Transport Manager's Salary (55% x ₹75,000)	41,250
Driver Salaries (32 x ₹22,000)	7,04,000
Helper Wages (28 x ₹13,000)	3,64,000
GPS Subscription (24 x ₹2,000)	48,000
Driver Safety & Training Programmes	80,000
Insurance (₹9,60,000 ÷ 12)	80,000

	Road Licence Fee ($\text{₹}5,40,000 \div 12$)	45,000
	Garage Rent ($\text{₹}10,80,000 \div 12$)	90,000
	Electricity & Utility Expenses	62,000
	Depreciation on Vehicles	6,80,000
	Workshop Repairs (Apportioned)	95,000
	Total Fixed Costs	22,89,250
B.	Variable Charges:	
	Loading & Unloading Charges (WN.1)	10,37,400
	Toll Charges (W.N.2)	2,73,000
	Diesel Cost (W.N.3)	24,01,485
	Lubricants & Oils	1,30,000
	Tyres, Tubes, Spare Parts	4,80,000
	Consumable Stores	1,50,000
	Total Variable Costs	44,71,885
C.	Total Cost (A + B)	67,61,135
D.	Total Ton-Kms. (W. N. 4)	15,15,571
E.	Cost per ton-km. (C $\div$ D)	4.461

Calculation of Chargeable Freight

Cost per ton-km.	₹ 4.461
Add: Profit @ 20% on freight or 25% on cost	₹ 1.115
Chargeable freight per ton-km.	₹ 5.576

Working Notes:

1. Wages paid to loading and unloading labours

Numbers of vehicles available per day x No. of days x trips x wages per trip

(24 vehicles x 88%) x 26 days x 2 trips x ₹950

$21 \times 2 \times 26 \times 950 = \text{₹}10,37,400$

2. Toll Charges

Numbers of vehicles available per day x No. of days x trips x toll charges per trip

$$21 \times 2 \times 26 \times 250 = ₹2,73,000$$

3. Cost of Diesel:

Distance covered by each vehicle during the month

$$= 120 \text{ k.m.} \times 2 \times 26 \text{ days} \times 88\% = 5,491.2 \text{ km.}$$

$$\text{Consumption of diesel} = \frac{5,491.2 \text{ k.m.} \times 24 \text{ vehicles}}{4.5 \text{ k.m.}} = 29,286.4 \text{ litres}$$

$$\text{Cost of diesel} = 29,286.4 \text{ litres} \times ₹ 82 = ₹24,01,485$$

4. Calculation of total ton-km:

Total Ton-Km. = Total Capacity x Distance covered by each vehicle x Average Capacity Utilisation ratio.

$$= \left[(6 \times 10 \text{ MT}) + (8 \times 14 \text{ MT}) + (6 \times 18 \text{ MT}) + (4 \times 22 \text{ MT}) \right] \times 5,491.2 \text{ k.m.} \times \frac{(85\% + 65\%)}{2}$$

$$= (60 + 112 + 108 + 88) \times 5,491.2 \times 75\%$$

$$= 368 \times 5,491.2 \times 75\%$$

$$= 15,15,571 \text{ ton-km.}$$

2. (i) (B) ₹ 16.25

Particulars	Amount (₹)	Amount (₹)
Raw material	1,20,00,000	
Add: Freight inwards	<u>8,00,000</u>	
Direct material:		1,28,00,000
Direct labour (wages)		<u>1,80,00,000</u>
Prime cost		3,08,00,000
Add: Factory overhead 30% of 3,08,00,000		<u>92,40,000</u>
Factory cost		4,00,40,000

Add: Office and administration overheads 20% of 4,00,40,000		<u>80,08,000</u>
Cost of production		4,80,48,000
Add: Selling and distribution overheads		<u>1,69,52,000</u>
Cost of sales		6,50,00,000
Add: Profit 30% of 6,50,00,000		<u>1,95,00,000</u>
Desirable sales		8,45,00,000

$$\text{Cost of sales per metre} = \frac{\text{₹ 6,50,00,000}}{40,00,000 \text{ metres}} = \text{₹ 16.25 per metre}$$

(ii) (D) ₹ 6.25

Loss element per metre on government supply

Cost of sales of khadi cloth per metre	₹ 16.25
Less: Supply rate to government per metre	<u>(₹ 10)</u>
Loss element per metre	<u>₹ 6.25</u>

(iii) (A) ₹ 29

Particulars	
Desirable sale as per cost sheet	₹ 8,45,00,000
Less: Amount at which supply is made to MP govt. (40,00,000 m x 40% x ₹ 10)	<u>(₹ 1,60,00,000)</u>
Amount to be recouped from general public	₹ 6,85,00,000
Units to be sold to general public	24,00,000 m
Selling price to general public <u>₹ 6,85,00,000</u> 24,00,000 m	₹ 28.5416

This will be rounded-off to Re. 1, so selling price will be ₹ 29 per metre.

(iv) (A) 22.313%

Profit & loss account

Particulars	Amount (₹)	Particulars	Amount (₹)
To direct material	1,20,00,000	By sales (₹ 29 x 24,00,000 + 10 x 16,00,000)	8,56,00,000
To direct labour	1,80,00,000		
To freight inwards	8,00,000		
To factory overheads	89,50,000		
To office and administration	90,50,000		
To selling and distribution overhead	1,70,00,000		
To Donations	2,00,000		
To fines and penalties	5,00,000		
To profit	1,91,00,000		
Total	8,56,00,000	Total	8,56,00,000

$$\text{Rate of return} = \frac{\text{Profit}}{\text{Sales}} = \frac{1,91,00,000}{8,56,00,000} = 22.313\%$$

(v) (D) ₹ 1,67,00,000

Particulars	Amount (₹)
New sales (₹ 28 x 24,00,000 + ₹ 10 x 16,00,000)	8,32,00,000
Less: Total costs as per P&L made above	(6,65,00,000)
New profit	1,67,00,000

3. (D) The fixed overhead volume variance is ₹ 2,000 (Adverse)

Material Usage Variance (MUV)

$$= (\text{Standard Quantity} - \text{Actual Quantity}) \times \text{Standard Price}$$

$$= (48,000 - 49,000) \times ₹ 5 = (-1,000) \times ₹ 5 = ₹ 5,000 \text{ (Adverse)}$$

