

Mock Test Paper - Series I: July, 2024

Date of Paper: 1st August, 2024

Time of Paper: 2 P.M. to 5 P.M.

INTERMEDIATE: GROUP – II

PAPER – 4: COST AND MANAGEMENT ACCOUNTING

Answers are to be given only in English except in the case of the candidates who have opted for Hindi medium. If a candidate has not opted for Hindi medium his/her answer in Hindi will not be valued.

Working notes should form part of the answer.

Time Allowed – 3 Hours

Maximum Marks – 100

1. *The question paper comprises two parts, Part I and Part II.*
2. *Part I comprises Case Scenario based Multiple Choice Questions (MCQs) for 30 marks*
3. *Part II comprises questions which require descriptive type answers for 70 marks.*

PART I – Case Scenario based MCQs

Part I is compulsory.

Write the most appropriate answer to each of the following multiple-choice questions by choosing one of the four options given. All questions are compulsory.

Tropic Pvt Ltd was engaged in the business of manufacturing Product P. The product P required 2 units of Material R. The company intends to sell 24,000 units of Product P and does not wish to retain any closing stock. However the opening stock of Product P is 4,000 units. Raw Material R has to be procured after considering the opening stock of R amounting to 10,000 units. The technical team further confirms that the yield in the course of manufacture of Product P is 80% of the input.

The company presently procures its annual requirement of materials on a quarterly basis from its regular supplier enjoying a discount of 2.5% on the invoice price of the material of ₹ 20 per unit. Every time the company places orders for Material R, it incurs ₹ 125 for each of the order placed. The company also has taken a rented warehouse for storing material R and the annual cost of storage is ₹ 10 per unit. The company appointed Mr. T a Chartered Accountant to review the cost of inventory and provide measures of improvement of cost. After reviewing the material purchase and consumption pattern, Mr. T suggested that the implementation of Wilson's EOQ would be beneficial to the company. He emphasized that the change in the quantity ordered would result in reduction of inventory carrying costs.

Mr. T further reviewed the labour costing and identified that the employees were paid overtime wages to ensure timely completion of projects. Overtime wages comprised of daily wage and 100% of daily wages as overtime premium. Based on the cost record it was understood that every month had 180 hours of regular working hours which was remunerated at ₹ 200 per hour and Overtime of 20 hours which was remunerated at ₹ 400 per hour. Mr. T suggested that the above time taken may be considered as standard and a scheme of Incentive be introduced to reduce overtime cost. He further indicated that Rowan scheme of incentive be used to measure performance and the improved productivity per hour would be 125 units per hour.

In this regard, address the following queries in line with the suggestions provided by Mr. T to Tropic Pvt Ltd.

1. The annual requirement of Material R to meet the target sales of 24,000 units of Product P is:
 - (a) 48,000 units
 - (b) 60,000 units
 - (c) 40,000 units
 - (d) 50,000 units
2. The ordering quantity as per the current inventory policy and the proposed Wilson's Economic order quantity of Material R are:
 - (a) Order Quantity as per the current inventory policy – 10,000 units & Economic Order Quantity – 1,000 units
 - (b) Order Quantity as per the current inventory policy – 15,000 units & Economic Order Quantity – 1,225 units
 - (c) Order Quantity as per the current inventory policy – 12,000 units & Economic Order Quantity – 1,095 units
 - (d) Order Quantity as per the current inventory policy – 12,500 units & Economic Order Quantity – 1,118 units
3. The net savings to inventory cost on migration from the current inventory policy to the Wilson's Economic Order Quantity policy would be:
 - (a) Savings from EOQ as compared to current discount policy – ₹ 26,820
 - (b) Savings from EOQ as compared to current discount policy – ₹ 20,500
 - (c) Savings from EOQ as compared to current discount policy – ₹ 33,253
 - (d) Savings from EOQ as compared to current discount policy – ₹ 25,546

4. Incentive payable under the Rowan Incentive scheme amounts to:
- ₹ 7,500
 - ₹ 6,400
 - ₹ 6,000
 - ₹ 8,000
5. The savings in labour cost achieved by implementation of incentive scheme over the overtime payments amounts to:
- ₹ 9,600
 - ₹ 5,600
 - ₹ 8,000
 - ₹ 3,200

(5 x 2 = 10 Marks)

XYZ Manufacturing Pvt. Ltd. is a prominent company in the electric appliances industry, known for producing a diverse range of high-quality products. The company has built a reputation for reliability and innovation in the manufacturing of household appliances, including fans, mixers, and heaters. XYZ Manufacturing Pvt. Ltd. is dedicated to delivering products that meet the needs of its customers while adhering to the highest standards of quality and performance.

The company operates a state-of-the-art factory that is fully equipped with advanced machinery and technology to ensure efficient and consistent production. The factory operates 25 days a month, running multiple shifts to meet the growing demand for its products. The company have spare capacity to additional orders. Each product type—fans, mixers, and heaters—undergoes a meticulous manufacturing process that includes assembly, quality testing, and packaging.

Cost Category	Amount (₹)
<u>Fixed Costs (per month)</u>	
Factory Rent	₹ 3,00,000
Depreciation	₹ 2,00,000
Administrative Expenses	₹ 1,00,000
Salaries	₹ 4,00,000
Total Fixed Costs	₹ 10,00,000
Number of units produced per month	10,000 units
(Note: Last month there was an additional special order of 2000 units which resulted in higher production)	
Selling price per unit	₹ 1,500

Additional Info: Raw Materials include Copper, Plastic, and Other Materials. The per unit cost of Copper is ₹ 80 more than the cost of Plastic, while the cost of Other Materials is twice that of Plastic. And the total Raw Material Cost per unit is ₹ 210 more than the combined cost of Copper & Plastic.

