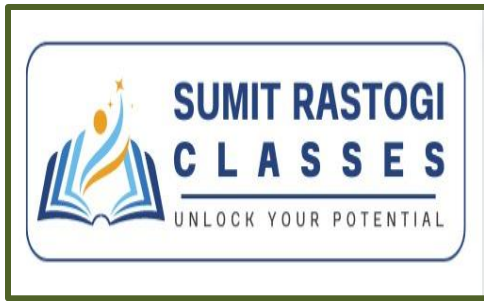




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TEST PAPER – 01

(CHAPTER COVERED – MARGINAL COSTNG)

MANAGEMENT ACCOUNTING

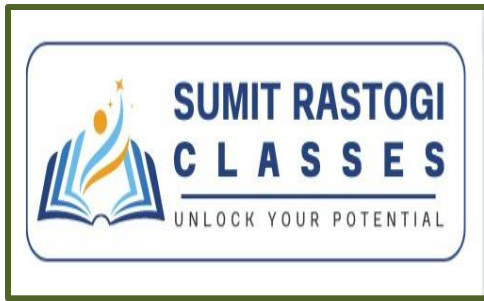
Time Allowed: 3 Hours

Full Marks: 100

**Section A contains Question Number 1. All parts of this question are compulsory.
Working notes should form part of the relevant answer.**

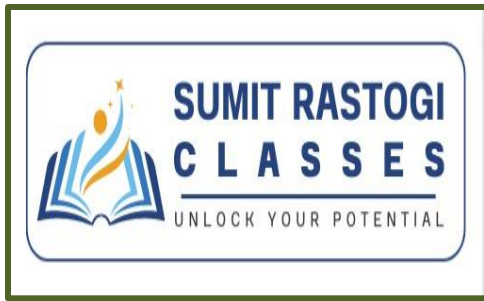
SECTION-A

1. Choose the correct answer from the given alternatives (you may write only the Roman number and the alphabet chosen for your answer) (2×15 = 30 Marks)
 - (i) ASHEEKA LTD. has annual turnover of ₹200 lakh and an average C/S Ratio of 40%. It makes 10% profit on sales before charging depreciation and interest which amount to ₹10 lakh and ₹15 lakh respectively. What will be the Fixed Cost of Asheeka Ltd.?
 - (A) ₹ 65 lakhs
 - (B) ₹ 85 lakhs
 - (C) ₹ 50 lakhs
 - (D) ₹ 90 lakhs
 - (ii) Absorption Costing is also known as:
 - (A) Discretionary Costing
 - (B) Target Costing
 - (C) Committed Costing
 - (D) Total Costing
 - (iii) Marginal costing technique follows the following basis of classification:
 - (A) Behaviour-wise
 - (B) Identifiability-wise
 - (C) Element-wise
 - (D) Function-wise



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- (iv) In a factory when production is increased within the relevant range then
- (A) Fixed and variable cost stays the same in total.
 - (B) Fixed costs will vary in total.
 - (C) Variable costs will vary on a per unit basis,
 - (D) Variable costs will vary in total.
- (v) A firm has Fixed Expenses ₹90,000, Sales ₹3,00,000 and Profit ₹60,000. The P/V Ratio of the firm is;
- (A) 50%
 - (B) 30%
 - (C) 20%
 - (D) 10%
- (vi) Decision-Making concerns with:
- (A) Future
 - (B) Past
 - (C) Past and Future both
 - (D) None of the above
- (vii) A Large Margin of Safety indicates:
- (A) Over Production
 - (B) The soundness of business
 - (C) Over-Capitalization
 - (D) None of the above
- (viii) Another name for 'Contribution' is:
- (A) Net Income
 - (B) Gross Profit
 - (C) Marginal Income
 - (D) None of the above
- (ix) XYZ Ltd. makes a special gadget for the car it manufactures. The machine for the gadget works to full capacity and incurs ₹15 Lakhs and ₹40 Lakhs respectively as Variable and Fixed Costs. If all the gadgets were purchased from an outside supplier, the machine could be used to produce other items, which would earn a total contribution of ₹25 Lakhs. What is the maximum price that XYZ Ltd. should be willing to pay to the outside supplier for the gadgets, assuming there is no change in Fixed Costs?
- (A) ₹15 Lakhs
 - (B) ₹25 Lakhs
 - (C) ₹65 Lakhs
 - (D) ₹40 Lakhs



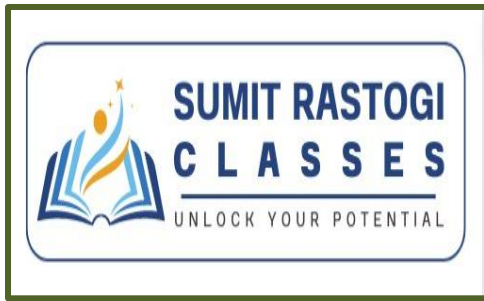
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- (x) The difference in total cost that results from two alternative courses of action is called:
 (A) Marginal Cost
 (B) Differential Cost
 (C) Opportunity Cost
 (D) Relevant Cost
- (xi) When there is no opening or closing stocks, profit under marginal Costing will be:
 (A) Equal to absorption costing
 (B) Greater than in absorption costing
 (C) Less than in absorption costing
 (D) Greater, Lower or Equal depending on certain factors.
- (xii) Break Even Point can be reduced by
 (A) Reducing the variable costs
 (B) Reducing fixed costs
 (C) Increasing selling price per unit
 (D) All of the above
- (xiii) The Cost per unit of a product manufactured in a factory of BOT Ltd. amounts to ₹150 (80% variable) when production is 10,000 units. If production is increased by 25%. What will be the cost of product per unit?
 (A) 135 (C) 120
 (B) 135 (D) 144
- (xiv) X Ltd. provides you with the following information:

Particulars	April to 30 th July	1 st July to 31 st March
Sales @100 per unit	₹10,00,000	₹35,00,000
Total Cost	₹3,90,000	₹13,20,000

Calculate Total Fixed Costs for the year:

- (A) 7,20,000
 (B) 4,80,000
 (C) 3,60,000
 (D) 2,40,000
- (xv) If Break-Even Point is Low and the Angle of Incidence is Small then:
 (A) Margin of Safety is Large and Rate of Profit is High
 (B) Margin of Safety is Large and Rate of Profit is Low
 (C) Margin of Safety is Low and Rate of Profit is High
 (D) Margin of Safety is Low and Rate of Profit is Low



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SECTION – B

Answer any five questions from question number 2 to 8.