Labour Rate Variance (LRV)

$$= (\text{Standard Rate} - \text{Actual Rate}) \times \text{Actual Hours}$$

$$= (\text{₹ } 20 - \text{₹ } 20) \times 19,200 = \text{₹ } 0$$

Fixed Overhead Volume Variance

$$= (\text{Actual Output} - \text{Budgeted Output}) \times \text{Standard FOH rate per unit}$$

$$= (4,800 - 5,000) \times \text{₹ } 10 = \text{₹ } 2,000 \text{ Adverse}$$

4. (A) ₹ 27.50

Particulars	Amount (₹)
Material Costs	80,000
Labour Costs	40,000
Production Overheads	30,000
Factory Cost	1,50,000
Add: Office Overheads (20% of Factory Cost)	30,000
Cost of Production (10,000 units)	1,80,000
Less: Closing Stock (2,000 units @ ₹ 18)	(36,000)
Cost of Goods Sold (8,000 units)	1,44,000
Add: Selling & Distribution (8,000 × ₹ 4)	32,000
Total Cost of Sales	1,76,000
Add: Profit (20% of Sales = 44,000)	44,000
Sales Revenue	2,20,000

$$\text{Selling Price per Unit} = 2,20,000 / 8,000 = \text{₹ } 27.50 \text{ per unit}$$

5. (C) ₹ 1500 (F)**Material Cost Variance**

$$= \text{Standard cost of actual output} - \text{Actual cost of materials consumed}$$

$$= (1,500 \times 6) - (9,000 - 1,500)$$

$$= 1,500 \text{ (F)}$$

6. (B) ₹ 2,800

Revenue = $15,000 \times 3,000 = 450,00,000$ (₹ 450 lakh)

Variable cost = $15,000 \times 2,000 = 300,00,000$ (₹ 300 lakh)

Contribution = $450 - 300 = ₹ 150$ lakh

Profit = Contribution - Fixed cost = $150 - 90 = ₹ 60$ lakh

Target Profit = $100 - 60 = ₹ 40$ lakh

Required contribution per unit = $40,00,000/5,000 = ₹ 800/\text{unit}$

Transfer price = Variable cost + 800 = $2,000 + 800 = ₹ 2,800/\text{unit}$

7. (C) 1,86,000 units

Raw material required for production = $44,000 \text{ units} \times 4 \text{ units/unit}$
 $= 1,76,000$

Raw material to be purchased = Closing stock + RM required –
 Opening stock

$= 1,10,000 + 1,76,000 - 1,00,000$

$= 1,86,000 \text{ units}$

8. 1. (i) Calculation of Purchase Cost per Kg. of Materials

	Wholesale Market (₹)	Farmers (₹)
Orange:		
Purchase price	18.00	15.00
Add: Loading Cost	0.20 (₹ 10 ÷ 50 Kg.)	0.10 (₹ 5 ÷ 50 Kg.)
Add: Unloading Cost	0.04 (₹ 2 ÷ 50 Kg.)	0.04 (₹ 2 ÷ 50 Kg.)
	18.24	15.14
Apple:		
Purchase price	12.00	10.00

Add: Loading Cost	0.20 (₹ 10 ÷ 50 Kg.)	0.06 (₹ 3 ÷ 50 Kg.)
Add: Unloading Cost	0.04 (₹ 2 ÷ 50 Kg.)	0.04 (₹ 2 ÷ 50 Kg.)
	12.24	20.10
Grape:		
Purchase price	32.00	25.00
Add: Import duty @ 8%	---	2.00
Add: Loading Cost	0.20 (₹ 10 ÷ 50 Kg.)	0.50 (₹ 25 ÷ 50 Kg.)
Add: Unloading Cost	0.04 (₹ 2 ÷ 50 Kg.)	0.04 (₹ 2 ÷ 50 Kg.)
	32.24	27.54

(ii) Economic Order Quantity (E.O.Q)

$$= \sqrt{\frac{2 \times \text{Annual requirement} \times \text{Ordering cost}}{\text{Carrying cost per kg. per annum}}}$$

Annual Requirement (A)

Commodity		Quantity (Kg.)
Orange	(60,000 Ltr. x 3 Kg. x 12 months)	21,60,000
Apple	(20,000 Ltr. x 6 Kg. x 12 months)	14,40,000
Grape	(5,000 Ltr. x 5 Kg. x 12 months)	3,00,000

Cost per Order (O)

	Wholesale Market (₹)	Farmers (₹)
Orange:		
- Transportation cost	5,000	20,000
- Sorting and piling cost	---	1,500
	5,000	21,500

Apple:		
- Transportation cost	11,000	15,000
- Sorting and piling cost	---	1,200
	11,000	16,200
Grape:		
- Transportation cost	3,000	15,000
- Sorting and piling cost	---	---
	3,000	15,000

Carrying Cost per Kg. per annum (C x i)

	Wholesale Market (₹)	Farmers (₹)
Orange:		
- Interest on cash credit	2.736 (₹ 18.24 x 15%)	2.271 (₹ 15.14 x 15%)
- Warehouse rent*	1.0000	1.0000
	3.736	3.271

Apple:		
- Interest on cash credit	1.836 (₹ 12.24 x 15%)	3.015 (₹ 20.10 x 15%)
- Warehouse rent	1.0000	1.0000
	2.836	4.015
Grape:		
- Interest on cash credit	4.836 (₹ 32.24 x 15%)	4.131 (₹ 27.54 x 15%)
- Warehouse rent	1.0000	1.0000
	5.836	5.131

$$* \text{ Warehouse rent per Kg.} = \frac{\text{₹ 1,000}}{1,000\text{Kg.}} = \text{₹ 1}$$

Calculation of E.O.Q for each material under the both options

	Wholesale Market (Kg.)	Farmers/Import (Kg.)
Orange	$\sqrt{\frac{2 \times 21,60,000 \text{Kg.} \times ₹ 5,000}{₹ 3.736}}$ $= 76,036.72$	$\sqrt{\frac{2 \times 21,60,000 \text{Kg.} \times ₹ 21,500}{₹ 3.271}}$ $= 1,68,508.11$
Apple	$\sqrt{\frac{2 \times 14,40,000 \text{Kg.} \times ₹ 11,000}{₹ 2.836}}$ $= 1,05,691.36$	$\sqrt{\frac{2 \times 14,40,000 \text{Kg.} \times ₹ 16,200}{₹ 4.015}}$ $= 1,07,798.07$
Grape	$\sqrt{\frac{2 \times 3,00,000 \text{Kg.} \times ₹ 3,000}{₹ 5.836}}$ $= 17,562.19$	$\sqrt{\frac{2 \times 3,00,000 \text{Kg.} \times ₹ 15,000}{₹ 5.131}}$ $= 41,881.31$

