PAPER – 4:
COST AND MANAGEMENT ACCOUNTING

QUESTIONS

PART I - Case Scenario based MCQs

Marginal Costing

1. Popular company produces various articles for student purposes. It has been in industry since last 25 years. Company had a very humble start but gained popularity over the years due to excellent quality products which were sold at very competitive prices. Company has huge reserves and feel that it is also obligated to give back to the society from which it has grown.

   Last year management decided to produce and supply special quality school bags, water bottles, & geometry boxes to NGOs, at no price, as a social responsibility. These articles were simple looking but were more durable, that would not have wore-off easily and could have been used for long-term.

   This year management wants to add another dimension to this social work. It approached charitable schools and government run schools and offered them the supply of the same articles, at cost. This will help students in these schools to get these things at a very low price compared to market.

   The variable costs are ₹ 100, ₹ 80, and ₹ 40 for school bags, water bottles, and geometry boxes, respectively. These articles are made using a single machine. 0.20 hours of machine operation is required for manufacturing 1 unit of school bag. Similarly, machine hours required for each units of water bottle and geometry box is 0.15 hours and 0.10

hours, respectively. Fixed overhead related to machine is ₹ 7,40,000 per year. Machine can operate for 8,000 hours in a year.

Company has decided to sell its 80% capacity production in markets. Rest is divided amongst the 2 undergoing social works, equally.

All Schools requests these items in the ratio of 2:3:5, as per their demand by the school students.

Company wants to set a price for these articles to be offered to the schools. Management has few questions they need the answers to. They assigned the task to their team. Team made rough calculations but as there were too many people on the team, each came up with different answers. As a Chartered accountant, you have been approached. Understand the case closely, find the correct answers and help management to set a price.

Answer the following:

(i) What is allocated fixed cost per unit of School bags, water bottles, and geometry boxes?

(a) 18.5, 13.875, 9.75

(b) 18.5, 13.875, 9.25

(c) 18.5, 13.785, 9.25

(d) 18.5, 13.785, 9.50

(ii) If the prices were ₹ 200, ₹ 160, and ₹ 100, what would be the overall break-even point in units in relation to fixed cost allocated to these supplies?

(a) 308.33 units

(b) 500 units

(c) 508.33 units

(d) 1,000 units

(iii) Find out the maximum number of units of each article that can be given at the prices given in Part (ii).

(a) 61, 92, 154

(b) 200, 300, 500

(c) 101, 152, 254

(d) 100, 150, 250

(iv) What will be the maximum units that can be supplied to the schools of each article?

(a) 1103, 1645, 2726

(b) 1093, 1655, 2748

(c) 1185, 1777, 2962

(d) 1133, 1675, 2958

(v) What should be the correct price for each item as per the management's decision?

(a) 118.50, 93.875, 49.75

(b) 118.50, 93.785, 49.25

(c) 118.50, 93.785, 49.50

(d) 118.50, 93.875, 49.25

Process Costing

2. Knowing the hectic schedule of a student preparing for the examination, a homemaker managing work from home or a new parent busy in neonatal care, a freshly qualified professional (Mr. Rishi) entered into a start-up business of manufacturing frozen foods.

The process majorly involve washing and cutting the vegetables (Process I), blanching, cooling and mixing of ingredients with spices (Process II), forming, frying and freezing the final product (Process III).

In Accounts, Mr. Rishi normally transfers the output of one process to another process at cost but, being a young entrepreneur, he is interested in knowing the profit made at each and every process. Thus, it was decided to transfer the output of Process I and II to the next process at cost plus 25%. Further, the output of Process III is also transferred to finished stock at cost plus 33 1/3%.

Following information is extracted from the books of Mr. Rishi for the current year:

	Process I (₹)	Process II (₹)	Process III (₹)	Finished Stock (₹)
Opening stock	8,02,500	14,44,500	21,40,000	24,07,500
Direct materials	42,80,000	34,77,500	26,75,000	--
Direct wages	66,87,500	57,78,000	49,22,000	--
Factory overheads	51,36,000	38,52,000	35,57,750	--
Closing stock	10,70,000	17,12,000	20,86,500	26,75,000
Inter-process profit included in opening stock	NIL	2,14,000	5,35,000	10,70,000

Stock in processes is valued at prime cost. The finished stock is valued at the price at which it is received from Process III.

Mr. Rishi wants you to FIGURE OUT the following to analyse the profit generated at each process:

(i) What is the transfer price value at which the output of Process I is transferred to Process II?

(a) ₹ 1,97,95,000

(b) ₹ 39,59,000

(c) ₹ 1,58,36,000

(d) ₹ 1,69,06,000

(ii) What is the transfer price value at which the output of Process II is transferred to Process III?

(a) ₹ 1,20,97,476

(b) ₹ 4,07,93,750

(c) ₹ 2,86,96,274

(d) ₹ 3,43,47,000

(iii) What is the transfer price value at which the output of Process III is transferred to Finished Stock?

(a) ₹ 5,40,88,500

(b) ₹ 3,98,91,140

(c) ₹ 2,94,44,860

(d) ₹ 6,93,36,000

(iv) What is the cost value at which the output of Process III is transferred to Finished Stock?

(a) ₹ 5,40,88,500

(b) ₹ 3,98,91,140

(c) ₹ 2,94,44,860

(d) ₹ 6,93,36,000

(v) What is the cost value of closing stock of Process III A/c?

(a) ₹ 20,86,500

(b) ₹ 15,64,884

(c) ₹ 3,98,91,140

(d) ₹ 5,21,616

Employee Cost and Direct Expenses

3. Phalsa Ltd. pays its workers on time-basis because their services cannot be tangibly measured. The company's normal working week includes 5 days of 8 hours each. Sometimes, the workers needs to work late at night which was 3 nights of 3 hours each for the current week. The average output produced per worker for the week is 120 units.

Information regarding incentive rate is as follows:

Rate of Payment	Day shift: ₹ 320 per hour
	Night shift: ₹ 450 per hour

However, this time-basis payment made workers lazy, making their expected output lower. As workers started doing more of the night shifts

for higher earnings with minimal impact on the outputs, the company decided to shift on to a system of payments on output basis. Information regarding amended incentive rate is as follows:

Time-rate (as usual)	:	₹ 320 per hour
Basic time allowed for 15 units	:	5 hours
Piece-work rate	:	Add 15% to basic piece-rate

In the amended incentive system, the normal weekly working hours remained the same while production increased to 135 units.

CALCULATE the labour cost per unit as per the existing incentive system, along with the amended incentive system.

(a) ₹ 140.42 and ₹ 122.67 respectively

(b) ₹ 124.81 and ₹ 138.00 respectively

(c) ₹ 124.81 and ₹ 122.67 respectively

(d) ₹ 140.42 and ₹ 138.00 respectively

Overheads- Absorption Costing Method

4. Gaarmentz Ltd. run a sewing factory for medical garments. But, the company suffers from the limiting factor i.e. labor. Each sewing machine needs 100% attention of one person at a particular point of time to operate it. The company has 8 number of alike sewing machines on which 8 operators work separately. The following particulars are furnished for a six months period:

Paid hours for all the 8 operators	9,594 hours
Effective working hours for all the 8 operators	9,360 hours
Average rate of wages per day of 8 hours per operator	₹ 110
Power consumed	₹ 60,125
Supervision and Indirect Labour	₹ 21,450
The following particulars are given for a year:	
Insurance	₹ 4,68,000
Sundry Expenses	₹ 7,15,000

Depreciation charged is 10% on the original cost of all the sewing machines.

Repairs and Maintenance comes to 5% of the value of all the sewing machines.

The original cost of all the sewing machines works out to ₹ 41,60,000

CALCULATE the Comprehensive Machine Hour Rate.