14×5 =70

2 (a) GYC Ltd. provides you with the following information.

Year 1		Year 2	
Loss	₹40,000	Cost	₹11,40,000
Cost	108% of Sales	Profit	24% of Sales

During the next year III, the Selling Price and Variable Cost are expected to be reduced by 20% and 33-1/3% respectively and Fixed Costs are expected to increase by 25%.

Required: Estimate the Sales so as to earn a return of 30% on Capital Employed. Working Capital is 25% of Sales and 20% of Capital Employed.

(7 marks)

2 (b) M/s Ankita Plastics Limited provides you the data of the following products for the year 2022-23.

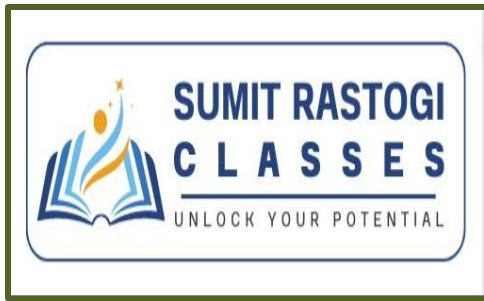
Particulars	1" PVC Pipe	½" PVC Pipe
Profit (₹)	3,00,000	60,000
Unit Selling Price (₹)	200	150
P/V Ratio	40%	50%
Sales Mix = 2:1		
Joint Fixed Cost = ₹8,15,000		

M/s Ankita Plastics Limited expects that number of units to be sold in 2023-24 would be same as in 2022-23. However, due to up gradation in manufacturing process, the joint fixed cost would be reduced by 10% and the variable cost would increase by 8%.

You are required to calculate the following:

- A. Number of units of product 1" PVC Pipe and ½" PVC Pipe sold in 2022-23.
- B. Total expected profit of the company from the two products in 2023-24.

(7 marks)



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3 (a) While preparing the estimate of profitability for the coming year, the Sales Manager of a company indicated sale of the single product manufactures at a sale price of ₹60 per unit. At that price the expected profit will be ₹25,00,000. The variable cost of the product is ₹20 per unit and the total fixed expenses for the year was estimated at ₹15,00,000.

The Sales Manager further indicated that if there is a reduction in price, the quantity of Sale will Rise in the following manner:

When Selling Price Reduced by	Quantity of Sale to Increase by
10 %	20 %
5 %	15 %
2.5 %	8 %

As a Cost Accountant, you have been asked to evaluate the effect of alternative sale prices as above and suggest the best alternative to be adopted in the coming year.

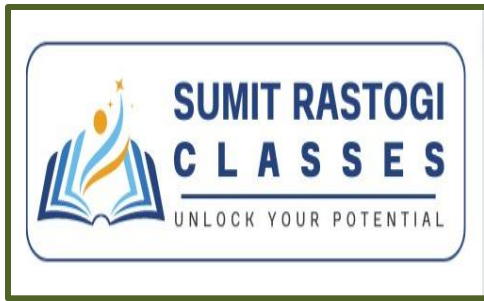
(7 marks)

3 (b) SHEENNA LTD., an appliance manufacturer, has always sold its product through wholesalers. Last year its sales were ₹20,00,000 and its net profit 10% of sales. As a result of the increase in appliance sales through departmental stores and e-commerce business establishment, the company is considering elimination of wholesalers and selling directly to retailers. It is estimated that this would result in a 40% drop in sales but net profit would be ₹1,80,000 due to the elimination of middlemen. Fixed expenses would increase from ₹2,00,000 to ₹3,00,000 owing to additional storage and logistics facilities.

As a Management Accountant you are required to find out:

- (1) Whether the proposed change would raise or lower the break-even point in rupees? By how much? Given reason.
- (2) What would be the sale volume in rupees which would enable Sheena Ltd. to obtain as much profit as it made last year?

(7 marks)



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4 (a) The anticipated sales of Electronic Corporation Ltd. is ₹4,00,000 and unit selling price is 20 each. The per unit cost of direct material is ₹9, labour is ₹3 and other variable expenses are ₹3 per unit. The company is earning a net profit of 5% and to improve the profitability, the following proposals were discussed at the Executive Committee Meeting:

- (i) The present administrative setup is on the regional basis and it was felt that centralization will reduce the fixed cost by ₹12,000.
- (ii) The Production Manager has agreed that he will try to work on a cost reduction programme which will reduce the cost by ₹1 per unit but there will be little impact on the quality which will be negligible to the customer.
- (iii) The Sales Manager opposed the two proposals and suggests that it may be possible to increase the number of units sold by 20%, provided the selling price is reduced by 5%.
- (iv) Alternatively, as per Sales Manager, if the selling price is increased by 10%, the sales number of units will be reduced by 5%.

As the Cost and Management Accountant of the company, evaluate the aforesaid four proposals and also put forward your suggestions to improve the situation.