(iii) Selection of best purchase option for the purchase of Grapes

	Wholesale Market	Import
Annual Requirement (A) (Kg.)	3,00,000	3,00,000
Order Quantity (Q)	17,562.19	1,50,000
No. of orders $\left(\frac{A}{Q}\right)$	17	2
Average Inventory $\left(\frac{Q}{2}\right)$ (Kg.)	8,781	75,000
Ordering Cost (₹) (I)	51,000 (17 Orders x ₹ 3,000)	30,000 (2 Order x ₹ 15,000)
Carrying Cost (₹) (II) (Average Inventory x Carrying cost per kg.)	51,245.92 (8,781 Kg. x ₹ 5.836)	3,84,825 (75,000 Kg. x ₹ 5.131)
Purchase Cost (₹) (III)	96,72,000	82,62,000

	(3,00,000 Kg. x ₹ 32.24)	(3,00,000 Kg. x ₹ 27.54)
Total Cost (I) + (II) + (III)	97,74,245.92	86,76,825

Importing grapes is the best purchase option for the XYZ enterprises.

9. Workings

- Normal working hours in a month = (Daily working hours – lunch break) × no. of days
= (8 hours – 0.5 hours) × 26 days = 195 hours
- Hours worked by Mr. Shyam = No. of normal days worked + Overtime + holiday / Sunday worked
= (21 days × 7.5 hours) + (9.5 hours + 8.5 hours) + (5 hours + 6 hours)
= 157.5 hours + 18 hours + 11 hours = 186.50 hours.

(i) Calculation of earnings per day

Particulars	Amount (₹)
Basic salary (₹ 1,000 × 26 days)	26,000
Dearness allowance (20% of basic salary)	5,200
	31,200
House rent allowance (16% of basic salary)	4,160
Employer's contribution to Provident fund (12% × ₹ 31,200)	3,744
Employer's contribution to Pension fund (7% × ₹ 31,200)	2,184
	41,288
No. of working days in a month (days)	26

Rate per day	1,588
Transport allowance per day	50
Earnings per day	1,638

(ii) **Calculation of effective wage rate per hour of Mr. Shyam:**

Particulars	Amount (₹)
Basic salary (₹ 1,000 × 26 days)	26,000
Additional basic salary for Sunday & holiday (₹ 1,000 × 2 days)	2,000
Dearness allowance (20% of basic salary)	5,600
	33,600
House rent allowance (16% of basic salary)	4,480
Transport allowance (₹ 50 × 23 days)	1,150
Overtime allowance (₹ 160 × 2 × 2 hours)*	640
Employer's contribution to Provident fund (12% × ₹33,600)	4,032
Employer's contribution to Pension fund (7% × ₹ 33,600)	2,352
Total monthly wages	46,254
Hours worked by Mr. Shyam (hours)	186.5
Effective wage rate per hour	248

*(Daily Basic + DA) ÷ 7.5 hours

= (1,000+200) ÷ 7.5 = ₹160 per hour

(iii) **Calculation of wages to be charged to Job no. AB100**

= ₹ 248 × 100 hours = ₹ 24,800

10. (i) Schedule of Cost Allocation among the Departments

	Total	Production Dept.	Administration Dept.	Selling & Distribution Dept.	General Management
Raw Material Cost	5,75,00,000	5,75,00,000	-	-	-
Indirect Material Cost:	12,50,000	7,45,000	4,75,000	30,000	-
Salary & Wages	1,60,00,000	1,60,00,000	-	-	-
Rent & Property tax	90,000	-	-	90,000	-
Depreciation on Machinery	12,50,000	12,50,000	-	-	-
Power & fuel	4,90,000	4,70,000	-	20,000	-
Insurance premium on machinery	5,00,000	5,00,000	-	-	-
Printing & Stationery:	8,20,000	21,000	5,78,000	2,21,000	-
Audit fees	1,40,000	-	-	-	1,40,000
Telephone & Mobile expenses:	4,95,000	1,25,000	50,000	2,90,000	30,000
Travelling expenses	24,00,000	5,50,000	-	6,50,000	12,00,000
Software license renewal fees:	16,50,000	8,80,000	1,50,000	6,20,000	-
Total Allocated Direct Expenses	8,25,85,000	7,80,41,000	12,53,000	19,21,000	13,70,000

(ii) Schedule of Cost Apportionment (Primary Distribution)

	Basis	Total	Production Dept.	Administration Dept.	Selling & Distribution Dept.	General Management
Allocated Cost	Direct	8,25,85,000	7,80,41,000	12,53,000	19,21,000	13,70,000
Salary & Wages	Gross Salary (9:6:5:4)	2,60,00,000	97,50,000	65,00,000	54,16,667	43,33,333
Rent & Property tax	Floor Area (11:4:3:2)	30,000	16,500	6,000	4,500	3,000
Depreciation						
- Building	Floor Area (11:4:3:2)	10,50,000	5,77,500	2,10,000	1,57,500	1,05,000
- AC	RT (4:2:2:1)	2,00,000	88,889	44,444	44,444	22,222

Group Employee Insurance	Gross Salary (9:6:5:4)	3,10,000	1,16,250	77,500	64,583	51,667
Electricity Expenses	Units (14:25:10:4)	4,00,000	1,05,660	1,88,679	75,472	30,189
Meal Coupon Subsidy	No. of Employees (22,20,28)	2,25,000	66,000	60,000	84,000	15,000 (b.f.)
Miscellaneous Expenditure	Direct Expenses (Allocated Expenses)	9,50,000	8,97,729	14,414	22,098	15,760
Total		11,17,50,000	8,96,59,528	83,54,037	77,90,264	59,46,170

(iii) Schedule of Secondary Distribution:

	Basis	Total	Production Dept.	Administration Dept.	Selling & Distribution Dept.	General Management
Total Allocated and Apportioned costs		11,17,50,000	8,96,59,528	83,54,037	77,90,264	59,46,170
General Management	(2:1:7)	59,46,170	11,89,234	5,94,617	41,62,319	(59,46,170)
			9,08,48,762	89,48,654	1,19,52,583	
Administration dept.	(1:1)	89,48,654	44,74,327	(89,48,654)	44,74,327	
Total			9,53,23,089	-	1,64,26,910	

11. Customer Profitability Statement

Particulars	MT Ltd.	KG Ltd.	MG Bros.
Sales (units)	2,000	1,000	800
	(₹)	(₹)	(₹)
Sales Revenue (A)	2,20,00,000	1,10,00,000	88,00,000
Less: Average Variable Cost (B) (₹ 5,500 × 60% = 3,300 p.u.)	66,00,000	33,00,000	26,40,000
Contribution [70% of Sales] ... (A)-(B)	1,54,00,000	77,00,000	61,60,000
Less: Additional Overheads			
Delivery Cost	2,00,000	1,60,000	1,80,000