The Labour Hour Rate is ₹ 100 per hour. The total labour hours used in the last month were 36,000 Hours. The Utilities Cost per unit is ₹ 100, and the Packaging Cost per unit is ₹ 50. Being a finance manager of the company, you are required to answer the following:

6. Calculate the contribution margin per unit.
 - (a) ₹ 550
 - (b) ₹ 600
 - (c) ₹ 650
 - (d) ₹ 700
 7. Determine the break-even point in sales revenue.
 - (a) ₹ 31,28,593
 - (b) ₹ 25,85,153
 - (c) ₹ 27,27,025
 - (d) ₹ 27,05,983
 8. If the company wants to achieve a target profit of ₹ 5,00,000, what should be the sales volume (in units)?
 - (a) 2,000 units
 - (b) 2,727 units
 - (c) 2,750 units
 - (d) 3,000 units
 9. What would be the impact on the break-even point if the variable cost per unit increases by 10%?
 - (a) 2,178 units
 - (b) 2,198 units
 - (c) 2,248 units
 - (d) 2,258 units
 10. Calculate the margin of safety in percentage if the company sells 4,000 units if the variable cost per unit increases by 10%
 - (a) 44.85%
 - (b) 42.55%
 - (c) 45.05%
 - (d) 45.75%
- (5 x 2 = 10 Marks)**
11. A FMCG company has an annual demand of 50,000 units for its specific product whose setting up cost per batch is ₹ 10,000 and carrying cost per unit per month is ₹ 1. What is the Economic Batch Quantity?

- (a) 7,071 units
 (b) 10,000 units
 (c) 12,641 units
 (d) 9,129 units **(2 Marks)**
12. A furniture company uses premium wood for sofa. Standard quantity of premium wood per sofa is 5 sq. ft. Standard price per sq. ft. of premium wood is ₹ 10. Actual production of sofa is 1,000. Premium wood actually used is 5,300 sq. ft. Actual purchase price of premium wood per sq. ft. is ₹ 10. What is material cost variance?
 (a) ₹ 3,000 (A)
 (b) ₹ 4,300 (A)
 (c) ₹ 7,300 (A)
 (d) ₹ 5,300 (F) **(2 Marks)**
13. One of Pintu Company's cost pools is parts administration. The budgeted overhead cost for that cost pool was ₹ 4,00,000 and the expected activity was 4,000 part types. The actual overhead cost for the cost pool was ₹ 4,20,000 at an actual activity of 5,000 part types. The activity rate for that cost pool was:
 (a) ₹ 80 per part type
 (b) ₹ 100 per part type
 (c) ₹ 105 per part type
 (d) ₹ 84 per part type **(2 Marks)**
14. A truck carrying 10 tons of goods over 200 kilometres per day for 26 days in a month. The ton kms applicable is -
 (a) 52,000
 (b) 20,000
 (c) 5200
 (d) 260 **(2 Marks)**
15. Standard hours required for doing a work is 100 hours and budgeted hours is 120 hrs while the same work is actually completed by workers in 110 hrs. You are required to calculate the activity ratio:
 (a) 109.09%
 (b) 83.33%
 (c) 90.90%
 (d) 110% **(2 Marks)**

PART-II – Descriptive Questions (70 Marks)*Question No. 1 is compulsory.**Attempt any **four** questions out of the remaining **five** questions.*

1. (a) From the following data of Meta Ltd., CALCULATE Cost of production:

		Amount (₹)
(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
(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
(xvi)	Expenses paid for pollution control and engineering & maintenance	22,000

(5 Marks)

- (b) A manufacturing company has disclosed net loss of ₹ 48,700 as per their cost accounting records for the year ended 31st March, 2024. However their financial accounting records disclosed net profit of ₹ 30,400 for the same period. A scrutiny of data of both the sets of books of accounts revealed the following informations:

		₹
(i)	Factory overheads under absorbed	30,500
(ii)	Administrative overheads over absorbed	65,000

(iii)	Depreciation charged in financial accounts	2,25,000
(iv)	Depreciation charged in cost accounts	2,70,000
(v)	Income-tax provision	52,400
(vi)	Transfer fee (credited in financial accounts)	10,200
(vii)	Obsolescence loss charged in financial accounts	20,700
(viii)	Notional rent of own premises charged in cost accounts	49,000
(ix)	Value of opening stock:	
	(a) in cost accounts	1,38,000
	(b) in financial accounts	1,15,000
(x)	Value of closing stock:	
	(a) in cost accounts	1,22,000
	(b) in financial accounts	1,12,500

PREPARE a Memorandum Reconciliation Account by taking costing loss as base. **(5 Marks)**

- (c) A job can be executed either through workman A or B. A takes 32 hours to complete the job while B finishes it in 30 hours. The standard time to finish the job is 40 hours.

The hourly wage rate is same for both the workers. In addition workman A is entitled to receive bonus according to Halsey plan (50%) sharing while B is paid bonus as per Rowan plan. The works overheads are absorbed on the job at ₹ 7.50 per labour hour worked. The factory cost of the job comes to ₹ 2,200 irrespective of the workman engaged.

FIND out the hourly wage rate and cost of raw materials input. Also SHOW cost against each element of cost included in factory cost.

(4 Marks)

2. (a) PQR Company Ltd. provides the following information relating to Process-P:

- (i) Opening Work-in-progress - NIL
- (ii) Units Introduced - 45,000 units @ ₹ 10 per unit
- (iii) Expenses debited to the process:
 - Direct material ₹ 65,500
 - Labour ₹ 90,800
 - Overhead ₹ 1,80,700
- (iv) Normal loss in the process - 2% of Input

- (v) Work-in progress - 1800 units
 Degree of completion
 Materials - 100%
 Labour - 50%
 Overhead - 40%
- (vi) Finished output - 42,000 units
- (vii) Degree of completion of abnormal loss:
 Materials - 100%
 Labour - 80%
 Overhead - 60%
- (viii) Units scrapped as normal loss were sold at ₹ 5 per unit.
- (ix) All the units of abnormal loss were sold at ₹ 2 per unit.

You are required to PREPARE:

- Statement of equivalent production.
- Statement showing the cost of finished goods, abnormal loss and closing balance of work-in-progress.
- Process-P account and abnormal loss account. **(10 Marks)**

(b) EXPLAIN the treatment of following items in cost sheet.