(7 marks)

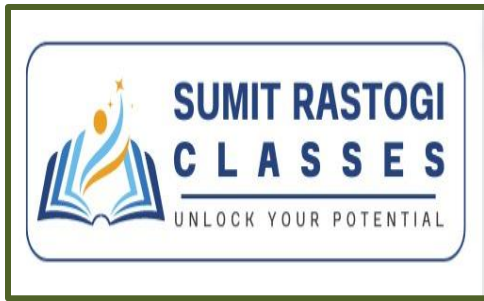
4 (b) A company is at present working at 90% of its capacity and producing 13,500 units per annum. It operates a flexible budgetary control system. The following figures are obtained from its budget:

Particulars	90% (₹)	100% (₹)
Sales	15,00,000	16,00,000
Fixed Expenses	3,00,500	3,00,600
Semi-Fixed Expenses	97,500	1,00,500
Variable Expenses	1,45,000	1,49,500
Units made	13,500	15,000

Labour and materials costs per unit are constant under present conditions. Profits margin is 10%.

- (i) You are required to determine the differential cost of producing 1,500 units by increasing capacity to 100%.
- (ii) What would you recommend for an export price for these 1,500 units, taking into account that the overseas prices are much lower than the indigenous prices?

(7 marks)



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5 (a) XER Co. manufactures an electronic product and puts a price tag of 190.00 as wholesale price. The company has a production and storage facility with a 1,00,000 units monthly output capacity based on running 8 hours shift each workday. Estimated Costs are given below:

Monthly Fixed Costs	(₹)	Per Unit Cost	(₹)
Building Depreciation	2,50,000	Production Labour	45.00
Project Management	1,75,000	Supervisors Charges	5.00
Advertising Costs	3,00,000	Material Handling	8.00
Network Administration	75,000	Sales Commissions	12.00
Office Expenses	1,50,000	Materials	70.00
Equipment (Depreciation)	2,00,000	Electricity Costs	3.00

Required:

- Based on the information provided, what quantity must this firm produce in order to be at breakeven?
- If the firm produces at the plant's capacity, what is the minimum price at which the firm can sell the product and still breakeven?
- Suppose the firm seeks to target profit of ₹30,00,00 from this product based on the input costs and wholesale price noted in the problem. How many units would the firm need to produce to generate the required profit?

(7 marks)

5 (b) REAXON LTD. a manufacturing company provides you the following Chotails for the year 2018.

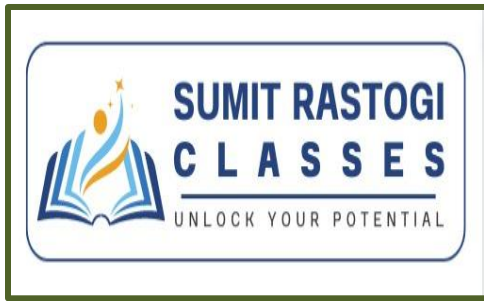
Sales (16,000 units)	₹ 16,00,000
Less: Expenses (including Fixed Expenses ₹8,00,000)	₹ 17,60,000
Net Loss	₹ 1,60,000

The manager believes that an increase of ₹4,00,000 in advertising outlays will increase sales substantially. His plan was approved by the chairman of the board:

Required:

- Calculate P/V Ratio and Break-Even Sales.
- What additional sales will be required to offset that increase in advertisement outlays?
- What should be selling price per unit if the breakeven point is brought down to 20,000 units?

(7 marks)



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6 (a) ZEESLIN LTD. has furnished the following relevant information for the two years:

	2018	2019
Sales (₹)	9,30,000	?
PV ratio (%)	50%	38%
Margin of Safety Sales as % of Total Sales	40%	22%

There has been substantial savings in the fixed cost in the year 2019 due to the restructuring process. The company could maintain its sales quantity level of 2018 in 2019 by reducing selling price.

You are required to calculate the following:

- Sales for 2019 in ₹
- Fixed cost for 2019
- Break-even sales for 2019 in Rupees.

(7 marks)

6 (b) RITU Ltd. a manufacturer of Gel Pens selling in the market at ₹100 per dozen makes an average net profit of 20% on sales by producing 50,000 dozen per annum against a Capacity of 75,000 dozen. The Cost Sheet of the Company for 2020 was as under:

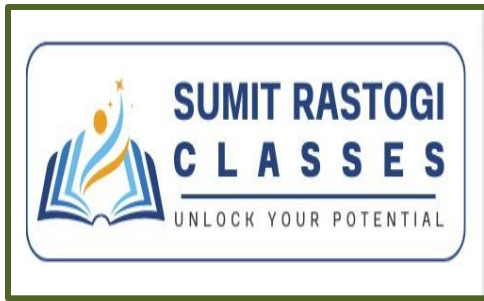
Particulars	Cost per dozen (₹)
Direct Materials	36
Direct Wages	30
Works overhead (50% Variable)	10
Sales overhead (25% Variable)	4
Total Cost	80

In 2021, the Company anticipates its fixed cost to increase by 6%, Cost of Direct materials by 5% and Labour by 10%. Market enquires revealed that the Selling price of the product and quantity will remain unchanged in 2021.

Based on above information you are required to answer the following questions:

- How many numbers of Gel Pens have to be manufactured and sold in 2021 in order to break-even?
- The Profit of the Company in the year 2021 would be how much?
- An inquiry has been received for the Supply of 10,000 dozen of Gel Pen to ZT Company, a customer. If the business wants to make a maximum Profit of ₹9 lakhs in 2021, what could be the lowest quotation?

(7 marks)



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7 (a) The variable cost structure of a product manufactured by ABX company during the current year is as under:

Particulars	Per unit (₹)
Material	168.00
Labour	42.00
Overheads (Variable)	16.80

The Selling Price per unit is ₹378 and the Fixed Cost and Sales during the Current Year are ₹19.60 Lakh and ₹56.70 Lakh respectively.

During the forthcoming year, the direct workers will be entitled to a wage Increase of 10% from the beginning of the year and the material cost, variable overhead and fixed overhead are expected to increase by 7.5%, 5% and 3% respectively.