(No. of K.M. × ₹ 200)			
Emergency Delivery Cost (Emergency Delivery × ₹ 21,000)	42,000	21,000	-
Order Processing Cost (No. of Orders × ₹ 6,000)	24,000	12,000	48,000
Specific Discount	55,00,000	22,00,000	13,20,000
Sales Commission	33,00,000	11,00,000	4,40,000
Advertisement Cost	8,75,000	6,15,000	4,30,000
Profit <i>per customer</i> *	54,59,000	35,92,000	37,42,000
Profit Margin <i>per customer</i> * (%)	24.81%	32.65%	42.52%
Rank	III	II	I

**Before deducting general fixed overhead cost*

The contribution margin is 70% for each customer but when the other overheads costs per customer is included in the above profitability statement the profitability of the three customers become different. MG Ltd. is the most profitable customer.

12. (i) Costing Profit & Loss Statement

Particulars	Amount (₹)
Raw Materials	32,50,000
Direct Wages	21,75,000
Prime Cost	54,25,000
Add: Production Overheads (25% of Prime Cost)	13,56,250
Factory Cost	67,81,250
Less: Work-in-Progress	(1,32,500)
Manufacturing Cost Incurred During the Period	66,48,750
Add: Administration Overheads (₹14.75 x 42,000 units)	6,19,500
Cost of Production	72,68,250
Less: Closing Finished Goods (2,000 units x ₹ 173.05)	(3,46,100)
Cost of Goods Sold	69,22,150

Add: Selling & Distribution Overheads (₹11.50 x 40,000 units)	4,60,000
Cost of Sales	73,82,150
Profit (Balancing Figure)	18,17,850
Sales (40,000 units)	92,00,000

(ii) **Control Accounts**

Production Overheads A/c

Particulars	Amount (₹)	Particulars	Amount (₹)
To General Ledger Adjustment A/c	11,20,000	By WIP A/c (absorbed)	13,56,250
To Overhead Adjustment A/c (Over-absorption)	2,36,250		
Total	13,56,250	Total	13,56,250

Administration Overheads A/c

Particulars	Amount (₹)	Particulars	Amount (₹)
To General Ledger Adjustment A/c	6,25,000	By Finished Goods A/c	6,19,500
		By Overhead Adjustment A/c (Under-absorption)	5,500
Total	6,25,000	Total	6,25,000

Selling & Distribution Overheads A/c

Particulars	Amount (₹)	Particulars	Amount (₹)
To General Ledger Adjustment A/c	4,60,000	By Cost of Sales A/c	4,60,000
Total	4,60,000	Total	4,60,000

(iii) Reconciliation Statement

Particulars	Amount (₹)	Amount (₹)
Profits as per Cost Accounts		18,17,850
Add:		
– Production Overheads – over-absorbed	2,36,250	
– Dividend received	5,25,000	
– Interest from bank deposits	1,20,000	
– Write-down of Finished Stock (3,90,000 – 3,46,100)	43,900	
Total Additions		9,25,150
Less:		
– Administration Overheads – under-absorbed	5,500	
– Preliminary expenses written off	30,000	
– Goodwill written off	55,000	
– Fines	10,000	
– Interest on term loan	18,000	
– Loss on sale of equipment	20,000	
– Taxation	2,25,000	
Total Deductions		3,63,500
Profit as per Financial Accounts		23,79,500

13. Production Statement

For the Year Ended 31st March 2025

Particulars	Amount (₹)
Direct Materials	12,50,000
Direct Wages	9,80,000
Prime Cost	22,30,000

Factory Overheads	5,75,000
Cost of Production (COP)	28,05,000
Administration Overheads	5,40,000
Selling & Distribution Overheads	6,30,000
Cost of Sales	39,75,000
Profit	8,25,000
Sales Value	48,00,000

Calculation of Rates (2025-26)

1. **Percentage of Administration Overheads to Cost of Production**

$$\text{(COP)} = \frac{\text{₹ } 5,40,000}{\text{₹ } 28,05,000} \times 100 = 19.251\%$$

2. **Percentage of Profit to cost = 8,25,000 / 39,75,000 = 20.755%**

3. **Selling & Distribution Overheads (20% Increase, Variable 65%)**

$$\text{new S\&D} = 1.20 \times 6,30,000 = \text{₹ } 7,56,000$$

$$\text{S\&D rate (revised)} = 7,56,000 / 28,05,000 = 26.952\%$$

Note: variable portion changed to 65% - that affects fixed/variable split but not the total used for recovery here

4. **Factory Overheads decreased by 10%:**

$$\text{new Factory OH} = 0.90 \times 5,75,000 = \text{₹ } 5,17,500$$

$$\text{Factory OH rate (revised)} = 5,17,500 / 9,80,000 = 52.806\%$$

Job Cost Sheet

Particulars	Amount (₹)
Direct Materials	3,20,000
Direct Wages	2,10,000
Prime Cost	5,30,000
Add: Factory Overhead applied (52.806% of DL)	1,10,893
Cost of Production	6,40,893

Add: Administration overhead (19.251% of CP)	1,23,378
Cost of Sales (CP + Admin)	7,64,271
Add: Selling & Distribution overhead (26.952% of CP)	1,72,733
Total Cost (before profit)	9,37,004
Add: Profit (20.755% on cost)	1,94,475
Sales Value (Quoted Price)	11,31,479

14. Statement of Equivalent Units (Process- I)

Input (Units)	Particulars	Output (Units)	Equivalent Production			
			Materials		Labour and Overheads	
			Units	(%)	Units	(%)
40,000	Introduced and completed	36,000	36,000	100	36,000	100
	Normal loss	2,000	-	-	-	-
	Closing stock	2,000	2,000	100	1,000	50
40,000		40,000	38,000		37,000	

Computation of cost per Equivalent Unit for each element of cost (Process- I)

Elements of Cost	Total Cost (₹)	Equivalent units	Cost per Equivalent units (₹)
Direct Materials	6,00,000	38,000	15.7895
Labour	1,20,000	37,000	3.2432
Factory Overheads	2,40,000	37,000	6.4865

Statement of Apportionment of Cost

Items	Elements	Equivalent units	Cost per unit (₹)	Cost (₹)	Total (₹)
Units introduced and completed	Materials	36,000	15.7895	5,68,422.00	
	Labour	36,000	3.2432	1,16,755.20	
	Overheads	36,000	6.4865	2,33,514.00	9,18,691.20
Closing stock	Materials	2,000	15.7895	31,579.00	
	Labour	1,000	3.2432	3,243.20	
	Overheads	1,000	6.4865	6,486.50	41,308.70