- (i) Credit for Recoveries
- (ii) Packing Cost (primary)
- (iii) Joint Products and By-Products
- (iv) Quality Control Cost **(4 Marks)**

3. (a) A company manufactures one main product (MN) and two by-products AB and PQ. For the month of January 2024, following details are available:

Total Cost upto separation Point ₹ 2,12,400

	MN	AB	PQ
Cost after separation	-	₹ 35,000	₹ 24,000
No. of units produced	4,000	1,800	3,000
Selling price per unit	₹ 100	₹ 40	₹ 30
Estimated net profit as percentage to sales value	-	20%	30%
Estimated selling expenses as percentage to sales value	30%	15%	15%

There are no beginning or closing inventories.

PREPARE statement showing:

- (i) Allocation of joint cost; and
- (ii) Product-wise and overall profitability of the company for January 2024. **(6 Marks)**

- (b) A mini-bus, having a capacity of 32 passengers, operates between two places - 'A' and 'B'. The distance between the place 'A' and place 'B' is 30 km. The bus makes 10 round trips in a day for 25 days in a month. On an average, the occupancy ratio is 70% and is expected throughout the year.

The details of other expenses are as under:

	Amount (₹)
Insurance	15,600 Per annum
Garage Rent	2,400 Per quarter
Road Tax	5,000 Per annum
Repairs	4,800 Per quarter
Salary of operating staff	7,200 Per month
Tyres and Tubes	3,600 Per quarter
Diesel: (one litre is consumed for every 5 km)	13 Per litre
Oil and Sundries	22 Per 100 km run
Depreciation	68,000 Per annum
Passenger tax @ 22% on total taking is to be levied and bus operator requires a profit of 25% on total taking.	

PREPARE operating cost statement on the annual basis and find out the cost per passenger kilometer and one way fare per passenger.

(8 Marks)

4. (a) The following particulars refer to process used in the treatment of material subsequently, incorporated in a component forming part of an electrical appliance:
- (i) The original cost of the machine used (Purchased in June 2023) was ₹ 10,000. Its estimated life is 10 years, the estimated scrap value at the end of its life is ₹ 1,000, and the estimated working time per year (50 weeks of 44 hours) is 2,200 hours of which machine maintenance etc., is estimated to take up 200 hours.
- No other loss of working time expected. Setting up time, estimated at 100 hours, is regarded as productive time. (Holiday to be ignored).

- (ii) Electricity used by the machine during production is 16 units per hour at cost of a 9 paise per unit. No current is taken during maintenance or setting up.
- (iii) The machine required a chemical solution which is replaced at the end of week at a cost of ₹ 20 each time.
- (iv) The estimated cost of maintenance per year is ₹ 1,800.
- (v) Two attendants control the operation of machine together with five other identical machines. Their combined weekly wages, insurance and the employer's contribution to holiday pay amount ₹ 120.
- (vi) Departmental and general works overhead allocated to this machine for the current year amount to ₹ 3,000.

You are required to CALCULATE the machine hour rate of operating the machine. **(6 Marks)**

- (b) Anju Limited produces a product 'Pect' which is sold in a 10 Kg. packet. The standard cost card per packet of 'Pect' are as follows:

	₹
Direct materials 10 kg @ ₹ 45 per kg	450
Direct labour 8 hours @ ₹ 50 per hour	400
Variable Overhead 8 hours @ ₹ 10 per hour	80
Fixed Overhead	<u>200</u>
	<u>1,130</u>

Budgeted output for the third quarter of a year was 10,000 Kg. Actual output is 9,000 Kg.

Actual cost for this quarter are as follows :

	₹
Direct Materials 8,900 Kg @ ₹ 46 per Kg.	4,09,400
Direct Labour 7,000 hours @ ₹ 52 per hour	3,64,000
Variable Overhead incurred	72,500
Fixed Overhead incurred	1,92,000

You are required to CALCULATE:

- (i) Material Usage Variance
- (ii) Material Price Variance
- (iii) Material Cost Variance
- (iv) Labour Efficiency Variance
- (v) Labour Rate Variance

- (vi) Labour Cost Variance
- (vii) Variable Overhead Cost Variance
- (viii) Fixed Overhead Cost Variance

(8 Marks)

5. (a) Bicon Ltd. manufactures two products using two types of materials and one grade of labour. Shown below is an extract from the company's working papers for the next month's budget:

	Product - A	Product-B
Budgeted sales (in units)	2,400	3,600
Budgeted material consumption per unit (in kg):		
Material-X	5	3
Material-Y	4	6
Standard labour hours allowed per unit of product	3	5

Material-X and Material-Y cost ₹ 4 and ₹ 6 per kg and labours are paid ₹ 25 per hour. Overtime premium is 50% and is payable, if a worker works for more than 40 hours a week. There are 180 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 down-time is budgeted at 20% of the productive hours worked.

There are four 5-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	400 units
Product-B	200 units
Material-X	1,000 kgs.
Material-Y	500 kgs.

The anticipated closing stocks for budget period are as below:

Product-A	4 days sales
Product-B	5 days sales
Material-X	10 days consumption
Material-Y	6 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.

(7 Marks)

- (b) Icecold a FMCG Company manufactures and sells three flavors of ice cream:

Dark chocolate, Chocolate, and Butterscotch. The batch size for the ice cream is limited to 1,000 ice cream based on the size of the fridge and ice cream molds owned by the company. Based on budgetary projections, the information listed below is available:

	<u>Dark chocolate</u>	<u>Chocolate</u>	<u>Butterscotch</u>
Projected sales in units	500,000	800,000	600,000

PER UNIT data:

Selling price	₹ 80	₹ 75	₹ 60
Direct materials	₹ 20	₹ 15	₹ 14
Direct labor	₹ 4	₹ 2	₹ 2

Hours per 1000-unit batch:

Direct labor hours	20	10	10
Fridge hours	1	1	1
Packaging hours	0.5	0.5	0.5

Total overhead costs and activity levels for the year are estimated as follows:

<u>Activity</u>	<u>Overhead costs</u>	<u>Activity levels</u>
Direct labor		2,400 hours
Fridge	₹ 2,10,00,000	1,900 fridge hours
Packaging	<u>₹ 1,50,00,000</u>	950 packaging hours
	<u>₹ 3,60,00,000</u>	

Required:

- a. With the help of ABC system, for the Chocolate ice cream:
 1. Compute the activity-cost-driver rate
 2. Compute the estimated overhead costs per thousand ice cream.
 3. Compute the estimated operating profit per thousand ice cream.
 - b. With the help of traditional system (with direct labor hours as the overhead allocation base), for the Chocolate ice cream, compute the estimated operating profit per thousand ice cream. **(7 Marks)**
6. (a) EXPLAIN the types of responsibility centres. **(5 Marks)**
- (b) EXPLAIN the efficiency rating procedures of the employees. **(5 Marks)**
- (c) WHAT are the essential pre-requisites for integrated accounts? **(4 Marks)**
- OR
- (d) WHAT are the principles of estimation of costs and benefits? **(4 Marks)**

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PAPER – 4: COST AND MANAGEMENT ACCOUNTING

Suggested Answers/ Solution

PART I – Case Scenario based MCQs

1. c. **40,000 units.**
 Projected Sales of Product P – 24,000 units
 Less: Opening stock of Product P- (4,000 units)
 Product P to be produced- 20,000 units
 Raw Material required- 50,000 units (20,000 x 2/80% yield)
 Opening stock of Material R available- 10,000 units
 Material to be procured- 40,000 units.
2. a. **Order Quantity as per the current inventory policy – 10,000 units and EOQ – 1,000 units**
 Annual requirement - Procurement- 40,000 units
 Order Quantity as per the current inventory policy (Quarterly) - 10,000 units
 Ordering Cost- ₹125 per order
 Carrying Cost- ₹ 10 per unit p.a.
 EOQ - 1,000 units.
3. b. **Savings from EOQ as Compared to current discount policy – ₹ 20,500**
 Associated Costs under EOQ:
 Ordering Costs = No. of orders x Ordering cost per order
 No of orders = Annual Requirement/ EOQ (or) current order quantity
 Hence No of orders = 40
 Therefore Ordering Cost = 40 x 125 = ₹ 5,000.
 Carrying cost = Average Inventory x Carrying cost per unit per annum
 Average Inventory = (EOQ/ current order quantity)/2
 = 1,000/2 = 500
 Carrying cost = 500 x 10 = ₹ 5,000

Associated Costs under EOQ = Ordering cost + Carrying Cost
 = ₹ 10,000 ----- A

Associated Costs under current inventory policy:

No of orders = 4 (Quarterly)

Ordering cost = $4 \times 125 = ₹ 500$

Average inventory = $10,000/2 = 5,000$

Carrying cost = $5,000 \times 10 = 50,000$

Associated Costs = $50,000 + 500 = 50,500$

Less: Discount = 20,000

Net cost = 30,500. ----- B

Incremental Cost = $B - A = 20,500$

4. b. ₹ 6,400

Time taken under the Overtime regime 180 Hours + 20 Hours overtime
 = 200 Hours

Time to be taken under the Incentive regime

Units to be produced = 20,000 units

Units produced per hour under incentive scheme = 125 units

Time taken = 160 Hours

Time saved = $200 - 160 = 40$ hours.

Incentive under Rowan scheme = $(\text{Time saved} / \text{Time allowed}) \times \text{time taken} \times \text{Rate}$

= $(40/200) \times 160 \times 200 = ₹ 6,400$.

5. b. ₹ 5,600

Cost under the Overtime scheme:

Base wage = $200 \times 200 = 40,000$

OT Premium = $20 \times 200 = 4,000$

Total Wages under Overtime scheme = 44,000

Cost under Incentive scheme:

Base Wage = $160 \text{ hours} \times 200 = 32,000$

Incentive = 6,400

Total wages paid = 38,400

Savings in Incentive scheme over Overtime scheme = ₹ 5,600.

6. a ₹ 550

Contribution Margin per Unit = Selling Price per Unit - Variable Cost per Unit

= Variable Cost per unit = ₹ 500*+ ₹ 300**+ ₹ 100+ ₹ 50

Contribution Margin per Unit = ₹ 1,500 - ₹ 950 = ₹ 550

*Raw Material Cost Calculation

Let the cost of Plastic be x

1. The cost of Copper is ₹ 80 more than the cost of Plastic: Cost of Copper = $x + 80$
2. The cost of Other Materials is twice that of Plastic: Cost of Other Materials = $2x$
3. The total Raw Material Cost per unit is ₹ 210 more than the combined cost of Copper & Plastic: $x + (x+80) + 2x = (x + (x+80)) + 210$

Solving for X = 105

Now, calculate the total cost of Raw Materials:

$105 + (105+80) + 210 = 500$

So, the total cost of Raw Materials is ₹ 500.

** Labour Cost Calculation

1. The Labour Hour Rate is ₹ 100 per hour.
2. The total labour hours used in the last month were 36,000 hours.
3. The production units last month were 12,000 units (10000 normal units plus 2000 special order).

Total Labour Cost = Labour Hour Rate × Total Labour Hours

Total Labour Cost = ₹ 100 /hour × 36,000 hours = ₹ 3,600,000

Per Unit Labour Cost = Total Labour Cost/Production Units

Per Unit Labour Cost = ₹ 3,600,000/12000

Per Unit Labour Cost = ₹ 300

So, the per unit labour cost is ₹ 300.