Based on the above information you are required to answer the following questions:

- What is the current year's Profit?
- The new sale price in the forth coming year if the current P/V Ratio is to be maintained would be how much?
- How many numbers of Units would require to be sold during the forth Coming year so as to yield the same of Profit in the Current year, assuming that selling price per unit will not be increased?

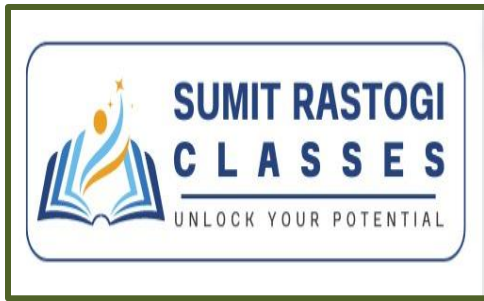
(7 marks)

7 (b) PANT Ltd., producing a single product sells it at ₹50 per unit variable cost is ₹35, and the fixed cost amount to ₹12 lakh per annum.

With this data, you are required to calculate the following treating each independent of the other.

- P/V ratio and break-even sales
- New Break-even sales if variable cost increases by ₹3 per unit without an increase in selling price
- Increase in sales required if profits are to be increased by ₹2.4 lakhs
- Percentage increase/decrease in sales volume units to off-set
 - An increase of ₹3 in the variable cost per unit
 - A 10% increase in selling price without affecting existing profits quantum.

(7 marks)



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8 (a) AGT Ltd. manufactures a product, currently utilising 50% capacity with a turnover of 18,00,000 at 100 per unit and its P/V Ratio is 40%. The cost data is as under:

Particulars	₹
Direct Material per unit	30
Direct Wages per unit	20
Variable Overheads per unit	8
Semi-Variable Overheads (which will increase by 22,800 for every 18% increase in capacity or any part thereof)	96,000
Fixed Overheads	2,40,000

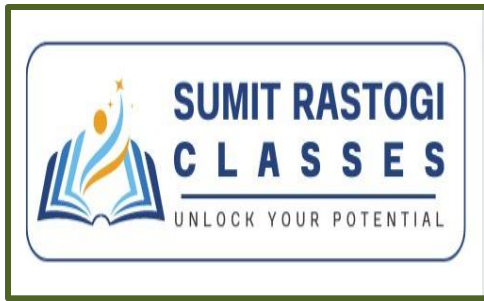
Required:

- Calculate the Total Fixed Cost at 50% capacity level.
- Calculate the Number of units to be sold to earn a profit of ₹28 per unit.
- Calculate the Selling Price per unit to earn a profit of 25% on capital employed at the 80% activity level. The fixed portion of capital employed is ₹53,85,600 and the Working Capital portion is 20% of Sales.

(10 marks)

8 (b) Calculate Break-Even-Point for a train journey between Delhi and Jaipur where cost of an Engine is 80,000 and of a Bogie is 16,000. The capacity of a bogie 70 passengers and each ticket is priced at 600. The Variable Cost per ticket is 100.

(4 marks)



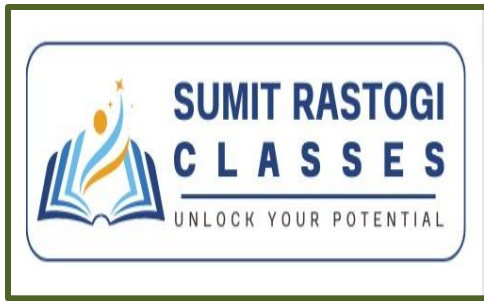
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SUGGESTED ANSWERS OF TEST PAPER 01

SECTION - A

ANS.1

- (i) (B) ₹85 Lakhs
- (ii) (D) Total Costing
- (iii) (A) Behaviour-wise
- (iv) (D) Variable costs will vary in total.
- (v) (A) 50%
- (vi) (A) Future
- (vii) (B) The soundness of business
- (viii) (C) Marginal Income
- (ix) (D) ₹40 Lakhs
- (x) (B) Differential Cost
- (xi) (A) Equal to absorption costing
- (xii) (D) All of the above
- (xiii) (D) ₹144
- (xiv) (C) 3,60,000
- (xv) (B) Margin of Safety is Large and Rate of Profit is Low



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SECTION - B

ANS 2(a)

Working Note

(1) During Year II:

Profit = 24% of Sales. So, Cost = 76% of Sales.

Cost = ₹11,40,000

Therefore, Sales = $11,40,000 \times 100/76 = ₹15,00,000$.

Profit = $24\% \times 15,00,000 = ₹3,60,000$

(2) During Year I:

Loss = ₹40,000

Cost = 108% of sales

Loss = 8% of Sales

Sales = $40,000/8\% = ₹5,00,000$

(3) PV Ratio = $(3,60,000 - (40,000)) \times 100 / (15,00,000 - 5,00,000) = 40\%$

Variable Cost = 60% of Sales.

Fixed Costs = $11,40,000 - (15,00,000 \times 60\%) = ₹2,40,000$

(4) During Year III:

Suppose earlier SP = 100

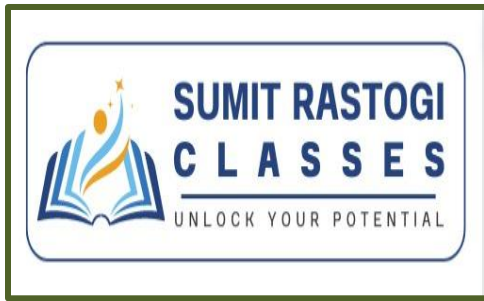
Then New SP = $100 - 20\% = ₹80$

Earlier Variable cost = $60\% \times 100 = ₹60$

New Variable Cost = $60 - 33.33\% = ₹40$

New PV Ratio = $(80 - 40) \times 100/80 = 50\%$

New Fixed Cost = $₹2,40,000 + 25\% = ₹3,00,000$



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Let, Sales of year III be X.