Process- I Account

Particulars	Units	Amount (₹)	Particulars	Units	Amount (₹)
To Materials	40,000	6,00,000	By Normal loss	2,000	-
To Labour		1,20,000	By Process II	36,000	9,18,691
To Overheads		2,40,000	By Closing stock	2,000	41,309
	40,000	9,60,000		40,000	9,60,000

Statement of Equivalent Units (Process- II)

Input (Units)	Particulars	Output (Units)	Equivalent Production			
			Materials		Labour and Overheads	
			Units	(%)	Units	(%)
36,000	Units transferred from Process- I					
	Normal loss	1,500	-	-	-	-
	Completed	32,000	32,000	100	32,000	100
	Closing stock (balancing figure)	2,500	2,500	100	1,250	50
36,000		36,000	34,500		33,250	

Computation of cost per Equivalent Unit for each element of cost (Process- I)

Elements of Cost	Total Cost (₹)	Equivalent units	Cost per Equivalent units (₹)
Cost of 36,000 units transferred from Process- I	9,18,691	34,500	26.6287
Labour	1,60,000	33,250	4.8120
Factory Overheads	2,00,000	33,250	6.0150

Statement of Apportionment of Cost

Items	Elements	Equivalent units	Cost per unit (₹)	Cost (₹)	Total (₹)
Units introduced and completed	Materials	32,000	26.6287	8,52,118.40	
	Labour	32,000	4.8120	1,53,984.00	
	Overheads	32,000	6.0150	1,92,480.00	11,98,582.40
Closing stock	Materials	2,500	26.6287	66,571.75	
	Labour	1,250	4.8120	6,015.00	
	Overheads	1,250	6.0150	7,518.75	80,105.50

Process- II Account

Particulars	Units	Amount (₹)	Particulars	Units	Amount (₹)
To Units introduced	36,000	9,18,691	By Normal loss	1,500	-
To Labour		1,60,000	By Finished stock	32,000	11,98,582
To Overheads		2,00,000	By Closing stock	2,500	80,109*
	36,000	12,78,691		36,000	12,78,691

*Difference arose due to rounding-off has been adjusted.

15. (i) Statement showing the apportionment of joint costs to P, Q and C

Products	P	Q	C	Total
Output (kg)	18,000	10,000	54,000	
Sales value at the point of split off (₹)	9,00,000 (₹ 50 x 18,000)	4,00,000 (₹ 40 x 10,000)	5,40,000 (₹ 10 x 54,000)	18,40,000
Joint cost apportionment on the basis of sales value at the point of split off (₹)	6,30,000 $\left(\frac{₹ 12,88,000}{₹ 18,40,000} \times ₹ 9,00,000 \right)$	2,80,000 $\left(\frac{₹ 12,88,000}{₹ 18,40,000} \times ₹ 4,00,000 \right)$	3,78,000 $\left(\frac{₹ 12,88,000}{₹ 18,40,000} \times ₹ 5,40,000 \right)$	12,88,000

- (ii) Statement showing the cost per kg. of each product (indicating joint cost; further processing cost and total cost separately)

Products	P	Q	C
Joint costs apportioned (₹): (I)	6,30,000	2,80,000	3,78,000
Production (kg): (II)	18,000	10,000	54,000
Joint cost per kg (₹): (I ÷ II)	35	28	7
Further processing Cost per kg. (₹)	10 $\left(\frac{₹ 1,80,000}{18,000\text{kg}} \right)$	15 $\left(\frac{₹ 1,50,000}{10,000\text{kg}} \right)$	2 $\left(\frac{₹ 1,08,000}{54,000\text{kg}} \right)$
Total cost per kg (₹)	45	43	9

- (iii) Statement showing the product wise and total profit for the period

Products	P	Q	C	Total
Sales value (₹)	12,24,000	2,50,000	7,92,000	
Add: Closing stock value (₹) (Refer to Working note 2)	45,000	2,15,000	90,000	
Value of production (₹)	12,69,000	4,65,000	8,82,000	26,16,000
Apportionment of joint cost (₹)	6,30,000	2,80,000	3,78,000	
Add: Further processing cost (₹)	1,80,000	1,50,000	1,08,000	
Total cost (₹)	8,10,000	4,30,000	4,86,000	17,26,000
Profit (₹)	4,59,000	35,000	3,96,000	8,90,000

Working Notes

1.

Products	P	Q	C
Sales value (₹)	12,24,000	2,50,000	7,92,000

Quantity sold (Kgs.)	17,000	5,000	44,000
Selling price ₹/kg	72 $\left(\frac{₹ 12,24,000}{17,000 \text{ kg}} \right)$	50 $\left(\frac{₹ 2,50,000}{5,000 \text{ kg}} \right)$	18 $\left(\frac{₹ 7,92,000}{44,000 \text{ kg}} \right)$

2. Valuation of closing stock:

Since the selling price per kg of products P, Q and C is more than their total costs, therefore closing stock will be valued at cost.

Products	P	Q	C	Total
Closing stock (kgs.)	1,000	5,000	10,000	
Cost per kg (₹)	45	43	9	
Closing stock value (₹)	45,000 (₹ 45 x 1,000 kg)	2,15,000 (₹ 43 x 5,000 kg)	90,000 (₹ 9 x 10,000 kg)	3,50,000

(iv) Calculations for processing decision

Products	P	Q	C
Selling price per kg at the point of split off (₹)	50	40	10
Selling price per kg after further processing (₹) (Refer to working Note 1)	72	50	18
Incremental selling price per kg (₹)	22	10	8
Less: Further processing cost per kg (₹)	(10)	(15)	(2)
Incremental profit (loss) per kg (₹)	12	(5)	6

Product P and C has an incremental profit per unit after further processing, hence, these two products may be further processed.

However, further processing of product Q is not profitable hence, product Q shall be sold at split off point.

