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STRATEGIC COST MANAGEMENT

MCQ – PAST PAPERS

CHAPTER - 1 INTRODUCTION TO STRATEGIC COST MANAGEMENT

1. One of the most important features of Strategic Cost Management which differs it from Traditional Cost Management is:
- (A) Internal Focus
 - (B) Cost Impact as Primary Concern
 - (C) Reactive Management as Management Responsibility
 - (D) Value Chain Perspective

Ans. (D) Value Chain Perspective

2. Activities required to design, develop, produce, market, distribute, and service a product are known as:
- (A) Target activities
 - (B) Value-chain activities
 - (C) Whole life activities
 - (D) Overhead

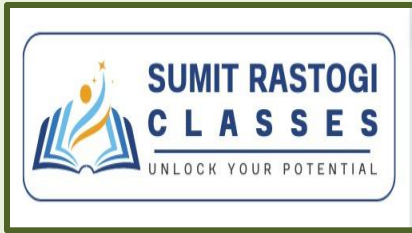
Ans. (B) Value-chain activities

3. A hand crafted product is produced in a factory taking 8 hours per unit against the standard set at 9 hours. The production manager is trying to find means of reducing the standard to lesser hours by improving material handling, etc. This measure is considered as (Cost Reduction/Cost Control).
- (A) Cost Reduction
 - (B) Cost Control
 - (C) Cost Ascertainment
 - (D) Cost Accounting

Ans. (A) Cost Reduction

4. Which one of the following is not a support activity of value chain?
- (A) Human Resource Management
 - (B) Technological Development
 - (C) Service
 - (D) Infrastructure

Ans. (C) Service



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5. Which one of the following is not true for a Red ocean strategy and why?

- (A) Beat the competition
- (B) Exploit existing demand
- (C) Make the value cost trade-off
- (D) Break the value cost trade-off

Ans. (D) Break the value cost trade-off

6. Which one of the following important pillars of Strategic Cost Management determines the company's comparative position in the Industry in terms of performance?

- (A) Cost drivers Analysis
- (B) Value Chain Analysis
- (C) Strategic positioning analysis
- (D) Competitive Value Analysis

Ans. (C) Strategic positioning analysis

7. Which one of the following is true for Blue Ocean Strategy?

- (A) Beat the competition
- (B) Exploit existing demand
- (C) Make the competition irrelevant
- (D) Make the value-cost trade off

Ans. (C) Make the competition irrelevant

8. Which of the following primary activities of Porter's Value Chain deliver the Product or Service to the Customer?

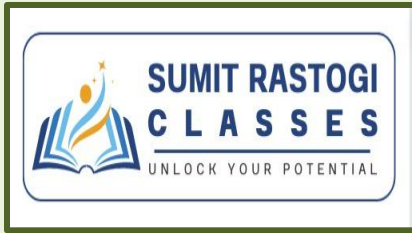
- (A) Operations
- (B) Outbound Logistics
- (C) Infrastructure
- (D) Services

Ans. (B) Outbound Logistic

9. Which one of the following, simply answers the question "What else will accomplish the purpose of the product, service or process we are studying?"

- (A) Value Engineering
- (B) Value Analysis
- (C) Business Process Re-engineering
- (D) Supply Chain Strategy

Ans. (A) Value Engineering



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10. Which of the following is not a principle of Business Process Re-engineering?

- (A) Organise work around outcomes, not tasks
- (B) Capture information once and at the source
- (C) Empower workers who use the process
- (D) Rely heavily on hierarchy and supervision

Ans. (D) Rely heavily on hierarchy and supervision

11. Which one of the following is true for a Blue Ocean Strategy?

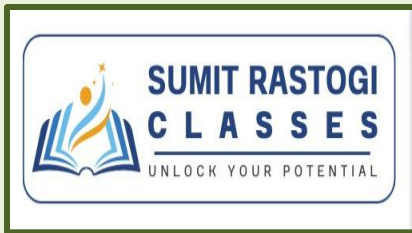
- (A) Exploit existing demand
- (B) Beat the competition
- (C) Make the competition irrelevant
- (D) Make the value-cost trade off

Ans. (C) Make the competition irrelevant

12. A major risk in implementing Business Process Reengineering is:

- (A) over dependence on Information Technology
- (B) Increase in product prices
- (C) reduced market share
- (D) employee resistance to change