Working Capital = 0.25 of sales = $0.25X$

Working Capital = 0.20 of Capital employed

$0.25X = 0.20$ of capital employed

Capital employed = $1.25X$

Return on Capital Employed (Profit) = 30% = $1.25X \times 30\% = 0.375X$

Desired Contribution = $0.375X + 3,00,000$

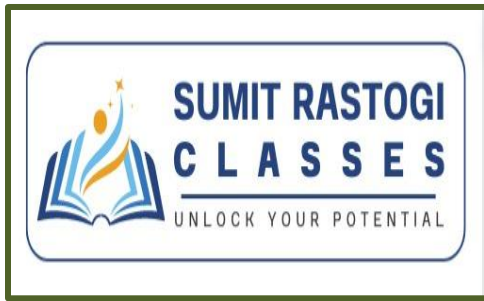
Sales = $(0.375X + 3,00,000)/50\%$

$X = 0.75X + 6,00,000$

$0.25X = 6,00,000$

X (Sales) = 24,00,000

Hence, Required Sales to Earn return of 30% on Capital Employed is ₹24,00,000.



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ANS 2 (b)

A. Number of Units sold in 2022-23:

1" PVC Pipe: Contribution per unit = $200 \times 40\% = ₹80$

1 1/2" PVC Pipe: Contribution per unit = $150 \times 50\% = ₹75$

Let No. of Units of **1 1/2" PVC Pipe** = X

Therefore, No. of units of **1" PVC Pipe** = 2X

Total Contribution = $80 \times 2X + 75X = 235X$

Total Contribution = Fixed Cost + Profit = $8,15,000 + 3,00,000 + 60,000 = ₹11,75,000$ Therefore,
 $235X = 11,75,000$

X = 5,000 units

1" PVC Pipe units sold = $5,000 \times 2 = 10,000$ units

1 1/2" PVC Pipe units sold = **5,000 units**

B. Total expected profit of the company from the two products in 2023-24:

Revised Fixed Cost = $8,15,000 - 10\% = ₹7,33,500$

Variable Cost for **1" PVC Pipe** = $120 + 8\% = ₹129.60$

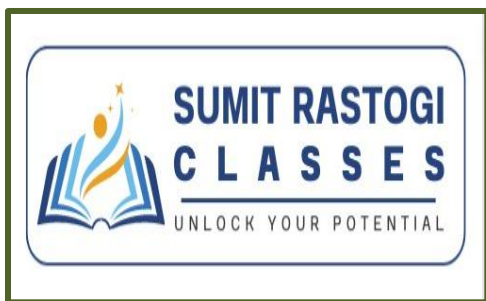
Revised Contribution per unit = $200 - 129.60 = ₹70.40$

Variable Cost for **1 1/2" PVC Pipe** = $75 + 8\% = ₹81$

Revised Contribution per unit = $150 - 81 = ₹69$

Total Contribution = $70.40 \times 10,000 + 69 \times 5,000 = ₹10,49,000$

Revised Profit = $10,49,000 - 7,33,500 = ₹3,15,500$



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ANS 3 (a)

Calculation of quantity of sales envisaged in the original proposal: -

	₹
Expected Profit	25,00,000
+ Fixed Cost	<u>15,00,000</u>
Contribution	40,00,000

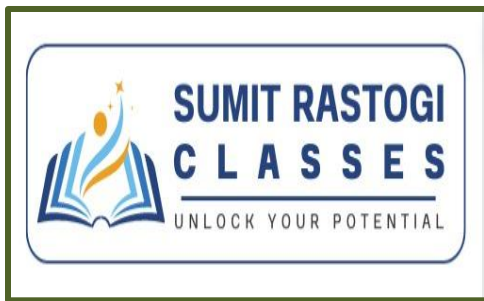
Contribution per unit = 60 – 20 = ₹40

No. of units to be sold = 40,00,000/40 = 1,00,000 units

Evaluation of three proposals

Particulars	SP reduced by 10% and quantity increased by 20%	SP reduced by 5% and quantity increased by 15%	SP reduced by 2.5% and quantity increased by 8%
Selling Price per unit (₹)	54	57	58.50
- Variable cost per unit (₹)	20	20	20.00
Contribution per unit (₹)	34	37	38.50
Units	1,20,000	1,15,000	1,08,000
Total Contribution (₹)	40,80,000	42,55,000	41,58,000

The best option is to reduce selling price by 5% which will result increase in sales by 15%.



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ANS 3 (b)

Old Situation Cost Statement

Particulars	Amount (₹)
Sales	20,00,000
Profit (10% × 20,00,000)	2,00,000
+ Fixed cost	2,00,000
Contribution	4,00,000
Variable Costs = Sales - Contribution	16,00,000

PV Ratio = $4,00,000 \times 100 / 20,00,000 = 20\%$

Break-Even Sales (₹) = $2,00,000 / 20\% = ₹10,00,000$

New Situation Cost Statement

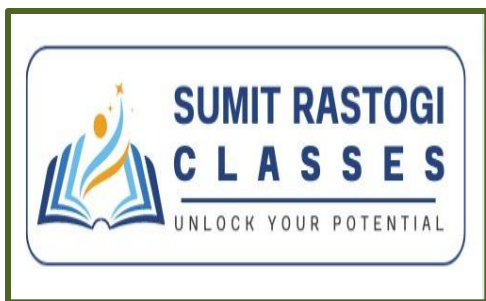
Particulars	Amount (₹)
Sales (20,00,000 – 40%)	12,00,000
Profit	1,80,000
+ Fixed cost	3,00,000
Contribution	4,80,000
Variable Costs = Sales - Contribution	7,20,000

PV Ratio = $4,80,000 \times 100 / 12,00,000 = 40\%$

Break-Even Sales (₹) = $3,00,000 / 40\% = ₹7,50,000$

(i) Break-even sales are reduced by **₹2,50,000**

(ii) Sales to Earn Last Year's Profit = $(3,00,000 + 2,00,000) / 40\% = ₹12,50,000$