(a) ₹ 215.86

(b) ₹ 217.99

(c) ₹ 116.43

(d) ₹ 119.34

Cost Sheet

5. Following information is available for the month of March relating to manufacturing of a product:

Particulars	Amount (₹)
Cost of Sales	37,51,540
Stock of Raw material as on 01st March	6,50,000
Direct Wages	11,44,000
Hire charges paid for Plant (indirect expenses)	3,24,740
Salary to office staff	1,78,750
Maintenance of office building	13,000
Depreciation on Delivery van	39,000
Warehousing charges	61,750
Stock of Raw material as on 31st March	1,95,000
Realisable value on sale of scrap	32,500

Factory overheads are 20% of the Prime cost.

FIND OUT the value of Raw Material purchased with the help of Statement of Cost.

(a) ₹ 10,40,000

(b) ₹ 14,95,000

(c) ₹ 26,39,000

(d) ₹ 34,91,540

Joint Products and By products

6. ICT Ltd. belongs to pharmaceutical industries. The chemical process that ICT Ltd. operates convert one compound into three category of medicines viz. BetaTab, Folick and TegriCap. Though BetaTab and Folick are already converted to final product at split-off point, Tegricap needs further processing along with addition of new compound with it.

The market for BetaTab and Folick is highly active, thus the production is sold at split-off point, however, Tegricap can be sold only after further processing.

Following information is provided for the current year:

Products	Quantity sold (tons)	Selling price per ton (₹)
BetaTab	372	7,500
Folick	1,054	5,625
TegriCap	1,472	3,750

The selling price is expected to remain the same for coming years.

The total joint manufacturing costs till split-off point is ₹ 62,50,000 and the amount spent for further processing w.r.t. Tegricap is ₹ 31,00,000

The details regarding closing inventories are as follows:

Products	Completed units (tons)
BetaTab	360
Folick	120
TegriCap	50

You are required to COMPUTE the joint cost allocated to BetaTab, Folick and TegriCap using Net realizable value (NRV) method.

(a) BetaTab- ₹ 15,65,481, Folick - ₹ 33,26,647 and TegriCap - ₹ 13,57,872

(b) BetaTab - ₹ 23,33,985, Folick - ₹ 28,07,478 and TegriCap - ₹ 11,08,537

(c) BetaTab - ₹ 19,27,533, Folick - ₹ 23,18,570 and TegriCap - ₹ 20,03,897

(d) BetaTab - ₹ 11,08,537, Folick - ₹ 28,07,478 and TegriCap - ₹ 23,33,985

Marginal Costing

7. Ms. Gauri has the business of selling pens. She has setup this pen retailing for over 10 years with good profit volume ratio. Her average cost from the retailing is ₹ 11.25 per unit if she sells 16,000 units and is ₹ 11 per unit if she sells 20,000 units.

For the current month, she also charged ₹ 5,000 towards depreciation and the rental payment due.

The excess of sales revenue over the variable costs is ₹ 3.333 per unit.

You are required to CALCULATE Break-even Point (in units), Cash Break-even Point (in units) and Profit Volume Ratio.

(a) Break-even Point- 6,000 units, Cash Break-even Point- 6,000 units and Profit Volume Ratio- 33.33%

(b) Break-even Point- 6,000 units, Cash Break-even Point- 4,500 units and Profit Volume Ratio- 25%

(c) Break-even Point- 4,500 units, Cash Break-even Point- 4,500 units and Profit Volume Ratio- 33.33%

(d) Break-even Point- 4,500 units, Cash Break-even Point- 4,500 units and Profit Volume Ratio- 25%

PART-II Descriptive Questions

Material Cost

8. Ani Ltd. uses 6 kg. of Material 'EXE' to produce 1 finished unit of Product 'EME'. The current demand of Product 'EME' is 16,000 units quarterly. 1 kg. of Material 'EXE' costs ₹ 40. The cost relating to quotations, documentation works, employee cost directly attributable to the procurement of material, every-time the order is made, is ₹ 2,000. The

cost of fund invested in inventories, cost of storage, insurance cost, etc. is estimated to be 15% per annum of average inventory.

You are required the following:

(i) CALCULATE the Economic Order Quantity for Material 'EXE'.

(ii) COMMENT, should Ani Ltd. accept an offer of 2.5% discount by the supplier of Material 'EXE', if supply of the annual requirement of the Material is made in 4 equal installments?

Employee Cost and Direct Expenses

9. AeBee Publishers works for various educational institutes for editing, binding, printing of various books and magazines on job work basis. Currently, the company has employed 30 workers and pays them on hour rate basis for each job assigned. To complete one of the process of binding, the average time allowed to an employee is 8 hours for a 10 pages magazine.

In the month of March, two employees 'Cee' and 'Dee' were given 21 and 30 units of magazines respectively for binding work. The following are the details of the work assigned:

Particulars	'Cee'	'Dee'
Work assigned	21 units	30 units
Time taken	78 hours	114 hours

The existing rate of wages is ₹ 60 per hour along with bonus as per Halsey System.

However, a new wage agreement has been signed between the employees and the company where, employees will be paid ₹ 65 per hour with effect from the April month. But, inadvertently, for the month of March, the accountant of the company paid the wages to these employees considering rate of wages as ₹ 65 per hour.

You are required to CALCULATE the following:

(i) Amount of loss that the company has incurred due to incorrect rate selection in the month of March.

(ii) Loss incurred by the company due to incorrect rate selection if it had followed Rowan scheme of bonus payment.

(iii) Amount that could have been saved if Rowan Scheme of bonus payment were followed.

Overheads- Absorption Costing Method

10. Han Ltd. sells three products namely 'A', 'B' and 'C'. The following information is available regarding sales, costs and activity for the year ended 31st March:

Particulars	A	B	C
Sales (₹)	60,00,000	90,00,000	54,00,000
Cost of Sales (₹)	30,00,000	78,00,000	27,00,000
Area of storage (sq.ft.)	72,000	1,08,000	36,000
Number of parcels sent	2,40,000	3,00,000	2,10,000
Number of invoices sent	60,000	90,000	1,44,000

Selling and Distribution overheads and the basis of allocation are as follows :

Fixed Cost	Amount (₹)	Basis of allocation to Products
Rent and Insurance	6,00,000	Square feet
Depreciation	2,70,000	Parcel
Salesman's salaries & expenses	11,40,000	Sales Volume
Administrative wages and salaries	9,00,000	No. of Invoices
Variable Costs:		
Packing wages & materials		₹ 4.80 per parcel
Commission		2.40% of sales
Stationery		₹ 1.80 per invoice

Finance Manager of the Company has recommended to discontinue the Product 'C' since it's sales is less compared to other products.

You are required to PREPARE the profitability statement of each product, showing the percentage of profit/ (loss) on sales for each product, and also EXAMINE the recommendation of Finance Manager.

Cost Sheet

11. IC Ltd. manufactures two types of phone covers, one is 'plastic' phone cover and another is 'silicon' phone cover.

The cost data relating to the manufacturing of both the phone covers for the year ended 31st March is provided below:

Particulars	Amount (₹)
Direct Materials	1,00,00,000
Direct Wages	56,00,000
Production Overhead	32,00,000
Total	1,88,00,000

Other information relating to the production of the phone covers is as follows:

- Direct material cost per unit of 'silicon' phone cover was twice than that of 'plastic' phone cover.
- Direct wages per unit for 'plastic' phone cover were 60% of those for 'silicon' phone cover.
- Production overhead per unit was at same rate for both the type of phone covers.
- Administration overhead being part of cost of production was 50% of Production overhead.
- Selling cost and Selling Price of 'silicon' phone cover were ₹ 8 and ₹ 140 per unit respectively.
- No. of units of 'silicon' phone covers sold- 90,000
- No. of units of Production of -

  'silicon' phone cover: 1,00,000

  'plastic' phone cover: 3,00,000

You are required to PREPARE a cost sheet for 'silicon' phone cover showing Cost and Profit (per unit and Total).