Ans. (D) employee resistance to change



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CHAPTER – 2 QUALITY COST MANAGEMENT

1. Following are included in the concept of the TQM philosophy, except:

- (A) Customer focus
- (B) Static improvement
- (C) Employee empowerment
- (D) Use of quality tools

Ans. (B) Static improvement

2. A factory is setting up a special inspection at the supply point of raw materials at ₹80,000. Consequent to this, there is lesser number of returns from customers. These goods used to be sold for ₹1,00,000 and variable costs are ₹80,000. The change in quality costs are:

- (A) Decrease by ₹80,000
- (B) Decrease by ₹60,000
- (C) Decrease by ₹20,000
- (D) No change

Ans. (D) No change

3. Liability claims is an example of:

- (A) Prevention costs
- (B) Appraisal costs
- (C) External failure costs
- (D) Internal failure costs

Ans. (C) External failure costs

4. Spoilage is an example of quality cost.

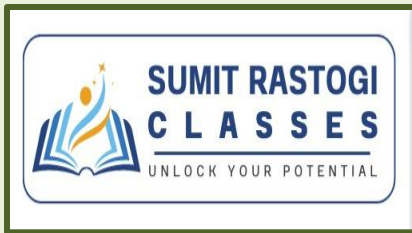
- (A) Internal Failure
- (B) External Failure
- (C) Prevention Cost
- (D) Appraisal Cost

Ans. (A) Internal Failure

5. During the lockdown days, a hospital that was running to capacity in terms of medical staff available on regular shifts proposes to share profits with staff that are willing to work extra time. Can this be termed lean management?

- (A) Yes. Planning from a lean perspective – invest in people
- (B) No. Lean management focuses only on cost cutting
- (C) No. Lean management discourages overtime work
- (D) Yes. Lean management requires reduction in workforce

Ans. (A) Yes, Planning from a lean perspective - invest in people.



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6. Depreciation of product testing equipment is:

- (A) Internal Failure Cost
- (B) Appraisal Cost
- (C) Not a Quality Cost
- (D) Irrelevant, but Quality Cost

Ans. (B) Appraisal Cost

7. Warranty period returns of finished goods sold falls under the following quality cost:

- (A) Prevention
- (B) Appraisal
- (C) Internal failure
- (D) External failure

Ans. (D) External failure

8. Down time due to defect in quality is an example of

- (A) Internal failure cost
- (B) Prevention cost
- (C) Appraisal cost
- (D) External failure cost

Ans. (A) Internal failure cost

9. Which of the following Quality Cost is incurred in the process of uncovering defects?

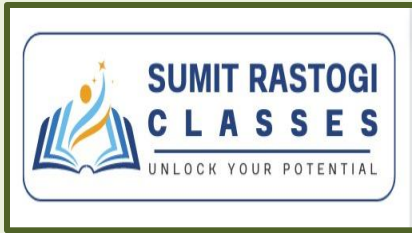
- (A) Appraisal costs
- (B) Prevention Cost
- (C) Internal failure costs
- (D) External failure costs

Ans. (A) Appraisal Costs

10. Which of the following quality costs is incurred when inferior products are delivered to customers?

- (A) Prevention costs
- (B) Appraisal costs
- (C) External failure costs
- (D) Internal failure costs

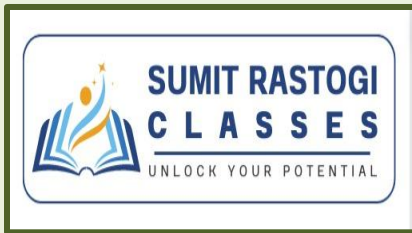
Ans. (C) External Failure Costs



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11. Which of the following is/are not the quality parameter(s) for manufacturing organisations?
- (A) Reliability
 - (B) Durability
 - (C) Serviceability
 - (D) Courtesy/Friendliness

Ans. (D) Courtesy/Friendliness



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MODULE – 3 DECISION INVOLVING ALTERNATIVE CHOICES

1. Given the following particulars:

Sales ₹2,00,000
 Fixed cost ₹40,000
 Break-even Point ₹60,000

The C/S ratio in respect of the above would be:

- (A) 50.6%
 (B) 60.7%
 (C) 66.7%
 (D) 48.6%

Ans. (C) 66.7%

2. The following details relate to product P-1 of a manufacturing company.

Level of Activity (units)	1,000	2,000
Cost per unit (₹):		
Direct Materials	4.00	4.00
Direct Labour	3.00	3.00
Production Overheads	3.50	2.50
Selling Overheads	1.00	0.50
	11.50	10.00

The total fixed cost and variable cost per unit are:

	Total Fixed Cost (₹)	Variable Cost per unit (₹)
(A)	2,000	7.00
(B)	2,000	8.50
(C)	3,000	7.00
(D)	3,000	8.50

Ans. (D) 3,000, 8.50

Working Note:

Variable Material & Labour Cost per unit = 4.00 + 3.00 = ₹7.00

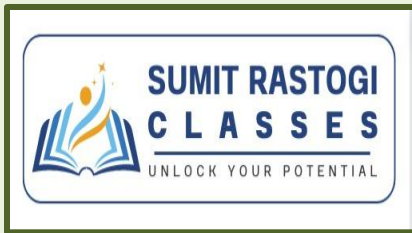
Total FC (included in Production Overheads and Selling Overheads) is as follows:

Units	1,000	2,000
Total OH	4.50 × 1,000 = 4,500	3.00 × 2,000 = 6,000
Difference in Overhead		= ₹1,500
Difference in Volume		= 1,000
∴ Variable per unit		= ₹1.50

Add this to Variable Cost per unit of ₹7.00.

The Total Variable Cost = ₹1.50 + ₹7.00 = ₹8.50

Fixed Cost = ₹4,500 - (1,000 × 1.50) = ₹4,500 - ₹1,500 = ₹3,000.



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3. Which of the following would take place if a company is able to reduce its variable cost?

	Contribution Margin	Break-Even Point
(A)	Increase	Increase
(B)	Decrease	Decrease
(C)	Increase	Decrease
(D)	Decrease	Increase

Ans. (C) Increase, Decrease

4. A company makes a single product which it sells at ₹10 per unit. Fixed costs are ₹48,000 per month and the product has a contribution to sales ratio of 40%. In a period when actual sales were ₹1,40,000, the company's margin of safety in units was:

- (A) 2,000
 (B) 3,000
 (C) 3,500
 (D) 4,000

Ans. (A) 2,000

Working Note:

BEP = FC/(C/S Ratio) = ₹48,000/0.4 = ₹1,20,000 or 12,000 units.

When sells are ₹1,40,000, the volume is ₹1,40,000 ÷ 10 = ₹14,000 units

∴ Margin of Safety is 14,000 - 12,000 = 2,000 units.

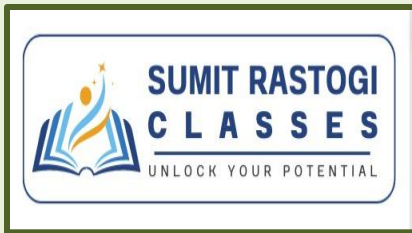
5. The following are cost data for two alternative ways of processing the clerical work for legal cases brought before the district court:

	Semi-Automatic	Fully Automatic
Monthly Fixed Costs (₹):		
Occupancy	15,000	15,000
Maintenance Contract	5,000	10,000
Equipment Lease	25,000	1,00,000
Unit Variable Cost (per report) (₹):		
Supplies	80	20
Labour	60	20

The cost indifference point will be:

- (A) 800 cases
 (B) 850 cases
 (C) 750 cases
 (D) 700 cases

Ans. (A) 800 cases



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Working Note:

Cost Indifference Point is calculated as follows:
(Difference in monthly FC/Difference in unit VC)
= $(₹1,25,000 - ₹45,000) / (₹140 - ₹40)$
= $₹80,000 / ₹100 = 800 \text{ Cases}$.

6. A company produces a product which is sold at a price of ₹80. Its Variable cost is ₹32. The company's Fixed cost is ₹11,52,000 p.a. The company operates at a margin of safety of 40%. The total sales of the company is:

- (A) 4,000 units
(B) 40,000 units
(C) 30,000 units
(D) 20,000 units

Ans. (B) 40,000 units

Working Note:

Contribution SP - VC = $80 - 32 = 48$
Fixed Cost = ₹11,52,000; B.E.P. = $11,52,000 / 48 = 24,000 \text{ units}$
MOS = 40%; B.E.P. = 60%
Total sales = $24,000 \times 100 / 60 = 40,000 \text{ units}$.