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ANS 4 (a)

Statement of Anticipated Cost and Profit

Particulars	Amount (₹)
Sales (20,000 units)	4,00,000
- Profit 5% × 4,00,000	(20,000)
Total Cost	3,80,000
- Variable Cost:	
Direct Material (20,000 × 9)	1,80,000
Direct labour (20,000 × 3)	60,000
Variable Expenses (20,000 × 3)	60,000
Fixed Costs	80,000

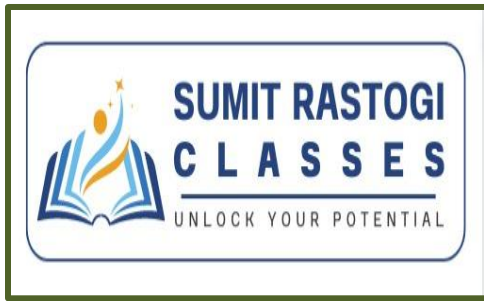
Variable Cost per unit = 3,00,000/20,000 = ₹15

Statement of Evaluation of four Proposals

Particulars	Proposal - 1 (₹)	Proposal - 2 (₹)	Proposal - 3 (₹)	Proposal - 4 (₹)
Sales (Units)	20,000	20,000	24,000	19,000
Selling Price (₹)	20	20	19	22
Variable Cost (₹)	(15)	(14)	(15)	(15)
Contribution per unit (₹)	5	6	4	7
Total Contribution	1,00,000	1,20,000	96,000	1,33,000
Fixed Cost	(68,000)	(80,000)	(80,000)	(80,000)
Profit	32,000	40,000	16,000	53,000
Anticipated Profit	20,000	20,000	20,000	20,000
Increased/(Decrease) in Profits	12,000	20,000	(4,000)	33,000

Conclusion:

- The Proposal of Sales Manager (i.e., iii) is not at all acceptable as this will result in loss of ₹4,000.
- The Proposal (ii), with a profit of ₹20,000, will have little impact on quality. This proposal is fraught with marketing dangers. The lower quality of the product will have long-range disadvantages, as compared to the product of the competitors.
- The Sales Manager's Proposal - (iv) is really attractive, as it will fetch additional profit worth ₹33,000.
- The Proposal - (i) will yield additional profit of ₹12,000. As Cost and Management Accountant of the company, I will recommend combination of proposals (i) and (iv).



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ANS 4 (b)

Computation of material and labour

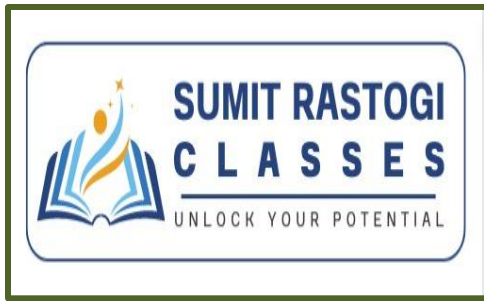
Particulars	Amount (₹)
Sales	15,00,000
- Profit (10% on sales)	(1,50,000)
Total Cost	13,50,000
- Fixed expenses	(3,00,500)
- Semi-fixed expenses	(97,500)
- Variable expenses	(1,45,000)
Labour and Material Cost	8,07,000

Statement showing differential cost of 1500 units

Particulars	Amount (₹)
Material & Labour (8,07,000 × 1500/3,500)	89,667
+ Fixed Expenses (3,00,600 – 3,00,500)	100
+ Semi-Fixed Expenses (1,00,500 – 97,500)	3,000
+ Variable expenses (1,49,500 – 1,45,000)	4,500
Differential cost	97,267

Differential cost per unit = $97,267/1,500 = ₹64.84$

The minimum price for these 1,500 units should not be less than ₹64.84.



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ANS 5 (a)

Total Fixed Cost = Building Depreciation + Project Mgt. + Advertising + Network + Office Exp. + Equipment (Dep.)

$$= 2,50,000 + 1,75,000 + 3,00,000 + 75,000 + 1,50,000 + 2,00,000 = ₹11,50,000$$

Variable Cost per unit = Production Labour + Supervisor Charges + Material Handling + Sales Comm + Materials + Electricity

$$= 45.00 + 5.00 + 8.00 + 12.00 + 70.00 + 3.00 = 143.00$$

Contribution per unit = $190 - 143 = ₹47$

(i) Break Even Point = Fixed Cost/Contribution per unit

$$= 11,50,000 / 47 = 24,469 \text{ units}$$

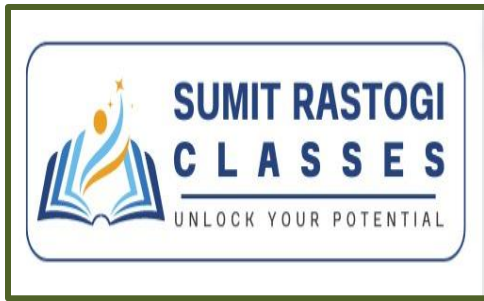
(ii) Price = Total Fixed Cost/Quantity + Variable Cost Per unit

$$= 11,50,000 / 100,000 + 143 = ₹154.50$$

(iii) Desired Profit = ₹30,00,000

Sales to Earn Desired Profit = (Fixed Cost + Desired Profit)/Contribution per unit

$$= (11,50,000 + 30,00,000) / 47 = 88,298 \text{ units}$$



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ANS 5 (b)