Cost Accounting Systems

12. Following information is extracted as a result of scrutiny of the figures from both the financial accounts and cost accounts of CK Ltd. for the year ending 31st March:

Particulars	Amount (₹)
Net Profit (as per cost accounts)	57,71,840
Under recovery of selling overheads in cost accounts	1,16,800
Under valuation of closing stock in cost accounts	1,64,000
Rent received credited in financial accounts	87,200
Bad debts provided in financial accounts	52,000
Income tax provided in financial accounts	2,54,400
Under recovery of administration overheads in cost accounts	1,50,400

You are required to PREPARE a Statement of Reconciliation showing the profit as per financial records.

Batch Costing

13. Phonick Ltd. accepted an order to supply 2,000 units per month of Product 'E' for the third quarter of the year. Each monthly batch order records the actual costs of materials and labour. Overheads are charged at a rate per labour hour. The selling price is established at ₹ 15 per unit.

Information relating to Material, Labour and Overheads is provided below:

Month	Batch Output (Numbers)	Material Cost (₹)	Labour Cost (₹)	Overheads (₹)	Total Labour Hours
October	2,500	12,500	5,000	24,000	8,000
November	3,000	18,000	6,000	18,000	9,000
December	2,000	10,000	4,000	30,000	10,000

Labour is paid at the rate of ₹ 2 per hour.

CALCULATE the cost and profit per unit of each batch order along with the overall position of the order for 6,000 units.

Joint Products and By products

14. JPBP Ltd. manufactures two joint products A and B simultaneously from the same process. The process produces another product C which is recovered incidentally from the material used in the manufacture of A and B.

The expenditures incurred up to the point of separation i.e. split-off point are ₹ 14,82,000. As the joint products are capable of being measured in the same units, joint costs are allocated on the basis of physical unit.

Though the joint products A and B are saleable at split-off point, these can also be further processed and sold at a higher market price, with some sales promotion efforts. However, product C can be sold only after further processing.

The management is of the view that, as the net realisable value of the product C at split off point is too small, the value may be deducted from the joint production cost.

The relevant details of the products are as follows:

Particulars	Product A	Product B	Product C
Output (kg.)	16,250	8,125	1,625
Selling price at the split-off point (per kg.) (₹)	72	80	-
Further processing cost (per kg.) (₹)	16	20	8
Further marketing cost (per kg.) (₹)	8	8	4
Selling price after further processing (per kg.) (₹)	112	104	24

You are required the following:

(i) DETERMINE the profit/ (loss) of each joint product if these are sold without further processing.

(ii) WHETHER joint products be processed further? Decide on the basis of incremental profit/ (loss).

Service Costing

15. Roshan Travels provide bus facility to a College for carrying its students from home to College and dropping them back at home after study hours. The travel company runs a fleet of 6 buses for this purpose and park them in the college premises.

The information regarding bus running is as follows:

(I) The College operates in two shifts (one in the morning and one in the afternoon).

(II) The distance travelled by each bus one way is 20 kms.

(III) The students need to attend the college for 30 days in a month.

(IV) The seating capacity of each bus is 30 persons.

(V) The seating capacity is normally 80% occupied during the year.

The information regarding expenses incurred for a year is as follows:

Particulars	Amount
Driver and attendant salary	₹ 60,000 per person per month
Cleaner's salary (One cleaner for 2 buses)	₹ 30,000 per cleaner per month
Diesel (Avg. 8 kms per litre)	₹ 160 per litre
Insurance charges (per annum)	2% of Purchase Price
License fees and taxes	₹ 10,160 per bus per month
Parking charges paid	₹ 36,000 per month
Repair & maintenance including engine oil and lubricants (for every 5,760 kms)	₹ 5,712 per bus

Purchase Price of each bus	₹ 30,00,000
Residual life of each bus	8 Years
Scrap value per bus at the end of residual life	₹ 6,00,000

Students coming from a distance of beyond 10 kms away from the College are charged double the fare than that from students coming from a distance of up-to 10 kms. away from the College. 50% of students travelling in each trip are coming from a distance beyond 10 kms. from the College. The charges are to be based on average cost.

You are required to:

(i) PREPARE a statement showing expenses of operating a single bus for a year.

(ii) CALCULATE the average cost per student per month in respect of:

(a) Students coming from a distance up-to 10 kms. from the College.

(b) Students coming from a distance beyond 10 kms. from the College.

Standard Costing

16. Banku manufacturing Ltd. is engaged in producing a item named 'ABC'. It produces 'ABC' in a batch of 100 kgs. Standard material inputs required for 100 kgs. of 'ABC' are as below:

Material	Quantity (in kgs.)	Rate per kg. (in ₹)
A	50	110
B	30	320
C	30	460

During the month of April, 2024, actual production was 50,000 kgs. of 'ABC' for which the actual quantities of material used for a batch and the prices paid thereof are as under:

Material	Quantity (in kgs.)	Rate per kg. (in ₹)
A	60	115
B	25	330
C	20	405

You are required to CALCULATE the following variances based on the above given information for the month of April, 2024 for Banku manufacturing Ltd.:

(i) Material Cost Variance;

(ii) Material Price Variance;

(iii) Material Usage Variance;

(iv) Material Mix Variance;

(v) Material Yield Variance.

Marginal Costing

17. XYZ Ltd. is a company involved in production and construction specialised equipment and machines on the demand of customers. The company received an order for construction of a specialised machine, it had nearly completed this job relating to construction of a specialised machine, when it discovered that the customer had gone out of business. At this stage, the position of the job was as under:

	(₹)
Original cost estimate	27,50,000
Costs incurred so far	24,80,000
Costs to be incurred	3,70,000
Progress payment received from original customer	15,50,000

After searches, a new customer for the machine has been found. He is interested to take the machine, if certain modifications are carried out. The new customer wanted the machine in its original condition, but without its AI device and with certain other modifications. The costs of these additions and modifications are estimated as under:

Direct Materials (at cost)	₹ 1,05,000
Direct Wages Dept.: X	35 men days
Dept.: Y	55 men days
Variable Overheads	30% of Direct Wages in each Dept.
Delivery Costs	₹ 15,500

Fixed overheads will be absorbed at 50% of direct wages in each department.

The following additional information is available:

(1) The direct materials required for the modification are in stock and if not used for modification of this order, they will be used in another job in place of materials that will now cost ₹ 1,50,000.

(2) Department X is working normally and hence any engagement of labour will have to be paid at the direct wage rate of ₹ 1,000 per man day.

(3) Department Y is extremely busy. Its direct wages rate is ₹ 1,200 per man day and it is currently yielding a contribution of ₹ 3 per rupee of direct wages.

(4) Additional supervisory required for the modification cost ₹ 80,000.

(5) The cost of the AI device that the new customer does not require is ₹ 1,35,000. If it is taken out, it can be used in another job in place of a different mechanism. The latter mechanism has otherwise to be bought for ₹ 1,05,000. The dismantling and removal of the control mechanism will take 5 man day in department X.

(6) If the conversion is not carried out, some of the materials in the original machine can be used in another contract in place of materials that would have cost ₹ 2,00,000. It would have taken 5 men days of work in department X to make them suitable for this purpose. The remaining materials will realize ₹ 1,50,000 as scrap. The drawings, which are included as part for the job can he sold for ₹ 45,000.

You are required to CALCULATE the minimum price, which the company can afford to quote for the new customer as staled above.

Budgets and budgetary control

18. BT Ltd. achieves sale of ₹ 73,12,500 with COGS of 40% while operating at 75% of its normal capacity during the current financial year.

The information relating to Administration, Selling and Distribution costs is given below:

Administration costs:

Office salaries	₹ 11,70,000
General expenses	5 per cent of COGS
Depreciation	₹ 97,500
Rates and taxes	₹ 1,13,750

Selling costs:

Salaries	8 per cent of sales
Travelling expenses	5 per cent of COGS
Sales office expenses	2.5 per cent of COGS
General expenses	2.5 per cent of COGS

Distribution costs:

Wages	₹ 1,95,000
Rent	1 per cent of sales
Other expenses	10 per cent of COGS

Considering some of the expenses like office salaries, depreciation, rates and taxes, and wages, to remain the same irrespective of the level of activity, as these expenses are fixed in nature, PREPARE flexible administration, selling and distribution costs budget, operating at 85%, 100% and 115% of normal capacity.