7. c ₹ 27,27,025

- Break-even Point (Sales Revenue) = Total Fixed Costs / Contribution Margin Ratio
- Contribution Margin Ratio = Contribution Margin per Unit / Selling Price per Unit
- = ₹ 550 / ₹ 1,500 = 0.3667

$$\text{Break-even Point} = ₹ 10,00,000 / 0.3667 \approx ₹ 27,27,025$$

8. b 2,727 units

- Required Sales Volume (Units) = (Total Fixed Costs + Target Profit) / Contribution Margin per Unit
- = (₹ 10,00,000 + ₹ 5,00,000) / ₹ 550 \approx 2,727.27 units \approx 2,727 units (rounded up)

9. b 2,198 units

- New Variable Cost per Unit = ₹ 950 + 10% of ₹ 950 = ₹ 950 + ₹ 95 = ₹ 1,045
- New Contribution Margin per Unit = ₹ 1,500 - ₹ 1,045 = ₹ 455
- New Break-even Point (Units) = Total Fixed Costs / New Contribution Margin per Unit
- = ₹ 10,00,000 / ₹ 455 \approx 2198 units

10. c 45.05%

- Margin of Safety (Units) = Actual Sales - Break-even Sales
- = 4,000 - 2198 = 1,802 units
- Margin of Safety (%) = (Margin of Safety in Units / Actual Sales in Units) * 100
- = (1,802 / 4,000) * 100 \approx 45.05%

11. d 9,129 units

Annual demand (D) = 50,000 units

Setup cost per batch (S) = ₹ 10,000

Carrying cost per unit per month (C) = ₹ 1

$$EBQ = \sqrt{\frac{2 \times D \times S}{C}}$$

= 9,129 units

12. a ₹ 3000(A)

Standard quantity = Standard quantity per sofa \times Actual production

$$= 5 \text{ sq. ft} \times 1000 = 5,000 \text{ sq. ft.}$$

Standard material cost = Standard quantity \times Standard price per sq. ft.

$$= 5,000 \text{ sq. ft.} \times ₹ 10/\text{sq. ft.} = ₹ 50,000$$

Actual material cost = Actual quantity used \times Actual purchase price per sq. ft.

$$= 5,300 \text{ sq. ft.} \times ₹ 10/\text{sq. ft.} = ₹ 53,000$$

$$\begin{aligned}\text{Material cost variance} &= \text{Standard material cost} - \text{Actual Material cost} \\ &= ₹ 50,000 - ₹ 53,000 = -₹ 3,000\end{aligned}$$

13. b ₹ 100 per part type

$$\begin{aligned}\text{Activity rate} &= \text{budgeted overhead/budgeted activity level} \\ &= 4,00,000/4,000 \\ &= ₹ 100 \text{ per part type}\end{aligned}$$

14. a 52,000

$$\begin{aligned}\text{Ton-kilometers} &= 10 \text{ tons} \times 200 \text{ kilometers} \times 26 \text{ days} \\ &= 52,000\end{aligned}$$

15. b 83.33%

$$\begin{aligned}\text{Activity Ratio} &= \frac{\text{Standard Hours}}{\text{Budgeted Hours}} \times 100 \\ &= 83.33\%\end{aligned}$$

PART-II Descriptive Questions

1. (a) Calculation of Cost of Production of Meta Ltd for the period.....

Particulars	Amount (₹)
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
Add: Expenses paid for pollution control and engineering & maintenance	22,000
Cost of Production	1,05,70,000

Notes:

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

(b) Memorandum Reconciliation Accounts

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Particulars	Amount (₹)	Particulars	Amount (₹)
To Net Loss as per Cost Accounts	48,700	By Administration overheads over recovered in Cost Accounts	65,000
To Factory overheads under absorbed in Cost Accounts	30,500	By Depreciation overcharged in Cost Accounts (₹ 2,70,000 – ₹ 2,25,000)	45,000
To Provision for Income tax	52,400	By Transfer fees in Financial Accounts	10,200
To Obsolescence loss	20,700	By Notional Rent of own premises	49,000
To Overvaluation of closing stock in Cost Accounts**	9,500	By Overvaluation of Opening stock in Cost Accounts*	23,000
To Net Profit (as per Financial Accounts)	30,400		
	1,92,200		1,92,200

* Overvaluation of Opening Stock as per Cost Accounts

= Value in Cost Accounts – Value in Financial Accounts

= ₹ 1,38,000 – ₹ 1,15,000 = ₹ 23,000.

** Overvaluation of Closing Stock as per Cost Accounts

= Value in Cost Accounts – Value in Financial Accounts

= ₹ 1,22,000 – ₹ 1,12,500 = ₹ 9,500.

(c) Calculation of:

(i) Time saved and wages:

Workmen	A	B
Standard time (hrs.)	40	40
Actual time taken (hrs.)	<u>32</u>	<u>30</u>
Time saved (hrs.)	<u>08</u>	<u>10</u>
Wages paid @ ₹ x per hr. (₹)	32x	30x

(ii) Bonus Plan:

	Halsey	Rowan
Time saved (hrs.)	8	10
Bonus (₹)	4x	7.5x
	$\left[\frac{8 \text{ hrs} \times ₹ x}{2} \right]$	$\left[\frac{10 \text{ hrs}}{40 \text{ hrs}} \times 30 \text{ hrs} \times ₹ x \right]$

(iii) Total wages:

Workman A: $32x + 4x = ₹ 36x$ Workman B: $30x + 7.5x = ₹ 37.5x$ **Statement of factory cost of the job**

Workmen	A	B
	₹	₹
Material cost (assumed)	y	y
Wages (shown above)	36x	37.5x
Works overhead	<u>240</u>	<u>225</u>
Factory cost (given)	<u>2,200</u>	<u>2,200</u>

The above relations can be written as follows:

$$36x + y + 240 = 2,200 \quad (i)$$

$$37.5x + y + 225 = 2,200 \quad (ii)$$

Subtracting (i) from (ii) we get

$$1.5x - 15 = 0$$

$$\text{or } 1.5x = 15$$

$$\text{or } x = ₹ 10 \text{ per hour}$$

On substituting the value of x in (i) we get $y = ₹ 1,600$

Hence the wage rate per hour is ₹ 10 and the cost of raw material is ₹ 1,600 on the job.