(i) **Contribution = Fixed Cost – Loss = 8,00,000 – 1,60,000 = ₹6,40,000**

Contribution per unit = 6,40,000/16,000 = ₹40

Variable cost per unit = 9,60,000/16,000 = ₹60

PV Ratio = 6,40,000 × 100/16,00,000 = 40%

Break-even Sales (₹) = Fixed Cost/PV Ratio

= (8,00,000 + 4,00,000)/40% = ₹30,00,000

Break-even Sales (Unit) = Fixed Cost/Contribution per unit

= (8,00,000 + 4,00,000)/40 = 30,000 units

(ii) **Additional Sales (Units) = Proposed Expenditure/Contribution per unit**

= 4,00,000/40 = 10,000 units

Additional Sales (₹) = Proposed Expenditure/PV Ratio

= 4,00,000/40% = ₹10,00,000

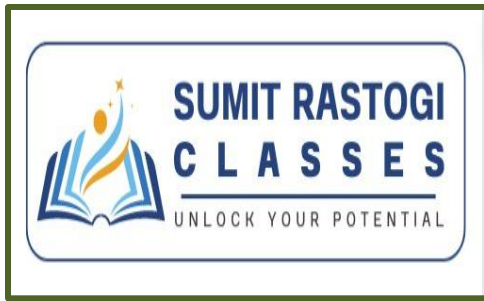
(iii) **Break-even Sales (Unit) = Fixed Cost/Contribution per unit**

20,000 = 12,00,000/Contribution per unit

Contribution per unit = ₹60

Selling price = Contribution + Variable Cost

= 60 + 60 = ₹120



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ANS 6 (a)

In 2018:

P/V Ratio = 50%

Variable Cost Ratio = 100% - 50% = 50%

Variable Cost in 2018 = ₹ 9,30,000 × 50% = ₹4,65,000

In 2019:

Sales Quality has not changed. Thus, Variable Cost in 2019 is ₹4,65,000.

P/V Ratio = 38%

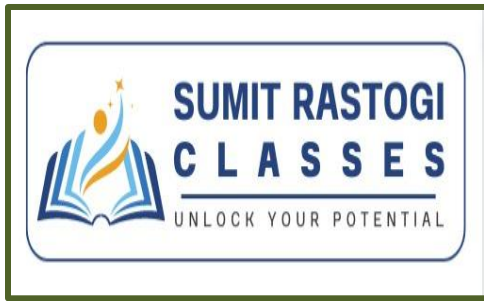
Thus, Variable Cost Ratio = 100% - 38% = 62%

(i) Thus, Sales in 2019 = 4,65,000/62% = ₹7,50,000

At Break-Even Point, Fixed Cost is Equal to Contribution. In 2019, Break-Even Sales
= 100% - 22% (MOS) = 78%

(ii) Break-Even Sales = 75,00,000 × 78% = ₹5,85,000

(iii) Fixed Cost = B.E.P × Sales P/V Ratio = ₹5,85,000 × 38% = ₹2,22,300



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ANS 6 (b)

In 2020:

Variable Cost per unit = $36 + 30 + (10 \times 50\%) + (4 \times 25\%) = ₹72$
Fixed Cost per unit = $(10 \times 50\%) + (4 \times 75\%) = ₹8$
Total Fixed Cost = $50,000 \times 8 = ₹4,00,000$
Contribution per unit = $100 - 72 = ₹28$

In 2021:

Variable Cost per unit = $36 \times 105\% + 30 \times 110\% + (10 \times 50\%) + (4 \times 25\%) = ₹76.80$
Fixed Cost = $4,00,000 + 6\% = ₹4,24,000$
Contribution per unit = $100 - 76.80 = ₹23.20$

(i) **Break-even Sales (units)** = Fixed Cost / Contribution per unit = $4,24,000 / 23.20$
= 18,276 dozen pens Or 2,19,312 pens

(ii) **Total Contribution** = $50,000 \times 23.20 = ₹11,60,000$

Profit = Contribution - Fixed Cost = $11,60,000 - 4,24,000 = ₹7,36,000$

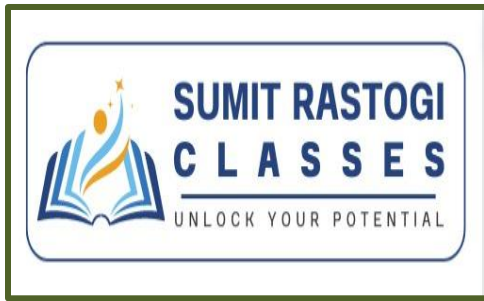
(iii) Maximum Desired Profit = ₹9,00,000

Profit from 50,000 units = ₹7,36,000

Balance profit to be covered from 10,000 pens = $9,00,000 - 7,36,000 = ₹1,64,000$

Profit per unit = $1,64,000 / 10,000 = 16.40$

Lowest Selling price to be quoted = $16.40 + 76.80 = ₹93.20$ per dozen



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ANS 7 (a)

In Current Year

Variable Cost in current year	= 168 + 42 + 16.80	= ₹226.80
Contribution per unit	= 378 - 226.8	= ₹151.20
Sales (Units)	= 56,70,000/378	= 15,000
Total Contribution	= 151.20 × 15,000	= ₹22,68,000
PV Ratio	= 151.20 × 100/378	= 40%

In Next Year:

Variable Cost in Current Year

$$= 168 \times 107.5\% + 42 \times 110\% + 16.80 \times 105\% = 180.60 + 46.20 + 17.64 = ₹244.44$$

$$\text{Fixed Cost} = 19,60,000 + 3\% = ₹20,18,800$$

(i) **Profit of Current Year** = 22,68,000 - 19,60,000 = ₹3,08,000

(ii) Required PV Ratio = 40%

$$\text{Variable Cost to Sales Ratio} = 60\%$$

$$\text{New SP} = 244.44 / 60\% = ₹407.40$$

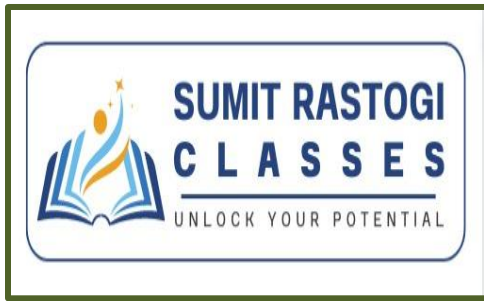
(iii) SP = 378

$$\text{Contribution Per Unit} = 378 - 244.44 = ₹133.56$$

$$\text{Desired Profit} = ₹3,08,000$$

$$\text{Sales to Earn Desired Profit} = (\text{Fixed Cost} + \text{Desired Profit}) / \text{Contribution Per Unit}$$

$$= (20,18,800 + 3,08,000) / 133.56 = 17,422 \text{ Units (Approx.)}$$



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ANS 7 (b)