Miscellaneous

19. (a) DISCUSS advantages of Marginal Costing.

(b) LIST DOWN certain financial expenses and income included in Financial Accounts only.

(c) DISCUSS the treatment of By-product cost in joint cost accounting when they are of small total value.

(d) DISCUSS normal and abnormal Process Loss and ENUMERATE their treatment in Cost Accounts.

SUGGESTED ANSWERS/HINTS

Note: Figures are rounded off to the nearest figures to remove approximation error, wherever required.

1. (i) (b) Fixed overhead = 740000

Total machine hours = 8000 hours

Fixed OH per hour= ₹ 92.5

Fixed OH per unit of:

- School bag = 0.20 x 92.5 = ₹ 18.5
- Water bottle = 0.15 x 92.5 = ₹ 13.875
- Geometry box = 0.10 x 92.5 = ₹ 9.25

(ii) (d) Hours allocated = 8000 x 10% = 800 hours

Fixed overhead allocated = 800 x 92.5 = ₹ 74,000

Contribution:

- Bag = 200-100 = 100
- Bottle = 160-80=80

- Geometry = 100- 40 = 60

Composite contribution = 100 x 2/10 + 80 x 3 / 10 + 60 x 5/10 = ₹ 74

Overall breakeven point for this assignment is = fixed cost allocated/composite contribution = 74,000/74 = **1,000 units**

(iii) **(b)** 1000 units are to be distributed in the ratio of 2:3:5

Bag = 200 units, bottle = 300 units, geometry = 500 units

(iv) **(c)** Total hours = 800 hours

let total no of units = X

Supply: bag 2/10 x X; bottle 3/10 x X; geometry 5/10 x X

Hours: (2X/10) x 0.20 + (3X/10) x 0.15 + (5X/10) x 0.10 = 800 hours

X = 5925

Units of :

- Bag = 2/10 x 5925 = 1185
- Bottle = 3/10 x 5925 = 1777.5 or 1777
- Geometry = 5/10 x 5925 = 2962.5 or 2962

(v) **(d)** Correct price is AT COST.

COST = Marginal Cost Per Unit + Fixed Overhead Cost Allocated Per Unit

	Bag	**Bottle**	**Geometry**
Variable cost per unit	100	80	40
Fixed cost per unit	18.5	13.875	9.25
Total	**118.5**	**93.875**	**49.25**

2. (i) (a) Process I Account

Particulars	Cost (₹)	Profit (₹)	Total (₹)	Particulars	Cost (₹)	Profit (₹)	Total (₹)
Opening Stock	8,02,500	–	8,02,500	Process II A/c (Transfer)*	1,58,36,000	39,59,000	1,97,95,000
Direct Material	42,80,000	–	42,80,000	Closing stock	10,70,000	–	10,70,000
Direct Wages	66,87,500	–	66,87,500				
Prime Cost	1,17,70,000	–	1,17,70,000				
Manufacturing Overheads	51,36,000	–	51,36,000				
Total cost	1,69,06,000	–	1,69,06,000				
Costing Profit and Loss A/c**		39,59,000	39,59,000				
	1,69,06,000	39,59,000	2,08,65,000		1,69,06,000	39,59,000	2,08,65,000

*Transfer price = (Total Cost - Closing Stock) (1 + 25%)

= (1,69,06,000 - 10,70,000) x 1.25

= ₹ 1,97,95,000

**Profit on transfer = (1,69,06,000 - 10,70,000) x .25 = ₹ 39,59,000

(ii) (b) Process II Account

Particulars	Cost (₹)	Profit (₹)	Total (₹)	Particulars	Cost (₹)	Profit (₹)	Total (₹)
Opening Stock	12,30,500	2,14,000	14,44,500	By Process III A/c (Transfer)**	2,86,96,274	1,20,97,476	4,07,93,750
Process I A/c	1,58,36,000	39,59,000	1,97,95,000	Closing stock*	14,77,726	2,34,274	17,12,000
Direct Material	34,77,500	-	34,77,500				
Direct Wages	57,78,000	-	57,78,000				
Prime Cost	2,63,22,000	41,73,000	3,04,95,000				
Manufacturing Overheads	38,52,000	-	38,52,000				
Total cost	3,01,74,000	41,73,000	3,43,47,000				
Costing Profit and Loss A/c***	-	81,58,750	81,58,750				
	3,01,74,000	1,23,31,750	4,25,05,750		3,01,74,000	1,23,31,750	4,25,05,750

* Cost of Closing Stock = $\left(\frac{₹\ 2,63,22,000}{₹\ 3,04,95,000}\right)$ X ₹ 17,12,000 = ₹ 14,77,726

**Transfer price = (Total Cost - Closing Stock) (1 + 25%)

= (3,43,47,000 - 17,12,000) x 1.25 = ₹ 4,07,93,750

***Profit on transfer = (3,43,47,000 - 17,12,000) x .25 = ₹ 81,58,750

(iii) (d) Process III Account

Particulars	Cost (₹)	Profit (₹)	Total (₹)	Particulars	Cost (₹)	Profit (₹)	Total (₹)
Opening Stock	16,05,000	5,35,000	21,40,000	By Finished Stock A/c** (Transfer)	3,98,91,140	2,94,44,860	6,93,36,000
Process II A/c	2,86,96,274	1,20,97,476	4,07,93,750	Closing stock*	15,64,884	5,21,616	20,86,500
Direct Material	26,75,000	--	26,75,000				
Direct Wages	49,22,000	--	49,22,000				
Prime Cost	3,78,98,274	1,26,32,476	5,05,30,750				
Manufacturing Overheads	35,57,750	--	35,57,750				
Total cost	4,14,56,024	1,26,32,476	5,40,88,500				
Costing Profit and Loss A/c***	-	1,73,34,000	1,73,34,000				
	4,14,56,024	2,99,66,476	7,14,22,500		4,14,56,024	2,99,66,476	7,14,22,500

* Cost of Closing Stock = $\left(\frac{₹\ 3,78,98,274}{₹\ 5,05,30,750}\right)$ X ₹ 20,86,500

= ₹ 15,64,884

**Transfer price = (Total Cost - Closing Stock) (1 + 33 1/3%)

= (5,40,88,500 - 20,86,500) x (1 + 33 1/3%)

= ₹ 6,93,36,000

***Profit on transfer = (5,40,88,500 - 20,86,500) x 33 1/3%

= ₹ 1,73,34,000

(iv) (b) Refer part (iii) above.

(v) (b) Refer part (iii) above.

3. (a) Calculation of existing labour cost per unit (time basis)

Normal weekly hours = 5 days x 8 hours = 40 hours

Night shift hours = 3 nights x 3 hours = 9 hours

Average production per week = 120 units

Weekly wages:

Normal shift	(40 hours × ₹ 320)	₹ 12,800
Night shift	(9 hours × ₹ 450)	₹ 4,050
Total wages		₹ 16,850

Labour cost per unit = $\left(\frac{₹\ 16,850}{120\ units}\right)$

= ₹ 140.42

Calculation of amended labour cost per unit (piece basis)

15 units are produced in 5 hours

Therefore, to produce 135 units, hours required is $\left(\frac{5\ hours}{15\ units}\right)$ X 135 units = 45 hours.