2. (a) Statement of Equivalent Production

Input Details	Units	Output Particulars	Units	Equivalent Production					
				Material		Labour		Overhead	
				%	Units	%	Units	%	Units
Unit Introduced	45,000	Finished output	42,000	100	42,000	100	42,000	100	42,000
		Normal loss (2% of 45,000)	900	-	-	-	-	-	-
		Abnormal loss	300	100	300	80	240	60	180
		Closing W-I-P	1,800	100	1,800	50	900	40	720
	45,000		45,000		44,100		43,140		42,900

Statement of Cost

Particulars	Units	Rate (₹)	Amount (₹)	Amount (₹)
(i) Finished goods	42,000	17.9042		7,51,976.40
(ii) Abnormal Loss				
Material	300	11.5873	3,476.19	
Labour	240	2.1048	505.15	
Overhead	180	4.2121	758.18	4,739.52
(iii) Closing W-I-P:				
Material	1,800	11.5873	20,857.14	
Labour	900	2.1048	1,894.32	
Overhead	720	4.2121	<u>3,032.71</u>	25,784.17

Cost per Unit

Particulars	Amount (₹)	Units	Per Unit (₹)
(i) Direct Material :			
Unit Introduced	4,50,000		
Add: Material	<u>65,500</u>		
	5,15,500		
Less: Value of normal loss (900 units × ₹ 5)	<u>(4,500)</u>		
	5,11,000	44,100	11.5873
(ii) Labour	90,800	43,140	2.1048
(iii) Overhead	1,80,700	42,900	<u>4.2121</u>
			<u>17.9042</u>

Process – P A/c

Particulars	Units	Amount (₹)	Particulars	Units	Amount (₹)
To Input	45,000	4,50,000	By Normal loss	900	4,500
To Direct Material	-	65,500	By Abnormal loss	300	4,740
To Labour	-	90,800	By Finished goods	42,000	7,51,976
To Overhead		1,80,700	By Closing W-I-P	1,800	25,784
	45,000	7,87,000		45,000	7,87,000

Abnormal Loss A/c

Particulars	Units	Amount (₹)	Particulars	Units	Amount (₹)
To Process-B A/c	300	4,740	By Cost ledger control A/c or Bank A/c	300	600
			By Costing Profit & loss A/c	-	4,140
	300	4,740		300	4,740

(b) Treatment is as follows:

- (i) **Credit for Recoveries:** The realised or realisable value of scrap or waste is deducted as it reduces the cost of production.
- (ii) **Packing Cost (primary):** Packing material which is essential to hold and preserve the product for its use by the customer is added in the factory cost.
- (iii) **Joint Products and By-Products:** Joint costs are allocated between/among the products on a rational and consistent basis. In case of by-products, the net realisable value of by-products is deducted from the cost of production.
- (iv) **Quality Control Cost:** It is added in the factory cost as this is the cost of resources consumed towards quality control procedures.

3. (a) (i) **Statement showing allocation of Joint Cost**

Particulars	AB	PQ
No. of units Produced	1,800	3,000
Selling Price Per unit (₹)	40	30
Sales Value (₹)	72,000	90,000

Less: Estimated Profit (AB -20% & PQ -30%)	(14,400)	(27,000)
Cost of Sales	57,600	63,000
Less: Estimated Selling Expenses (AB -15% & PQ -15%)	(10,800)	(13,500)
Cost of Production	46,800	49,500
Less: Cost after separation	(35,000)	(24,000)
Joint Cost allocated	11,800	25,500

(ii) Statement of Profitability

Particulars	MA (₹)	AB (₹)	PQ (₹)
Sales Value (A)	4,00,000 (4,000x ₹ 100)	72,000	90,000
Less:- Joint Cost	1,75,100 (2,12,400 -11,800 - 25,500)	11,800	25,500
Cost after separation	-	35,000	24,000
Selling Expenses (MA- 30%, AB-15% & PQ-15%)	1,20,000	10,800	13,500
(B)	2,95,100	57,600	63,000
Profit (A –B)	1,04,900	14,400	27,000
Overall Profit = 1,04,900 + 14,400 + 27,000 = ₹ 1,46,300			

(b) Operating Cost Statement

	Particulars	Total Cost Per annum (₹)
A.	Fixed Charges:	
	Insurance	15,600
	Garage rent (₹ 2,400 × 4 quarters)	9,600
	Road Tax	5,000
	Salary of operating staff (₹ 7,200 × 12 months)	86,400
	Depreciation	68,000
	Total (A)	1,84,600
B.	Variable Charges:	
	Repairs (₹ 4,800 × 4 quarters)	19,200
	Tyres and Tubes (₹ 3,600 × 4 quarters)	14,400
	Diesel {(1,80,000 km. ÷ 5 km.) × ₹ 13}	4,68,000
	Oil and Sundries {(1,80,000 km. ÷ 100 km.) × ₹ 22}	39,600

Total (B)	5,41,200
Total Operating Cost (A+B)	7,25,800
Add: Passenger tax (Refer to WN-1)	3,01,275
Add: Profit (Refer to WN-1)	3,42,359
Total takings	13,69,434

Calculation of Cost per passenger kilometre and one way fare per passenger:

$$\begin{aligned}\text{Cost per Passenger-Km.} &= \frac{\text{Total Operating Cost}}{\text{Total Passenger - Km.}} \\ &= \frac{\text{₹ 7,25,800}}{40,32,000 \text{ Passenger - Km.}} = \text{₹ 0.18}\end{aligned}$$

$$\begin{aligned}\text{One way fare per passenger} &= \frac{\text{Total Takings}}{\text{Total Passenger - Km.}} \times 30 \text{ Km.} \\ &= \frac{\text{₹ 13,69,434}}{40,32,000 \text{ Passenger - Km.}} \times 30 \text{ km} = \text{₹ 10.20}\end{aligned}$$

Working Notes:

1. Let total taking be X then Passenger tax and profit will be as follows:

$$X = \text{₹ 7,25,800} + 0.22 X + 0.25 X$$

$$X - 0.47 X = \text{₹ 7,25,800}$$

$$X = \frac{\text{₹ 7,25,800}}{0.53} = \text{₹ 13,69,434}$$

$$\text{Passenger tax} = \text{₹ 13,69,434} \times 0.22 = \text{₹ 3,01,275}$$

$$\text{Profit} = \text{₹ 13,69,434} \times 0.25 = \text{₹ 3,42,359}$$

2. Total Kilometres to be run during the year
 $= 30 \text{ km.} \times 2 \text{ sides} \times 10 \text{ trips} \times 25 \text{ days} \times 12 \text{ months} = 1,80,000 \text{ Kilometres}$
3. Total passenger Kilometres
 $= 1,80,000 \text{ km.} \times 32 \text{ passengers} \times 70\% = 40,32,000 \text{ Passenger-km.}$

4. (a) Working Notes:

- (i) Total Productive hours = Estimated Working hours – Machine Maintenance hours

$$= 2,200 \text{ hours} - 200 \text{ hours} = 2,000 \text{ hours}$$

- (ii) Depreciation per annum = $\frac{\text{₹ 10,000} - \text{₹ 1,000}}{10 \text{ years}} = \text{₹ 900}$

(iii) Chemical solution cost per annum = ₹ 20 × 50 weeks = ₹ 1,000

(iv) Wages of attendants (per annum) = $\frac{₹ 120 \times 50 \text{ weeks}}{6 \text{ machines}} = ₹ 1,000$

Calculation of Machine hour rate

Particulars	Amount (per annum)	Amount (per hour)
A. Standing Charge		
(i) Wages of attendants	1,000	
(ii) Departmental and general works overheads	3,000	
Total Standing Charge	4,000	
Standing Charges per hour $\left(\frac{4,000}{2,000}\right)$		2.0
B. Machine Expense		
(iii) Depreciation	900	0.45
(iv) Electricity $\left(\frac{₹ 0.09 \times 16 \text{ units} \times 1,900 \text{ hours}}{2,000 \text{ hours}}\right)$	-	1.37
(v) Chemical solution	1,000	0.50
(vi) Maintenance cost	1,800	0.90
Machine operating cost per hour (A + B)		5.22

(b) (i) Material Usage Variance = Std. Price (Std. Quantity – Actual Quantity)

= ₹ 45 (9,000 kgs. – 8,900 kgs.)

= ₹ 4,500 (Favourable)

(ii) Material Price Variance = Actual Quantity (Std. Price – Actual Price)

= 8,900 kgs. (₹ 45 – ₹ 46)

= ₹ 8,900 (Adverse)

(iii) Material Cost Variance = Std. Material Cost – Actual Material Cost

= (SQ × SP) – (AQ × AP)

= (9,000 kgs. × ₹ 45) – (8,900 kgs. × ₹ 46)

= ₹ 4,05,000 – ₹ 4,09,400

= ₹ 4,400 (Adverse)

(iv) Labour Efficiency Variance = Std. Rate (Std. Hours – Actual Hours)

$$= ₹ 50 \left(\frac{9,000}{10} \times 8 \text{ hours} - 7,000 \text{ hrs.} \right)$$

$$= ₹ 50 (7,200 \text{ hrs.} - 7,000 \text{ hrs.})$$

$$= ₹ 10,000 \text{ (Favourable)}$$

(v) Labour Rate Variance = Actual Hours (Std. Rate – Actual Rate)

$$= 7,000 \text{ hrs. } (₹ 50 - ₹ 52)$$

$$= ₹ 14,000 \text{ (Adverse)}$$

(vi) Labour Cost Variance = Std. Labour Cost – Actual Labour Cost

$$= (\text{SH} \times \text{SR}) - (\text{AH} \times \text{AR})$$

$$= (7,200 \text{ hrs.} \times ₹ 50) - (7,000 \text{ hrs.} \times ₹ 52)$$

$$= ₹ 3,60,000 - ₹ 3,64,000$$

$$= ₹ 4,000 \text{ (Adverse)}$$

(vii) Variable Overhead Cost Variance = Std. Overhead for Actual Production – Actual Variable Overhead Cost

$$= (7,200 \text{ hrs.} \times ₹ 10) - ₹ 72,500$$

$$= ₹ 500 \text{ (Adverse)}$$

(viii) Fixed Overhead Cost Variance = Absorbed Fixed Overhead – Actual Fixed Overhead

$$= \frac{₹ 200}{10 \text{ kgs.}} \times 9,000 \text{ kgs.} - ₹ 1,92,000$$

$$= ₹ 1,80,000 - ₹ 1,92,000$$

$$= ₹ 12,000 \text{ (Adverse)}$$

5. (a) Number of days in budget period = 4 weeks \times 5 days = 20 days

Number of units to be produced

	Product-A (units)	Product-B (units)
Budgeted Sales	2,400	3,600
Add: Closing stock $\left(\frac{2,400 \text{ units}}{20 \text{ days}} \times 4 \text{ days} \right) \left(\frac{3,600 \text{ units}}{20 \text{ days}} \times 5 \text{ days} \right)$	480	900
Less: Opening stock	400	200
Production (units)	2,480	4,300

(i) Material Purchase Budget

	Material-X (Kg.)	Material-Y (Kg.)
Material required:		
Product-A	12,400 (2,480 units × 5 kg.)	9,920 (2,480 units × 4 kg.)
Product-B	12,900 (4,300 units × 3 kg.)	25,800 (4,300 units × 6 kg.)
	25,300	35,720
Add: Closing stock $\left(\frac{25,300 \text{ kgs.}}{20 \text{ days}} \times 10 \text{ days} \right)$ $\left(\frac{35,720 \text{ kgs.}}{20 \text{ days}} \times 6 \text{ days} \right)$	12,650	10,716
Less: Opening stock	1,000	500
Quantity to be purchased	36,950	45,936
Rate per kg. of Material	₹ 4	₹ 6
Total Cost	₹ 1,47,800	₹ 2,75,616

(ii) Wages Budget

	Product-A (Hours)	Product-B (Hours)
Units to be produced	2,480 units	4,300 units
Standard hours allowed per unit	3	5
Total Standard Hours allowed	7,440	21,500
Productive hours required for production	$\frac{7,440 \text{ hours}}{80\%} = 9,300$	$\frac{21,500 \text{ hours}}{80\%} = 26,875$
Add: Non-Productive down time	1,860 hours. (20% of 9,300 hours)	5,375 hours. (20% of 26,875 hours)
Hours to be paid	11,160	32,250

Total Hours to be paid = 43,410 hours (11,160 + 32,250)

Hours to be paid at normal rate = 4 weeks × 40 hours × 180 workers = 28,800 hours

Hours to be paid at premium rate = 43,410 hours – 28,800 hours = 14,610 hours

Total wages to be paid = 28,800 hours × ₹ 25 + 14,610 hours × ₹ 37.5

= ₹ 7,20,000 + ₹ 5,47,875

= ₹ 12,67,875

(b) a.