16. Working for Finding – Missing Figures

$$\text{Cost Variance}_A = 0$$

$$\text{Cost Variance}_{(A+B)} = ₹ 1,300 \text{ (A)}$$

$$\text{Yield Variance}_{(A+B)} = ₹ 270 \text{ (A)}$$

Standard Cost and Actual Cost (Incomplete Information)

Raw Material	Standard Data			Actual Data		
	Qty. (Kg.) [SQ]	Price (₹) [SP]	Amount (₹) [SQ x SP]	Qty. (Kg.) [AQ]	Price (₹) [AP]	Amount (₹) [AQ x AP]
A	???	24	???	???	30	???
B	???	30	???	70	???	???
Total	???		???	???		???

$$\text{Material Cost Variance}_A = \text{Standard Cost} - \text{Actual Cost}$$

$$\Rightarrow 0 = (SQ_A \times ₹ 24 - AQ_A \times ₹ 30)$$

$$\Rightarrow SQ_A = 1.25 AQ_A$$

$$\text{Material Yield Variance}_{(A+B)} = \text{Average Standard Price per unit of Standard Mix} \times [\text{Total Standard Quantity (units)} - \text{Total Actual Quantity (units)}]$$

$$\Rightarrow ₹ 270 \text{ (A)} = \left(\frac{₹ 24 \times SQ_A + ₹ 30 \times SQ_B}{SQ_A + SQ_B} \right) \times [(SQ_A + SQ_B) - (AQ_A + 70)]$$

$$SQ_A = SQ_B \text{ as Standard Mix is in ratio 1:1}$$

$$\Rightarrow ₹ 270 \text{ (A)} = \left(\frac{₹ 24 \times SQ_A + ₹ 30 \times SQ_A}{SQ_A + SQ_A} \right) \times [(SQ_A + SQ_A) - (AQ_A + 70)]$$

$$\Rightarrow ₹ 270 \text{ (A)} = 27 \times [2 \times SQ_A - (AQ_A + 70)]$$

$$\begin{aligned}
 \Rightarrow ₹ 270 \text{ (A)} &= 27 \times [2 \times 1.25 A_{QA} - (A_{QA} + 70)] \\
 \Rightarrow A_{QA} &= 40 \text{ Kg.} \\
 \text{As } S_{QA} &= 1.25 A_{QA} \\
 &= 1.25 \times 40 \text{ Kg.} \\
 &= 50 \text{ Kg.} \\
 \text{As } S_{QB} &= S_{QA} \\
 &= 50 \text{ Kg.} \\
 \text{Cost Variance } (A+B) &= \text{Standard Cost} - \text{Actual Cost} \\
 \Rightarrow 1,300 \text{ (A)} &= (50 \text{ Kg.} \times ₹ 24 + 50 \text{ Kg.} \times ₹ 30) - \\
 &\quad (40 \text{ Kg.} \times ₹ 30 + 70 \text{ Kg.} \times A_{PA}) \\
 \Rightarrow A_{PA} &= ₹ 40
 \end{aligned}$$

Standard Cost and Actual Cost (Complete Information)

Raw Material	Standard Data			Actual Data			Std. Cost of Actual Qty. (₹) [AQ x SP]
	Qty. (Kg.) [SQ]	Price (₹) [SP]	Amount (₹) [SQ x SP]	Qty. (Kg.) [AQ]	Price (₹) [AP]	Amount (₹) [AQ x AP]	
A	50	24	1,200	40	30	1,200	960
B	50	30	1,500	70	40	2,800	2,100
Total	100		2,700	110		4,000	3,060

Computation of Variances

$$\begin{aligned}
 \text{Material Cost Variance} &= \text{Standard Cost} - \text{Actual Cost} \\
 &= SQ \times SP - AQ \times AP \\
 \text{(A)} &= ₹ 1,200 - ₹ 1,200 \\
 &= ₹ 0 \\
 \text{(B)} &= ₹ 1,500 - ₹ 2,800 \\
 &= ₹ 1,300 \text{ (A)} \\
 \text{Total} &= ₹ 0 + ₹ 1,300 \text{ (A)} \\
 &= ₹ 1,300 \text{ (A)}
 \end{aligned}$$

$$\begin{aligned}\text{Material Price Variance} &= \text{Standard Cost of Actual Quantity} - \text{Actual Cost} \\ &= \text{AQ} \times \text{SP} - \text{AQ} \times \text{AP}\end{aligned}$$

Or

$$\begin{aligned}&= \text{AQ} \times (\text{SP} - \text{AP}) \\ (A) &= 40 \text{ Kg.} \times (\text{₹}24.00 - \text{₹}30.00) \\ &= \text{₹}240 (A) \\ (B) &= 70 \text{ Kg.} \times (\text{₹}30.00 - \text{₹}40.00) \\ &= \text{₹}700 (A) \\ \text{Total} &= \text{₹}240 (A) + \text{₹}700 (A) \\ &= \text{₹}940 (A)\end{aligned}$$

$$\begin{aligned}\text{Material Usage Variance} &= \text{Standard Cost of Standard Quantity for Actual Output} - \text{Standard Cost of Actual Quantity} \\ &= \text{SQ} \times \text{SP} - \text{AQ} \times \text{SP}\end{aligned}$$

Or

$$\begin{aligned}&= \text{SP} \times (\text{SQ} - \text{AQ}) \\ (A) &= \text{₹}24 \times (50 \text{ Kg.} - 40 \text{ Kg.}) \\ &= \text{₹}240 (F) \\ (B) &= \text{₹}30 \times (50 \text{ Kg.} - 70 \text{ Kg.}) \\ &= \text{₹}600 (A) \\ \text{Total} &= \text{₹}240 (F) + \text{₹}600 (A) \\ &= \text{₹}360 (A)\end{aligned}$$

$$\begin{aligned}\text{Material Mix Variance} &= \text{Total Actual Quantity (units)} \times (\text{Average Standard Price Per unit of Standard Mix} \\ &\quad - \text{Average Standard Price per unit of Actual Mix})\end{aligned}$$

$$= 110 \text{ Kg.} \times \left(\frac{\text{₹ } 2,700}{100 \text{ Kg.}} - \frac{\text{₹ } 3,060}{110 \text{ Kg.}} \right)$$

$$= \text{₹ } 90 \text{ (A)}$$

Material Yield Variance = *Average Standard Price per unit of Standard Mix* × [Total Standard Quantity (units) – Total Actual Quantity (units)]

$$= \left(\frac{\text{₹ } 2,700}{100 \text{ Kg.}} \right) \times (100 \text{ Kg.} - 110 \text{ Kg.})$$

$$= \text{₹ } 270 \text{ (A)}$$

Standard Output = Standard Input – Standard Loss

$$= 100 \text{ Kg.} - 10 \text{ Kg.}$$

$$= 90 \text{ Kg.}$$

Actual Output = 90 Kg.