Labour cost of producing 135 units:

At basic time rate (45 hours × ₹ 320) = ₹ 14,400

Add: Bonus @ 15% on basic Piece rate

$\left[\left(\frac{₹\ 14,400}{135\ units}\right) \times 15\%\right] \times 135\ units$ = ₹ 2,160

Earning for the week ₹ 16,560

Labour cost per unit $= \left(\frac{₹\ 16,560}{135\ units}\right)$

= ₹ 122.67

4. (d) Computation of Comprehensive Machine Hour Rate

Particulars	**Amount for six months (₹)**
Operators' wages paid [(9,594 hrs./ 8 hrs.) x ₹ 110]	1,31,918
Power consumed	60,125
Supervision and indirect labour	21,450
Insurance (₹ 4,68,000/2)	2,34,000
Sundry expenses (₹ 7,15,000/2)	3,57,500
Depreciation {(₹ 41,60,000 × 10%)/2}	2,08,000
Repair and maintenance {(5% × ₹ 41,60,000)/2}	1,04,000
Total Overheads for 6 months	**11,16,993**
Comprehensive Machine Hour Rate $= \left(\frac{₹\ 11,16,993}{9,360\ hours}\right)$	**119.34**

5. (a) Statement of Cost for the month of March

Particulars	**Amount (₹)**	**Amount (₹)**
Cost of Material Consumed:		
Raw materials purchased	10,40,000**	
Add: Opening stock of raw materials	6,50,000	
Less: Closing stock of raw materials	(1,95,000)	14,95,000
Direct Wages		11,44,000

Prime Cost		26,39,000*
Hire charges paid for Plant (indirect expenses)	3,24,740	
Factory overheads (20% of Prime cost)	5,27,800	8,52,540
Works/ Factory Cost		34,91,540
Less: Realisable value on sale of scrap		(32,500)
Cost of Production/ Cost of Goods Sold		34,59,040
Administrative overheads:		
Maintenance of office building	13,000	
Salary paid to Office staff	1,78,750	1,91,750
Distribution overheads:		
Depreciation on delivery van	39,000	
Warehousing charges	61,750	1,00,750
Cost of Sales		37,51,540

(Reverse calculation to be done to find out the value of Raw materials purchased)

* Prime Cost + 3,24,740 + 20% of Prime Cost = 34,91,540

1.2 Prime Cost = 34,91,540 - 3,24,740 = 31,66,800

Prime Cost = 26,39,000

** Raw materials purchased = 14,95,000 - 6,50,000 + 1,95,000

= 10,40,000

6. (b) Calculation of total production of BetaTab, Folick and TegriCap

Products	Quantity sold (tons)	Quantity of closing inventories (tons)	Total production
(1)	(2)	(3)	(4) = [(2) + (3)]
BetaTab	372	360	732
Folick	1,054	120	1,174
TegriCap	1,472	50	1,522

Calculation of Net Realisable Value (at split-off point)

	Products			Total (₹)
	BetaTab	**Folick**	**TegriCap**	
Total Production (tons) (A)	732	1,174	1,522	
Selling price per ton (₹) (B)	7,500	5,625	3,750	
Final sales value of total production (₹) [(A) x (B)]	54,90,000	66,03,750	57,07,500	1,78,01,250
Less: Additional cost (₹)	-	-	(31,00,000)	(31,00,000)
Net realisable value (₹) (at split-off point)	54,90,000	66,03,750	26,07,500	1,47,01,250

Joint cost allocated using Net Realisable Value (at split-off point):

$$\frac{\text{Total Joint cost}}{\text{Total Net Realisable Value}} \times \text{Net Realisable Value of each product}$$

BetaTab $= \left(\frac{₹\ 62,50,000}{₹\ 1,47,01,250}\right)$ x ₹ 54,90,000

= ₹ 23,33,985

Folick $= \left(\frac{₹\ 62,50,000}{₹\ 1,47,01,250}\right)$ x ₹ 66,03,750

= ₹ 28,07,478

TegriCap $= \left(\frac{₹\ 62,50,000}{₹\ 1,47,01,250}\right)$ x ₹ 26,07,500

= ₹ 11,08,537

7. (b) Variable cost per unit $= \frac{\text{Change in Total cost}}{\text{Change in units}}$

$$= \left(\frac{(₹\ 11 \times 20,000 \text{ units}) - (₹\ 11.25 \times 16,000 \text{ units})}{20,000 \text{ units} - 16,000 \text{ units}}\right)$$

$$= \left(\frac{₹\ 2,20,000 - ₹\ 1,80,000}{4,000 \text{ units}}\right) = ₹\ 10$$

Fixed cost = Total Cost – Variable cost (at 20,000 units level)

= (₹ 11 x 20,000 units) – (₹ 10 x 20,000 units)

= ₹ 20,000

(i) Break-even Point (in units) $= \left(\frac{\text{Fixed Costs}}{\text{Contribution per unit*}}\right)$

$= \left(\frac{₹\ 20,000}{₹\ 3.333}\right)$

= **6,000 units**

* Contribution is the excess of sales revenue over the variable costs.

(ii) Cash Break-even Point (in units) $= \left(\frac{\text{Cash Fixed Costs**}}{\text{Contribution per unit}}\right)$

$= \left(\frac{₹\ 20,000 - ₹\ 5,000}{₹\ 3.333}\right)$

= **4,500 units**

** depreciation and other non-cash fixed costs are excluded from the fixed costs to compute cash break-even point.

(ii) P/V Ratio $= \frac{\text{Contribution per unit}}{\text{Sale price per unit}}$

$= \left(\frac{₹\ 3.333}{₹\ 10 + ₹\ 3.333}\right)$

= **25%**

8. Annual demand of material 'EXE'

= 16,000 units (per quarter) x 4 (No. of Quarter in a year) x 6 kg. (for every finished product)

= 3,84,000 kg.

(i) Calculation of Economic Order Quantity (EOQ) for material 'EXE'

$$EOQ = \sqrt{\frac{2 \times \text{Annual demand} \times \text{ordering cost}}{\text{Carrying cost per unit per annum}}}$$

$$= \sqrt{\frac{2 \times 3,84,000\text{kg.} \times ₹\ 2,000}{₹40 \times 15\%}} = 16,000 \text{ kg.}$$

(ii) Evaluation of Cost under different options of 'order quantity'.

Particulars	**When EOQ is ordered**	**When discount of 2.5% is accepted and supply is in 4 equal installments**
Order size	16,000 kg.	96,000 kg. $= \frac{3,84,000 \text{ kg.}}{4}$
No. of orders	24 $= \frac{3,84,000 \text{ kg.}}{16,000 \text{ kg.}}$	4
Purchase Cost per kg.	₹ 40	₹ 39 {₹ 40 - (₹ 40 × 2.5%)}
Total Purchase Cost (A)	₹ 1,53,60,000 (3,84,000 kg. x ₹ 40)	₹ 1,49,76,000 (3,84,000 kg. x ₹ 39)
Ordering Cost (B)	₹ 48,000 (24 orders x ₹ 2,000)	₹ 8,000 (4 orders x ₹ 2,000)
Carrying Cost (C)	₹ 48,000 $= \frac{16,000 \text{ kg.}}{2}$ x 15% x ₹ 40	₹ 2,80,800 $= \frac{96,000 \text{ kg.}}{2}$ x 15% x ₹ 39
Total Cost (A + B + C)	**₹ 1,54,56,000**	**₹ 1,52,64,800**

COMMENT – The total cost is lower if Ani Ltd. accept an offer of 2.5% discount by the supplier, when supply of the annual requirement of material 'EXE' is made in 4 equal installments.

9.