7. The P/V ratio of a firm dealing in Electrical equipment is 50% and the margin of safety is 40%. BEP of the firm at a sales volume of ₹50,00,000 will be:

- (A) ₹25,00,000
(B) ₹35,00,000
(C) ₹30,00,000
(D) 36,00,000

Ans. (C) ₹30,00,000

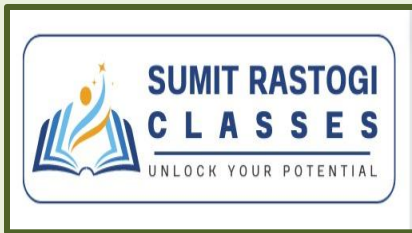
Working Note:

Actual Sales - M.O.S. = BEP Sales
Sales = ₹50,00,000
Less: Margin of safety 40% on sales = ₹20,00,000; Break-even sales = ₹30,00,000.

8. A Company requires ₹85,00,000 in sales to meet its target net profit. Its contribution margin is 30% and the fixed costs are ₹15,00,000. What is the target net profit?

- (A) ₹10,50,000
(B) ₹19,50,000
(C) ₹25,50,000
(D) ₹35,00,000

Ans. (A) ₹10,50,000



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Working Note:

Contribution = $85,00,000 \times 30\% = ₹25,50,000$

Target Profit = $25,50,000 - 15,00,000 = ₹10,50,000$

9. By making and selling 9,000 units of a product, a company makes a profit of 10,000, whereas in the case of 7,000 units, it would lose ₹10,000 instead. The number of units to break-even is:
- (A) 7,500 units
(B) 8,000 units
(C) 7,750 units
(D) 8,200 units

Ans. (B) 8,000 units

Working Note:

Contribution for 2,000 units = 20,000 (difference in profits for two output levels)

Hence, contribution per unit = ₹10. Contribution for 9,000 units = ₹90,000

Fixed Cost = $90,000 - 10,000 = ₹80,000$

BEP (units) = $80,000/10 = 8,000$ units

10. Empire Hotel has a capacity of 100 single rooms and 20 double rooms. Average occupancy is 70% for 365 days of the year. The rent for a double room is kept at 130% of a single room. The total room occupancy days in a year in terms of single room is:
- (A) 32,193
(B) 30,660
(C) 31,660
(D) 30,993

Ans. (A) 32,193

Working Note:

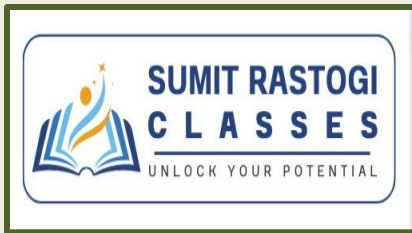
1 double room = 1.3 single in terms of revenue.

Capacity = $100 + 1.3 \times 20 = 100 + 26 = 126$ equivalent single rooms.

Total Room Occupancy p.a. = $126 \times 365 \times 70\% = 32,193$ days.

11. A company has a break-even point when sales are ₹3,20,000 and variable cost at that level of sales are ₹2,00,000. How much would contribution margin increase or decrease if variable expenses are dropped by ₹30,000?
- (A) Increase by 27.5%
(B) Increase by 9.375%
(C) Decrease by 9.375%
(D) Increase by 37.5%

Ans. (B) Increase by 9.375%



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Working Note:

Contribution = ₹3,20,000 - 2,00,000 = ₹1,20,000

PV ratio = $(1,20,000 / 3,20,000) \times 100 = 37.5\%$

New VC = ₹1,70,000

New Contribution = ₹1,50,000

New PV ratio = $(1,50,000 / 1,20,000) \times 100 = 46.875\%$

% increase in PV ratio = $(46.875 - 37.5) \% = 9.375\%$

12. The shadow price of skilled labour for SD Ltd. is currently 10 per hour. What does this mean?

- (A) The cost of obtaining additional skilled labour is ₹10 per hour.
- (B) There is a hidden cost of ₹10 for each hour of skilled labour actively worked.
- (C) Contribution will be increased by ₹10 per hour for each extra hour of skilled labour that can be obtained.
- (D) The total costs will be reduced by ₹10 for each additional hour of skilled labour that can be obtained.