(Actual Output and Standard Output are always equal numerically in any Material Variance Analysis)

17. Workings

(1)	All Overheads for one carton or 24cans	₹ 27
	Therefore, per can Overheads (₹27/24)	1.125
	Fixed Overheads Allocated for 1,50,000 cans:	₹ 1,12,500
	Per can Fixed Overheads (₹1,12,500 / 1,50,000cans)	₹ 0.75
	Variable Overheads per can (₹1.125 – ₹0.75)	₹ 0.375
(2)	Direct Wage per carton	₹ 36
	Per can (₹36/24)	₹ 1.50
(3)	Direct Materials per carton	₹ 54
	Per can (₹54/24)	₹ 2.25

- (4) Cost of making one empty *can*:

	Cost per can of 'EXE' (₹)	Cost % empty can	Cost empty can (₹)	Cost of per can of 'EXE' without empty can (₹)
Direct Material	2.250	20	0.4500	1.8000
Direct Wages	1.500	10	0.1500	1.3500
Variable Overheads	0.375	10	0.0375	0.3375
Total	4.125		0.6375	3.4875

- (5) Cost of manufacturing/buying of 1,50,000 empty *cans* of 'EXE':

	Empty can Cost (₹)	If empty can made (₹)	If empty can purchased (₹)
Direct Material	0.4500	67,500.00	-----
Direct Wages	0.1500	22,500.00	-----
Variable Overheads	0.0375	5,625.00	-----
Purchase Price	0.6750	-----	1,01,250.00
Total		95,625.00	1,01,250.00

The company should manufacture the empty *cans* for a production volume of 1,50,000 'EXE' *cans* as capacity is available and cost of manufacture is lower.

- (6) After the level of 1,50,000 empty *cans*, the company has to install a new machine involving a total additional Fixed Overheads of ₹ 7,500. The cost of making and buying the additional *cans* of 25,000 and 75,000 will be as follows:

	Cost per can (₹)	Make (₹)	Buy (₹)	Make (₹)	Buy (₹)
		25,000 cans		75,000 cans	
Direct Material	0.4500	11,250.00	-	33,750.00	-
Direct Wages	0.1500	3,750.00	-	11,250.00	-

Variable Overheads	0.0375	937.50	-	2,812.50	-
Additional Overheads		7,500.00	-	7,500.00	-
Purchase Price	0.6750	-	16,875.00	-	50,625.00
Total		23,437.50	16,875.00	55,312.50	50,625.00

The cost of buying additional empty containers at both the levels is lower than the cost of their manufacture.

- (a) If the company increases production to 1,75,000 cans of 'EXE', 1,50,000 empty cans should be manufactured and additional 25,000 cans should be purchased at ₹16,875 [Refer W.N. 5&6]

If the company increases production to 2,25,000 cans of 'EXE', 1,50,000 empty cans should be manufactured and additional 75,000 cans should be purchased at a cost of ₹ 50,625. [Refer W.N. 5&6]

- (b) Additional fixed overheads to be incurred on a new machine: ₹7,500 Savings per unit if empty cans are made instead of buying:

$$₹ 0.675 - ₹ 0.6375 = ₹ 0.0375$$

Minimum additional quantity of empty containers to be made to recover the additional fixed costs:

$$₹ 7,500 / ₹0.0375 = 2,00,000 \text{ empty cans}$$

Installation of the new machine for the manufacture of empty cans will be economical at production level of 3,50,000 cans per month.

- (c) Evaluation of the profitability on sale of "EXE" at the three levels.

	Per can (₹)	1,50,000 can (₹)	1,75,000 can (₹)	2,25,000 can (₹)
Sales	5.0000	7,50,000.00	8,75,000.00	11,25,000.00
Less: Direct Material	1.8000	2,70,000.00	3,15,000.00	4,05,000.00
Direct Wages	1.3500	2,02,500.00	2,36,250.00	3,03,750.00
Variable Overheads	0.3375	50,625.00	59,062.50	75,937.50

Empty <i>can</i> made	0.6375	95,625.00	95,625.00	95,625.00
Empty <i>can</i> purchases	0.6750		16,875.00	50,625.00
Net Gain		1,31,250.00	1,52,187.50	1,94,062.50

18. Material Purchase Budget

(in quantities and value)

Particulars	Total
Material Consumption (Kg.) A (1,740 units x 5 Kg. = 8,700) B (2,000 units x 3 Kg. = 6,000)	14,700
Add: Closing Balance of Material (Kg.) (W.N. 3)	2,450
Less: Anticipated Opening Balance of Material (Kg.)	2,150
Total Quantity of Material (kg.) to be purchased	15,000
Total Value of Material to be purchased (₹) (15,000 Kg. x ₹12)	₹ 1,80,000

Direct Workers Wages Budget

(showing hours required and wages paid)

Particulars	Total
Standard Hours for Budgeted Production A (1,740 units x 5 hrs. = 8,700) B (2,000 units x 4 hrs. = 8,000)	16,700
Standard Hours for Budgeted Production at Targeted Efficiency Ratio (W.N. 4)	20,875
Add: Non Productive Downtime (20% x 20,875 hours)	4,175
Total Labour Hours Required	25,050
Less: Normal Labour Hours (45 workers x 12 weeks x 5 days x 8 hours)	21,600
Difference (Overtime hours)	3,450

Wages for normal hours (21,600 hours x ₹ 8)	₹1,72,800
Overtime Wages (3,450 x ₹12)	₹41,400
Total Wages	₹2,14,200

Working Notes:

1. Computation of Closing Stock Balance of Products A and B

Budgeted Period of Sales (In days) = 12 weeks x 5 days = 60 days

Closing Stock of Product A (Units) (15 days sales)

$$= \frac{1,800 \text{ units} \times 15 \text{ days}}{60 \text{ days}} = 450 \text{ units}$$

Closing stock of Product B (units) (20 days sales)

$$= \frac{2,400 \text{ units} \times 20 \text{ days}}{60 \text{ days}} = 800 \text{ units}$$

2. Production Budget (Units)

	Products	
	A	B
Sales in units (60 days)	1,800	2,400
Add: Closing Stock (W.N. 1)	450	800
	2,250	3,200
Less: Anticipated Opening Balance	510	1,200
Total Number of Units to be produced	1,740	2,000

3. Closing Balance of Material (Kg.)

Closing Balance of Material (10 days consumption)

$$= \frac{14,700 \text{ kg}}{60 \text{ days}} \times 10 \text{ days} = 2,450 \text{ Kg.}$$

4. Standard Hours for Budgeted Production at targeted 80% efficiency ratio

$$= \frac{16,700 \text{ Hrs.}}{80} \times 100 = 20,875 \text{ Hrs.}$$

19. (a) **Type of costs categorised based on its use in Managerial Decision Making**