Particulars	**'Cee'**	**'Dee'**
No. of binding work assigned (units)	21	30
Hour allowed per magazine (Hours)	8	8
Total hours allowed (Hours)	168	240
Hours Taken (Hours)	78	114
Hours Saved (Hours)	90	126

(i) Calculation of loss incurred due to incorrect rate selection

(While calculating loss only excess rate per hour has been taken)

Particulars	'Cee' (₹)	'Dee' (₹)	Total (₹)
Basic Wages	390 (78 Hrs. ×₹ 5)	570 (114 Hrs. × ₹ 5)	960
Bonus (as per Halsey Scheme) (50% of Time Saved × Excess Rate)	225 (50% of 90 Hrs. × ₹ 5)	315 (50% of 126 Hrs. × ₹ 5)	540
Excess Wages Paid	**615**	**885**	**1,500**

(ii) Amount of loss if Rowan scheme of bonus payment were followed

Particulars	'Cee' (₹)	'Dee' (₹)	Total (₹)
Basic Wages	390.00 (78 Hrs. × ₹ 5)	570.00 (114 Hrs. × ₹ 5)	960.00
Bonus (as per Rowan Scheme) $(\frac{\text{Time Taken}}{\text{Time Allowed}} \times \text{Time Saved x Excess Rate})$	208.93 $=(\frac{78}{168} \times 90 \times ₹\ 5)$	299.25 $=(\frac{114}{240} \times 126 \times ₹\ 5)$	508.18
Excess Wages Paid	**598.93**	**869.25**	**1,468.18**

(iii) Calculation of amount that could have been saved if Rowan Scheme were followed

Particulars	'Cee' (₹)	'Dee' (₹)	Total (₹)
Wages paid under Halsey Scheme	615.00	885.00	1,500.00
Wages paid under Rowan Scheme	598.93	869.25	1,468.18
Difference (Savings)	**16.07**	**15.75**	**31.82**

10. Profitability statement of each product for the year ended 31st March

Particulars	Total (₹)	Products		
		A (₹)	B (₹)	C (₹)
Sales	2,04,00,000	60,00,000	90,00,000	54,00,000
Variable Costs:				
Cost of sales	1,35,00,000	30,00,000	78,00,000	27,00,000
Commission @ 2.40% of sales	4,89,600	1,44,000	2,16,000	1,29,600
Packaging wages and materials @ ₹ 4.80 per parcel	36,00,000	11,52,000	14,40,000	10,08,000
Stationery @ ₹ 1.80 per invoice	5,29,200	1,08,000	1,62,000	2,59,200
Total Variable Costs	1,81,18,800	44,04,000	96,18,000	40,96,800
Contribution (sales - variable cost)	22,81,200	15,96,000	(6,18,000)	13,03,200
Fixed costs:				
Rent and insurance	6,00,000	2,00,000	3,00,000	1,00,000
Depreciation	2,70,000	86,400	1,08,000	75,600
Salesman's salary and expenses	11,40,000	3,35,294	5,02,941	3,01,765
Administrative wages and salaries	9,00,000	1,83,674	2,75,510	4,40,816
Total Fixed Costs	29,10,000	8,05,368	11,86,451	9,18,181
Profit or loss (Contribution – Fixed costs)	(6,28,800)	7,90,632	(18,04,451)	3,85,019
Percentage of profit or loss on sales (%)	(3.08)%	13.18%	(20.05)%	7.13%

Recommendation of finance manager is not correct. Product 'C' should not be discontinued as it is profitable.

11. Preparation of Cost Sheet for 'silicon' phone covers

No. of units produced = 1,00,000 units

No. of units sold = 90,000 units

Particulars	**Per unit (₹)**	**Total (₹)**
Direct Materials (Working note- (i))	40.00	40,00,000
Direct Wages (Working note- (ii))	20.00	20,00,000
Prime Cost	60.00	60,00,000
Production Overhead (Working note- (iii))	8.00	8,00,000
Factory Cost	68.00	68,00,000
Administration Overhead (50% of Production Overhead)	4.00	4,00,000
Cost of Production	72.00	72,00,000
Less: Closing stock (1,00,000 units – 90,000 units)	-	(7,20,000)
Cost of Goods Sold i.e. 90,000 units	72.00	64,80,000
Selling cost	8.00	7,20,000
Cost of Sales/ Total Cost	**80.00**	**72,00,000**
Profit	**60.00**	**54,00,000**
Sales Value (₹ 140 × 90,000 units)	140.00	1,26,00,000

Working Notes:

(i) Direct material cost per unit of 'plastic' phone cover = M

Direct material cost per unit of 'silicon' phone cover = 2M

Total Direct Material Cost = 2M × 1,00,000 units + M × 3,00,000 units

Or, ₹ 1,00,00,000 = 2,00,000 M + 3,00,000 M

Or, M $= \frac{₹\ 1,00,00,000}{5,00,000} = ₹\ 20$

Therefore, Direct material Cost per unit of 'silicon' phone cover = 2 × ₹ 20 = ₹ 40

(ii) Direct wages per unit for 'silicon' phone cover = W

Direct wages per unit for 'plastic' phone cover = 0.6W

So, (W x 100,000) + (0.6W x 3,00,000) = ₹ 56,00,000

Or, 1,00,000 W + 1,80,000 W = ₹ 56,00,000

Or, W $= \frac{₹\ 56,00,000}{2,80,000} = ₹\ 20$ per unit

Therefore, Direct wages per unit of 'silicon' phone cover = ₹ 20

(iii) Production overhead per unit = $\frac{₹\ 32,00,000}{(1,00,000 + 3,00,000)} = ₹\ 8$

Production overhead for 'silicon' phone cover = ₹ 8 × 1,00,000 units = ₹ 8,00,000

12. Statement of Reconciliation

(Reconciling the profit as per costing records with the profit as per financial records)

Particulars	**(₹)**	**(₹)**
Net Profit as per Cost Accounts		57,71,840
Add: Under valuation of closing stock in cost accounts	1,64,000	
Rent received credited in financial accounts	87,200	2,51,200
		60,23,040
Less: Under recovery of selling overheads in cost accounts	1,16,800	
Bad debts provided in financial accounts	52,000	

Income tax provided in financial accounts	2,54,400	
Under recovery of administration overheads in cost accounts	1,50,400	5,73,600
Profit as per Financial Accounts		**54,49,440**

13. Statement of Cost and Profit per unit of each batch order

	October	November	December	Total
a) Batch Output (Nos.)	2,500	3,000	2,000	7,500
b) Sales Value (@ ₹ 15 per unit)	(₹) 37,500	(₹) 45,000	(₹) 30,000	(₹) 1,12,500
Cost				
Material	12,500	18,000	10,000	40,500
Wages	5,000	6,000	4,000	15,000
Overheads (working note)	7,500	6,000	6,000	19,500
c) Total	25,000	30,000	20,000	75,000
d) Profit per batch (b) – (c)	12,500	15,000	10,000	37,500
e) Cost per unit (c) ÷ (a)	**10**	**10**	**10**	
f) Profit per unit (d) ÷ (a)	**5**	**5**	**5**	

Overall Position of the Order for 6,000 Units

Particulars	Amount (₹)
Sales value (6,000 units × ₹ 15)	90,000
Less: Total cost (6,000 units × ₹ 10)	60,000
Profit	30,000

Working Note:

Calculation of overhead per hour

Particulars	October	November	December
i. Labour hours:			
= Labour cost / Labour rates per hour	₹ 5,000 / 2 = 2,500 hrs.	₹ 6,000 / 2 = 3,000 hrs.	₹ 4,000 / 2 = 2,000 hrs.
ii. Overhead per hour:			
= Total Overheads / Total labour hour	₹ 24,000 / 8,000 hrs. = ₹ 3	₹ 18,000 / 9,000 hrs. = ₹ 2	₹ 30,000 / 10,000 hrs. = ₹ 3
iii. Overhead for the batch (i) × (ii)	₹ 7,500	₹ 6,000	₹ 6,000

14. Workings -

1. Product C is produced incidentally from the material used in the manufacture of A and B, thus, Product C is a By-product.