1. Estimation of cost-driver rate

Activity	Overhead cost (₹)	Cost driver	Cost driver rate (₹)
Packaging	1,50,00,000	950 Packaging hours	15,789.47
Fridge	2,10,00,000	1,900 Fridge hours	11,052.63

2. Overhead cost for chocolate ice cream

Activity	Overhead for a 1,000 ice cream batch	Amount (₹)
Packaging	1 x ₹ 11,052.63	11,052.63
Fridge	0.5 x ₹ 15,789.47	7,894.74
Total		18,947.37

3. Operating profit for chocolate ice cream

Particulars	Amount (₹)
Revenue (1,000 x ₹ 75)	75,000.00
Less: Direct Material (1,000 x ₹ 15)	15,000.00
Less: Direct Labour (10,000 x ₹ 2)	20,000.00
Less: Overhead	18,947.37
Operating Profit	21,052.63

b. Overhead per direct hour

= Total Overhead / Total Direct Labour Hours

= ₹ 3,60,00,000 / 24,000 hours

= ₹ 1,500 per direct labour hour

Since it takes 10 direct labour hour per 1,000 Chocolate ice cream, the overhead is ₹ 15,000

Particulars	Amount (₹)
Revenue (1,000 x ₹ 75)	75,000.00
Less: Direct Material (1,000 x ₹ 15)	15,000.00
Less: Direct Labour (10,000 x ₹ 2)	20,000.00
Less: Overhead	15,000
Operating Profit	25,000

6. (a) The various types of responsibility centres are as follows:

(i) **Cost Centres:** The responsibility centre which is held accountable for *incurrence of costs* which are under its control. The performance of this responsibility centre is measured against pre-determined standards or budgets. The cost centres are of two types:

(a) Standard Cost Centre and (b) Discretionary Cost Centre

(a) **Standard Cost Centre:** Cost Centre where *output is measurable and input required for the output can be specified*. Based on a well-established study, an estimate of standard units of input to produce a unit of output is set. The actual cost for inputs is compared with the standard cost. Any deviation (variance) in cost is measured and analysed into controllable and uncontrollable cost. The manager of the cost centre is expected to comply with the standard and held responsible for adverse cost variances. The input-output ratio for a standard cost centre is clearly identifiable.

(b) **Discretionary Cost Centre:** The cost centre *whose output cannot be measured in financial terms, thus input-output ratio cannot be defined*. The cost of input is compared with allocated budget for the activity. Examples of discretionary cost centres are Research & Development department, Advertisement department where output of these department cannot be measured with certainty and co-related with cost incurred on inputs.

(ii) **Revenue Centres:** The responsibility centres which are accountable for *generation of revenue for the entity*. Sales Department for example, is responsible for achievement of sales target and revenue generation. Though, revenue centres do not have control on expenditures it incurs but sometimes expenditures related with selling activities like commission to sales person etc. are incurred by revenue centres.

(iii) **Profit Centres:** These are the responsibility centres which have *both responsibility of generation of revenue and incurrence of expenditures*. Since, managers of profit centres are accountable for both costs as well as revenue, profitability is the basis for measurement of performance of these responsibility centres. Examples of profit centres are decentralised branches of an organisation.

(iv) **Investment Centres:** These are the responsibility centres which are *not only responsible for profitability but also have the authority to make capital investment decisions*. The performance of these responsibility centres are measured on the basis of Return on Investment (ROI) besides profit. Examples of investment centres are Maharatna, Navratna and Miniratna companies of Public Sector Undertakings of Central Government.

(b) Efficiency is usually related with performance and may be computed by comparing the time taken with the standard time allotted to perform the given job/task.

If the time taken by a worker on a job equals or less than the standard time, then he is rated efficient.

In case he takes more time than the standard time he is rated as inefficient.

$$\text{Efficiency in \%} = \frac{\text{Time allowed as per standard}}{\text{Time Taken}} \times 100$$

For efficiency rating of employees the following procedures may be followed:

1. **Determining standard time/performance standards:** The first step is to determine the standard time taken by a worker for performing a particular job/task. *The standard time can be determined by using Time & Motion study or Work study techniques*. While determining the standard time for a job/task a heterogeneous group of workers is taken and contingency allowances are added for determining standard time.
 2. **Measuring Actual Performance of workers:** For computing efficiency rating it is necessary to develop a procedure for recording the actual performance of workers. The system developed should record the output of each worker along with the time taken by him.
 3. **Computation of efficiency rating:** The efficiency rating of each worker can be computed by using the above mentioned Formula.
- (c) 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.

Under this system there is no need for a separate cost ledger. Of course, there will be a number of subsidiary ledgers; in addition to the useful Customers' Ledger and the Purchase Ledger, there will be: (a) Stores Ledger; (b) Stock Ledger and (c) Job Ledger.

- (d) After identification of the costs and benefits, it is now required to be quantified i.e., the cost and benefit should be measured and estimated. The estimation is done by following the two principles as discusses below:

- (i) **Variability:** Variability means by how much a cost or benefit increased or decreased due to the choice of the option. Variable costs are the cost which differs under the different volume or activities. On the other hand, fixed costs remain same irrespective of volume and activities.
- (ii) **Traceability:** Traceability of cost means degree of relationship between the cost and the choice of the option. Direct costs are directly assigned to the option on the other hand indirect costs needs to be apportioned to the option on some reasonable basis.