Contribution per unit = $50 - 35 - 15$

(i) **PV Ratio** = $15 \times 100/50 = 30\%$

BEP Sales = Fixed cost/PV ratio = $12,00,000/30\% = ₹40,00,000$

(ii) New variable cost per unit = $35 + 3 = ₹38$

Contribution per unit = $50 - 38 = ₹12$

PV ratio $12 \times 100/50 = 24\%$

New BEP (Sales) = $12,00,000/24\% = ₹50,00,000$

(iii) Increase in profit required = ₹2,40,000

Increase in Sales Required = $2,40,000/30\% = ₹8,00,000$

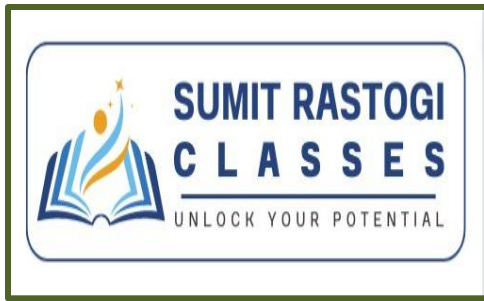
(iv) (a) Loss due to increase in variable cost = ₹3

Contribution per unit = ₹12

Every additional unit will generate ₹12 and loss in old units is ₹3. So, one additional unit will cover loss of 4 units. So, 25% ($3 \times 100/12$) increase in sales volume will cover the entire loss due to increase in variable cost.

(b) 10% increase in selling price = $50 \times 10\% = ₹5$

Increase in selling price will increase contribution by ₹5 per unit which is to be off-set by reducing number of units against which contribution loss will be ₹15. So, 3 units will off-set contribution loss of 1 unit. Hence, 25% ($1 \times 100/4$) decrease in sales volume to off-set increase in selling price.



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ANS 8 (a)

(i) Units = $18,00,000/100 = 18,000$

SP = ₹100

PV Ratio = 40%

Contribution per unit = $100 \times 40\% = ₹40$

Variable Cost = $100 - 40 = ₹60$ per unit

Variable Cost (Excluding Component of Semi-Variable OH) = $30 + 20 + 8 = ₹58$

So, Balance Variable Cost is a component from Semi-Variable overheads = $60 - 58 = ₹2$

Fixed portion is semi-variable overheads = $96,000 - (18,000 \times 2) = ₹60,000$

Total Fixed Cost = $2,40,000 + 60,000 = ₹3,00,000$

(ii) Let Sales units be X

Desired Profit = 28X

Sales to Earn Desired Profit = $(\text{Fixed Cost} + \text{Desired Profit}) / \text{Contribution per unit}$

$X = (3,00,000 + 28X) / 40$

$40X = 3,00,000 + 28X$, $X = 25,000$ units

(iii) Units at 80% = $18,000 \times 80/50 = 28,800$ units

At 80% Semi – Variable Overheads will increase twice by 18%

Therefore, Semi–Variable overheads = $96,000 + 22,000 \times 2 = ₹1,41,600$

Total cost at 80% = $(58 \times 28,800) + 1,41,600 + 2,40,000 = ₹20,52,000$

Let Sale price be X

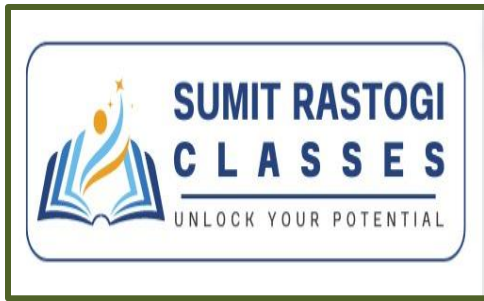
Capital Employed = $53,85,600 + 0.20 \times 28,800X$

Desired Profit = $25\% \times (53,85,600 + 5,760X) = 13,46,400 + 1,440X$

Sales = Total Cost + Profit

$28,800X = 20,52,000 + 13,46,400 + 1,440X$

$27,360X = 33,98,400$, $X = ₹124.21$



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ANS 8 (b)

- Selling Price = ₹600
- Variable Cost = ₹100
- Contribution per passenger = ₹500
- Fixed Cost 80,000+ 16,000 = ₹96,000
- Break-Even Point Fixed Cost/Contribution per passenger
= 96,000/500 = 192 Passengers

This is higher than the capacity of Bogie, for every additional bogie Fixed Cost will increase by ₹16,000

Let's take 3 bogies,

Fixed Cost 80,000+ (16,000 × 3) = ₹1,28,000

Break-Even Point = Fixed Cost/Contribution per passenger = 1,28,000/500 = 256 Passengers

This is higher than the capacity of 3 Bogies.

Let's take 4 bogies,

Fixed Cost = 80,000+ (16,000 × 4) = ₹1,44,000

Break-Even Point = Fixed Cost/Contribution per passenger = 1,44,000/500 = 288 Passengers

This is higher than the capacity of 4 Bogies.

Let's take 5 bogies,

Fixed Cost = 80,000+ (16,000×5) = ₹1,60,000

Break-Even-Point = Fixed Cost/Contribution per passenger = 1,60,000/500 = 320 Passengers

Capacity of 5 bogie's is 70 × 5 = 350 passengers, hence within the capacity.

Therefore, Break-even-Point = 320 passengers