	Per unit (₹)
Selling price after further processing (per kg.) (₹)	24
Less: Further Processing Cost (per kg)	8
Further Marketing Cost (per kg)	4
	12

Calculation of Joint Cost to be borne by By-product C

Joint Costs to be borne by By-product C = Output (kg.) x ₹ **12**

= 1,625 kg. × ₹ 12

= ₹ 19,500

2. Allocation of joint cost among joint products (on the basis of physical units) (given)

Product A: (₹ 14,82,000 - ₹ 19,500) x $\left(\frac{16,250}{24,375}\right)$ = **₹ 9,75,000**

Product B: (₹ 14,82,000 - ₹ 19,500) x $\left(\frac{8,125}{24,375}\right)$= **₹ 4,87,500**

(i) Statement of Profit/ (Loss) if joint products are sold without processing

Particulars	Product A	Product B	Total
(a) Output (kg.)	16,250	8,125	
(b) Selling price at the split-off point (per kg.) (₹)	72	80	
(c) Sales Value (a) x (b)	11,70,000	6,50,000	18,20,000
(d) Allocation of joint costs	9,75,000	4,87,500	14,62,500
(e) Profit at the point of separation (c)-(d)	**1,95,000**	**1,62,500**	**3,57,500**

(ii) Further processing decision

Particulars	Product A (₹)	Product B (₹)
(a) Selling price at split off	72	80
(b) Selling price after further processing	112	104
(c) Incremental revenue (b)-(a)	40	24
(d) Further processing cost	16	20
(e) Further Marketing Cost	8	8
(f) Incremental cost (d)+(e)	24	28
(g) Incremental profit/ (loss) per kg (c)-(f)	**16**	**(4)**
(h) Total Incremental profit/ (loss)	**₹ 16 x 16,250 kg**	**(₹ 4) x 8,125 kg**
	₹ 2,60,000	**(₹ 32,500)**

Therefore, Product A should be processed further as they give incremental profit. On the other hand, Product B should be sold at

split-off point as they suffer incremental losses after further processing.

15. (i) Statement of Expenses of operating a single bus for a year

Particulars		Rate (₹)	Per Bus per annum (₹)
(A)	**Standing Charges:**		
	Driver and attendant salary	60,000 p.m	7,20,000
	Average Cleaner's salary (50%)	30,000 p.m	1,80,000
	Insurance charge	60,000 p.a.	60,000
	License fee, taxes etc.	10,160 p.m.	121,920
	Average Parking Charges	36,000 p.m	72,000
	Depreciation {(30,00,000 – 6,00,000) ÷ 8}	3,00,000 p.a.	3,00,000
(B)	**Maintenance Charges:**		
	Repairs & maintenance including engine oil and lubricants (Working Note 1)	5,7120 p.a.	5,7120
(C)	**Operating Charges:**		
	Diesel (Working Note 2)		11,52,000
	Total Cost (A + B + C)		26,63,040
	Cost per month		2,21,920

(ii) Average cost per students per month:

A. Student coming from distance of up-to 10 km

$$= \frac{\text{Total cost per month}}{\text{Total no. of equivalent student}} = \frac{₹\ 2,21,920}{72^*} = ₹\ 3,082.22$$

B. Student coming from a distance beyond 10 km

= ₹ 3,082.22 × 2 = ₹ 6,164.44

*** Considering half fare students as a base**

Full fare students (12 × 2)	24 students
Add: Half fare students (Working Note 3)	12 students
Total Equivalent number of students per month	36 students
Total Equivalent number of students per month (morning + afternoon shift)	72 students

Working Notes:

1. Calculation of Repairs and maintenance cost of a bus:

Distance travelled in a year:

(4 trips × 2 × 20 km. × 30 days × 12 months)

Distance travelled p.a.: 57,600 km.

Repairs and maintenance cost per Bus per annum:

$$= \frac{57,600 \text{ km.}}{5,760 \text{ km}} \times ₹ 5,712 \text{ per bus}$$

= ₹ 57,120 per annum

2. Calculation of diesel cost per bus per annum:

Distance travelled in a year = 57,600 km

Diesel cost per Bus per annum:

$$= \frac{57,600 \text{ km.}}{8 \text{ Km}} \times ₹ 160$$

= ₹ 11,52,000

3. Calculation of equivalent number of students per bus:

Seating capacity of a bus	30 students
Occupancy (80% of capacity)	24 students
Half fare students (50% of 24 students)	12 students
Full fare students (50% of 24 students)	12 students

16. (i)

Material	SQ* × SP (₹)	AQ** × SP (₹)	AQ** × AP (₹)	RSQ*** × SP (₹)
A	27,50,000	33,00,000	34,50,000	26,24,600
	(25,000 kg. × ₹ 110)	(30,000 kg. × ₹ 110)	(30,000 kg. × ₹ 115)	(23,860 kg. × ₹ 110)
B	48,00,000	40,00,000	41,25,000	45,82,400
	(15,000 kg. × ₹ 320)	(12,500 kg. × ₹ 320)	(12,500 kg. × ₹ 320)	(14,320 kg. × ₹ 320)
C	69,00,000	46,00,000	40,50,000	65,87,200
	(15,000 kg. × ₹ 460)	(10,000 kg. × ₹ 460)	(10,000 kg. × ₹ 405)	(14,320 kg. × ₹ 460)
Total	1,44,50,000	1,19,00,000	1,16,25,000	1,37,94,200

** Standard Quantity of materials for actual output :*

A	$= \frac{50 \text{ kgs.}}{100 \text{ kgs}} \times 50{,}000 \text{ kgs.} = 25{,}000 \text{ kgs.}$
B	$= \frac{30 \text{ kgs.}}{100 \text{ kgs}} \times 50{,}000 \text{ kgs.} = 15{,}000 \text{ kgs.}$
C	$= \frac{30 \text{ kgs.}}{100 \text{ kgs}} \times 50{,}000 \text{ kgs.} = 15{,}000 \text{ kgs.}$

*** Actual Quantity of Material used for actual output:*

A	$= \frac{60 \text{ kgs.}}{100 \text{ kgs}} \times 50{,}000 \text{ kgs.} = 30{,}000 \text{ kgs.}$
B	$= \frac{25 \text{ kgs.}}{100 \text{ kgs}} \times 50{,}000 \text{ kgs.} = 12{,}500 \text{ kgs.}$
C	$= \frac{20 \text{ kgs.}}{100 \text{ kgs}} \times 50{,}000 \text{ kgs.} = 10{,}000 \text{ kgs.}$

****Revised Standard Quantity (RSQ):*

A	$= \frac{50 \text{ kgs.}}{110 \text{ kgs}} \times 52,500 \text{ kgs.} = 23,860 \text{ kgs.}$
B	$= \frac{30 \text{ kgs.}}{110 \text{ kgs}} \times 52,500 \text{ kgs.} = 14,320 \text{ kgs.}$
C	$= \frac{30 \text{ kgs.}}{110 \text{ kgs}} \times 52,500 \text{ kgs.} = 14,320 \text{ kgs.}$

(i) Material Cost Variance = (Std. Qty. × Std. Price) – (Actual Qty. × Actual Price)

Or = (SQ × SP) – (AQ × AP)

A	= ₹ 27,50,000 - ₹ 34,50,000	= ₹ 7,00,000 (A)
B	= ₹ 48,00,000 - ₹ 41,25,000	= ₹ 6,75,000 (F)
C	= ₹ 69,00,000 - ₹ 40,50,000	= ₹ 28,50,000 (F)
		= ₹ 28,25,000 (F)

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

= (AQ × SP) – (AQ × AP)

A	= ₹ 33,00,000 - ₹ 34,50,000	= ₹ 1,50,000 (A)
B	= ₹ 40,00,000 - ₹ 41,25,000	= ₹ 1,25,000 (A)
C	= ₹ 46,00,000 - ₹ 40,50,000	= ₹ 5,50,000 (F)
		= ₹ 2,75,000 (F)

(iii) Material Usage Variance = Std. Price (Std. Qty. – Actual Qty.)

Or = (SQ × SP) – (AQ × SP)

A	= ₹ 27,50,000 - ₹ 33,00,000	= ₹ 5,50,000 (A)
B	= ₹ 48,00,000 - ₹ 40,00,000	= ₹ 8,00,000 (F)
C	= ₹ 69,00,000 - ₹ 46,00,000	= ₹ 23,00,000 (F)
		= ₹ 25,50,000 (F)

(iv) Material Mix Variance = Std. Price (Revised Std. Qty. – Actual Qty.)