Ans. (C) Contribution will be increased by ₹10 per hour for each extra hour of skilled labour that can be obtained.

13. A factory can make only one of the three products X, Y or Z in a given production period. The following information are given:

Per unit ₹	X	Y	Z
Selling Price	1,500	1,800	2,000
Variable Cost	700	950	1,000

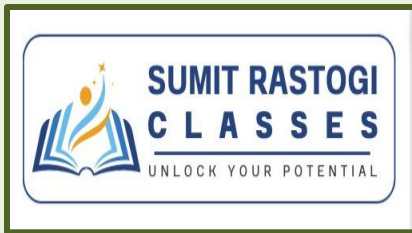
Assume that there is no constraint on resource utilization or demand and similar resources are consumed by X, Y and Z. The opportunity cost of = making one unit of Z is:

- (A) ₹850
- (B) ₹800
- (C) ₹1,800
- (D) ₹1,500

Ans. (A) ₹850

Working Note:

Opportunity cost is the cost of next best alternative foregone. Between X and Y, Y has a better contribution i.e. ₹850 as against X $(₹1,500 - 700) = ₹800$.



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14. XYZ Ltd. has the following alternative planned activity levels.

Level	E	F	G
Total Cost	₹1,00,000	₹1,50,000	₹2,00,000
No. of units produced	5,000	10,000	15,000

If fixed overhead remains constant, then fixed overhead cost per unit at Level E is

- (A) ₹20
 (B) ₹15
 (C) ₹13.33
 (D) ₹10

Ans. (D) ₹10

Working Note:

Change in Costs (F-E) = ₹50,000

Change in Units (F - E) = 5,000

VC per unit = ₹50,000 ÷ 5,000 = ₹10

Total Cost at E = ₹1,00,000

VC = 5,000 × ₹10 = ₹50,000

Total FC 1,00,000 - 50,000 = ₹50,000

FC Per unit = ₹50,000 ÷ 5,000 units = ₹10 per units

15. T Ltd. produces and sells a product. The company expects the following revenues and costs in 2018:

	₹
Revenues (400 sets sold @₹600 per product)	2,40,000
Variable costs	1,60,000
Fixed costs	50,000

What amount of sales must T Ltd. have to earn a target net income of ₹63,000 if they have a tax rate of 30%?

- (A) ₹4,20,000
 (B) ₹4,29,000
 (C) ₹3,00,000
 (D) ₹4,89,000

Ans. (A) ₹4,20,000

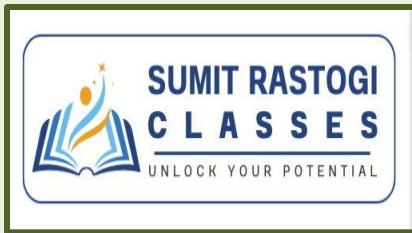
Working Note:

Desired Profit before Tax = 63,000 / (1 - 0.7) = ₹90,000

Required Sales = [FC + (Desired Profit)] / (Contribution/Sales)

= [50,000 + 90,000] / (1/3)

= ₹4,20,000



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16. Excel Products Ltd. manufactures four products e.g. Product E, Product F, Product G and Product H using same raw materials. The input requirements for Products E, F, G and H are 1 kg, 2 kgs, 5 kgs and 7 kgs, respectively. Product-wise Selling Price and Variable Cost data are given here under:

Products	E	F	G	H
Selling Price (₹)	100	150	200	300
Variable Cost (₹)	50	70	100	125

Assuming raw material availability is a limiting factor, the correct ranking of the products would be:

- (A) E, F, G & H
 (B) E, F, H & G
 (C) F, E, G & H
 (D) F, E, H & G

Ans. (B) E, F, H & G

Working Note:

Particulars	E	F	G	H
SP (₹)	100	150	200	300
VC (₹)	50	70	100	125
Contribution per unit	50	80	100	175
RM/unit (kg.)	1	2	5	7
Contribution per kg of RM (₹)	50	40	20	25
Rank	1	2	4	3