- (i) **Pre-determined Cost** - A cost which is computed in advance before production or operations start, on the basis of specification of all the factors affecting cost, is known as a pre-determined cost.
- (ii) **Standard Cost** - A pre-determined cost, which is calculated from managements 'expected standard of efficient operation' and the relevant necessary expenditure. It may be used as a basis for price fixation and for cost control through variance analysis.
- (iii) **Marginal Cost** - The amount at any given volume of output by which aggregate costs increases if the volume of output is increased or decreased by one unit.
- (iv) **Estimated Cost** - Kohler defines estimated cost as "the expected cost of manufacture, or acquisition, often in terms of a unit of product computed on the basis of information available in advance of actual production or purchase". Estimated costs are prospective costs since they refer to prediction of costs.
- (v) **Differential Cost** - (Incremental and decremental costs). It represents the change (increase or decrease) in total cost (variable as well as fixed) due to change in activity level, technology, process or method of production, etc. For example, if any change is proposed in the existing level or in the existing method of production, the increase or decrease in total cost or in specific elements of cost as a result of this decision will be known as incremental cost or decremental cost.
- (vi) **Imputed Costs** - These costs are notional costs which do not involve any cash outlay. Interest on capital, the payment for which is not actually made, is an example of imputed cost. These costs are similar to opportunity costs.
- (vii) **Capitalized Costs** - These are costs which are initially recorded as assets and subsequently treated as expenses.

Example, installation expenses on the erection of a machine are added to the cost of a machine.

- (viii) **Product Costs** - These are the costs which are associated with the purchase and sale of goods (in the case of merchandise inventory). In the production scenario, such costs are associated with the acquisition and conversion of materials and all other manufacturing inputs into finished product for sale. Hence, under marginal costing, variable manufacturing costs and under absorption costing, total manufacturing costs (variable and fixed) constitute inventoriable or product costs.
- (ix) **Opportunity Cost** - This cost refers to the value of sacrifice made or benefit of opportunity foregone in accepting an alternative course of action. For example, a firm financing its expansion plan by withdrawing money from its bank deposits. In such a case the loss of interest on the bank deposit is the opportunity cost for carrying out the expansion plan.
- (x) **Out-of-pocket Cost** - It is that portion of total cost, which involves cash outflow. This cost concept is a short-run concept and is used in decisions relating to fixation of selling price in recession, make or buy, etc. Out-of-pocket costs can be avoided or saved if a particular proposal under consideration is not accepted.
- (xi) **Shut down Costs** - Those costs, which continue to be, incurred even when a plant is temporarily shut-down e.g. rent, rates, depreciation, etc. These costs cannot be eliminated with the closure of the plant. In other words, all fixed costs, which cannot be avoided during the temporary closure of a plant, will be known as shut down costs.
- (xii) **Sunk Costs** - Historical costs incurred in the past are known as sunk costs. They play no role in decision making in the current period. For example, in the case of a decision relating to the replacement of a machine, the written down value of the existing machine is a sunk cost and therefore, not considered.

- (xiii) **Absolute Cost** - These costs refer to the cost of any product, process or unit in its totality. When costs are presented in a statement form, various cost components may be shown in absolute amount or as a percentage of total cost or as per unit cost or all together. Here the costs depicted in absolute amount may be called absolute costs and are base costs on which further analysis and decisions are made.
- (xiv) **Discretionary Costs** - Such costs are not tied to a clear cause and effect relationship between inputs and outputs. They usually arise from periodic decisions regarding the maximum outlay to be incurred. Examples include advertising, public relations, executive training etc.
- (xv) **Period Costs** - These are the costs, which are not assigned to the products but are charged as expenses against the revenue of the period in which they are incurred. All non-manufacturing costs such as general & administrative expenses, selling and distribution expenses are recognised as period costs.
- (xvi) **Engineered Costs** - These are costs that result specifically from a clear cause and effect relationship between inputs and outputs. The relationship is usually personally observable. Examples of inputs are direct material costs, direct labour costs etc. Examples of output are cars, computers etc.
- (xvii) **Explicit Costs** - These costs are also known as out-of-pocket costs and refer to costs involving immediate payment of cash. salaries, wages, postage and telegram, printing and stationery, interest on loan etc. are some examples of explicit costs involving immediate cash payment.
- (xviii) **Implicit Costs** - These costs do not involve any immediate cash payment. They are not recorded in the books of account. They are also known as economic costs.

(b)

Cost Pool	Cost Driver
Quality Control	- Number of Inspections - Product Units Produced
Research and Development	- Number of research projects - Personnel hours on a project
Machine Maintenance	Machine Hours
Employee Training Costs	- Number of Training Hours - Employees Trained
Customer Service	- Number of service calls - Number of products serviced - Hours spent on servicing products

(c) **Limitations of Budgetary Control System**

Points	Description
1. Based on Estimates	Budgets are based on a series of estimates, which are based on the conditions prevalent or expected at the time budget is established. It requires revision in plan if conditions change.
2. Time factor	Budgets cannot be executed automatically. Some preliminary steps are required to be accomplished before budgets are implemented. It requires proper attention and time of management. Management must not expect too much during the initial development period.
3. Co-operation Required	Staff co-operation is usually not available during the initial budgetary

	control exercise. In a decentralised organisation, each unit has its own objective and these units enjoy some degree of discretion. In this type of organisation structure, coordination among different units is required. The success of the budgetary control depends upon willing co-operation and teamwork.
4. Expensive	The implementation of budget is somewhat expensive. For successful implementation of the budgetary control, proper organisation structure with responsibility is prerequisite. Budgeting process start from the collection of information to for preparing the budget and performance analysis. It consumes valuable resources (in terms of qualified manpower, equipment, etc.) for this purpose; hence, it is an expensive process.
5. Not a substitute for management	Budget is only a managerial tool and must be intelligently applied for management to get benefited. Budgets are not a substitute for good management.
6. Rigid document	Budgets are sometime considered as rigid documents. But in reality, an organisation is exposed to various uncertain internal and external factors. Budget should be flexible enough to incorporate ongoing developments in the internal and external factors affecting the very purpose of the budget.

(d)

Cost Control	Cost Reduction
1. Cost control aims at maintaining the costs in accordance with the established standards.	1. 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.	2. Cost reduction recognises no condition as permanent, since a change will result in lower cost.
3. Cost control is a preventive function.	3. Cost reduction is a corrective function. It operates even when an efficient cost control system exists.
4. Cost control ends when targets are achieved.	4. Cost reduction has no visible end and is a continuous process.