Or = (RSQ × SP) – (AQ × SP)

A	= ₹ 26,24,600 - ₹ 33,00,000	= ₹ 6,75,400 (A)
B	= ₹ 45,82,400 - ₹ 40,00,000	= ₹ 5,82,400 (F)
C	= ₹ 65,87,200 - ₹ 46,00,000	= ₹ 19,87,200 (F)
		= ₹ 18,94,200 (F)

(v) Material Yield Variance = Std. Price (Std. Qty. – Revised Std. Qty.)

Or = (SQ × SP) – (RSQ × SP)

A	= ₹ 27,50,000 - ₹ 26,24,600	= ₹ 1,25,400 (F)
B	= ₹ 48,00,000 - ₹ 45,82,400	= ₹ 2,17,600 (F)
C	= ₹ 69,00,000 - ₹ 65,87,200	= ₹ 3,12,800 (F)
		= ₹ 6,55,800 (F)

17. Statement of Minimum Price Which the Company Can Afford to Quote for the New Customer

	(₹)	(₹)
Cost to be incurred to bring the machine in its original condition		3,70,000
Direct Material (Replacement Value)		1,50,000
Direct Wages		
Dept. X: (35 men days × ₹ 1,000)	35,000	
Dept. Y: (55 men days × ₹ 1,200)	66,000	
Opportunity Cost of Contribution Lost by Dept. Y (₹66,000 × ₹3)	1,98,000	2,99,000
Variable Overheads [30%×(₹35,000+₹ 66,000)]		30,300
Delivery Costs		15,500
Additional Supervisory required *for modification*		80,000
Saving Due to Alternative Use of AI Device		

Bought Out Price	1,05,000	
Less: Dismantling & Removal Cost (5 men day × ₹1,000)	5,000	
Less: Variable Cost (30% × ₹ 5,000)	1,500	(98,500)
Net Loss on Material Cost Savings (W.N.)		1,93,500
Opportunity Cost of Remaining Materials which can be sold as scrap		1,50,000
Opportunity Cost of Sale of Drawings		45,000
Total Minimum Price which may be quoted		12,34,800

Working Note

	(₹)
Loss on Material Cost Saving of Machine	2,00,000
Less: Conversion Cost (5 men days × ₹1,000)	5,000
Less: Variable Cost (30% × ₹5,000)	1,500
Net Loss on Material Cost Saving of Machine	1,93,500

18. Flexible Budget of BT Ltd.

Particulars	**75% (₹)**	**85% (₹)**	**100% (₹)**	**115% (₹)**
Sales	73,12,500	82,87,500	97,50,000	1,12,12,500
COGS (40% of Sales)	29,25,000	33,15,000	39,00,000	44,85,000
Administration Costs:				
Office Salaries (fixed)	11,70,000	11,70,000	11,70,000	11,70,000
General expenses (5% of COGS)	1,46,250	1,65,750	1,95,000	2,24,250
Depreciation (fixed)	97,500	97,500	97,500	97,500
Rent and rates (fixed)	1,13,750	1,13,750	1,13,750	1,13,750

(A) Total Adm. Costs	15,27,500	15,47,000	15,76,250	16,05,500
Selling Costs:				
Salaries (8% of sales)	5,85,000	6,63,000	7,80,000	8,97,000
Travelling expenses (5% of COGS)	1,46,250	1,65,750	1,95,000	2,24,250
Sales office (2.5% of COGS)	73,125	82,875	97,500	1,12,125
General expenses (2.5% of COGS)	73,125	82,875	97,500	1,12,125
(B) Total Selling Costs	8,77,500	9,94,500	11,70,000	13,45,500
Distribution Costs:				
Wages (fixed)	195,000	195,000	195,000	195,000
Rent (1% of sales)	73,125	82,875	97,500	1,12,125
Other expenses (10% of COGS)	2,92,500	3,31,500	3,90,000	4,48,500
(C) Total Distribution Costs	5,60,625	6,09,375	6,82,500	7,55,625
Total Costs (A + B + C)	**29,65,625**	**31,50,875**	**34,28,750**	**37,06,625**

19. (a) Advantages of Marginal Costing:

1. **Simplified Pricing Policy:** The marginal cost remains constant per unit of output whereas the fixed cost remains constant in total. Since marginal cost per unit is constant from period to period within a short span of time, firm decisions on pricing policy can be taken.

2. **Proper recovery of Overheads:** Overheads are recovered in costing on the basis of pre-determined rates. If fixed overheads are included on the basis of pre-determined rates, there will be under- recovery of overheads if production is less or if overheads are more. There will be over- recovery of overheads if production is more than the budget or actual

expenses are less than the estimate. This creates the problem of treatment of such under or over-recovery of overheads. Marginal costing avoids such under or over recovery of overheads.

3. **Shows Realistic Profit:** Advocates of marginal costing argues that under the marginal costing technique, the stock of finished goods and work-in-progress are carried on marginal cost basis and the fixed expenses are written off to profit and loss account as period cost. This shows the true profit of the period.

4. **How much to produce:** Marginal costing helps in the preparation of break-even analysis which shows the effect of increasing or decreasing production activity on the profitability of the company.

5. **More control over expenditure:** Segregation of expenses as fixed and variable helps the management to exercise control over expenditure. The management can compare the actual variable expenses with the budgeted variable expenses and take corrective action through analysis of variances.

6. **Helps in Decision Making:** Marginal costing helps the management in taking a number of business decisions like make or buy, discontinuance of a particular product, replacement of machines, etc.

7. **Short term profit planning:** It helps in short term profit planning by B.E.P charts.

(b) Items included in Financial Accounts only-

(A) Purely Financial Expenses:

(i) Interest on loans or bank mortgages

(ii) Expenses and discounts on issue of shares, debentures etc.

(iii) Other capital losses i.e., loss by fire not covered by insurance etc.

(iv) Losses on the sales of fixed assets and investments

(v) Income tax, donations, subscriptions

(vi) Expenses of the company's share transfer office, if any.

(B) Purely Financial Income

(i) Interest received on bank deposits, loans and investments

(ii) Dividends received

(iii) Profits on the sale of fixed assets and investments

(iv) Transfer fee received

(v) Rent receivables.

(c) By-product cost, when they are of small total value, can be dealt in cost accounting in the following ways:

When the by-products are of small total value, the amount realised from their sale may be dealt in any one the following two ways:

1. The sales value of the by-products may be **credited to the Costing Profit and Loss Account** and no credit be given in the Cost Accounts. The credit to the Costing Profit and Loss Account here is treated either as miscellaneous income or as additional sales revenue.

2. The sale proceeds of the by-product may be **treated as deductions from the total costs**. The sale proceeds in fact should be deducted either from the production cost or from the cost of sales.

(d) There are two types of material losses viz. (i) Normal loss and (ii) Abnormal loss.

(i) Normal Process Loss: It is also known as normal wastage. It is defined as **the loss of material which is inherent in the nature** of work. Such a loss can be reasonably anticipated from the nature of the material, nature of operation, the experience and technical data. It is unavoidable because of nature of the material or the process. It also includes units

withdrawn from the process for test or sampling.

Treatment in Cost Accounts: The cost of **normal process loss in practice is absorbed by good units produced** under the process. The amount realised by the sale of normal process loss units should be credited to the process account.

(ii) **Abnormal Process Loss*:*** It is also known as abnormal wastage. It is defined as the **loss in excess of the pre-determined loss** (Normal process loss). This type of loss may occur due to the carelessness of workers, a bad plant design or operation, sabotage etc. Such a loss cannot obviously be estimated in advance. But it can be kept under control by taking suitable measures.

Treatment in Cost Accounts: The cost of an abnormal process loss unit is equal to the cost of a good unit. The total cost of abnormal process loss is credited to the process account from which it arises. Cost of abnormal process loss is not treated as a part of the cost of the product. In fact, **the total cost of abnormal process loss is debited to costing profit and loss account.**

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