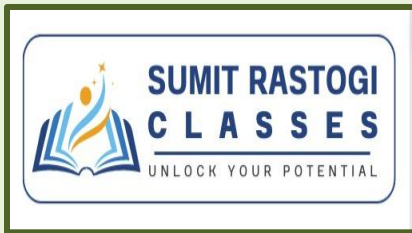
17. The break-even point of a manufacturing company is ₹1,60,000. Fixed cost is ₹48,000. Variable cost is ₹12 per unit. The PV ratio will be:

- (A) 20%
 (B) 40%
 (C) 30%
 (D) 25%

Ans. (C) 30%

Working Note:

BEP = Fixed Cost/PV Ratio
 $1,60,000 = 48,000/\text{PV Ratio}$
 PV Ratio = 30%



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18. What is the opportunity cost of making a component part in a factory given no alternative use of the capacity?

- (A) The variable manufacturing cost of the component
- (B) The total manufacturing cost of the component
- (C) The total variable cost of the component
- (D) Zero

Ans. (D) Zero

19. Only direct materials, direct labor, and variable manufacturing overhead costs are considered product costs when using

- (A) Absorption costing.
- (B) Full costing.
- (C) Variable costing.
- (D) Product costing.

Ans. (C) Variable costing.

20. When there is excess capacity, it makes sense to accept a one-time-only special order for less than the current selling price when

- (A) Incremental revenues exceed incremental costs.
- (B) Additional fixed costs need not be incurred to accommodate the order.
- (C) There is a positive contribution per unit of the product under normal capacity and spare capacity
- (D) The special order is from a normal customer.

Ans. (A) incremental revenues exceed incremental costs.

21. MK Company incurred the following costs for 60,000 units: Variable costs ₹18,00,000 Fixed costs ₹24,00,000 MK has received a special order from a foreign company for 5,000 units. There is sufficient capacity to fulfill the order without jeopardizing regular sales. Filling the order will require spending an additional ₹85,000 for shipping.

If MK wants to break even on the order, what should the unit sales price be?

- (A) ₹47
- (B) ₹30
- (C) ₹57
- (D) ₹40

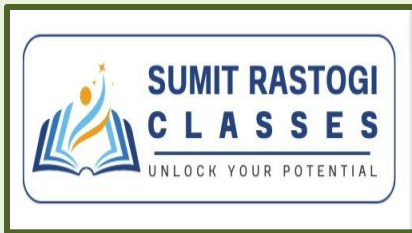
Ans. (A) ₹47

Working Note:

VC/Unit = $18,00,000 / 60,000 = ₹30$

Total Cost for special order = $85,000 + (30 \times 5,000) = ₹2,35,000$

SP for Break-even = $2,35,000 / 5,000 = ₹47$



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22. Hardware Company reported the following results from the sale of 5,000 hammers in May: sales ₹2,00,000, variable costs ₹1,20,000, fixed costs ₹60,000, and net income ₹20,000. Assume that Hardware increases the selling price of hammers by 10% on June 1. How many hammers will have to be sold in June to maintain the same level of net income?

(A) 4,000
(B) 6,000
(C) 2,000
(D) 3,000

Ans. (A) 4,000.

Working Note:

Present SP = $2,00,000 / 5,000 = ₹40$

Present VC = $1,20,000 / 5,000 = ₹24$

Revised SP = $40 \times 110\% = ₹44$

Revised Contribution per unit = $44 - 24 = ₹20$

No. of Hammers to be sold = $(60,000 + 20,000) / 20 = 4,000$

23. At the break-even point of 200 units, variable costs total ₹400 and fixed costs total ₹600. The 201st unit sold will contribute to _____ profits.

(A) ₹2
(B) ₹5
(C) ₹1
(D) ₹3

Ans. (D) ₹3

Working Note:

BEP = Fixed Cost / Contribution per unit

$200 = 600 / \text{Contribution per unit}$ Contribution per unit = $600 / 200 = ₹3$

24. Kraft Kay sells a single product. 7,000 units were sold resulting in ₹70,000 of sales revenue, ₹28,000 of variable costs and ₹12,000 of fixed costs. Contribution margin per unit is?

(A) ₹5
(B) ₹6
(C) ₹3
(D) ₹9

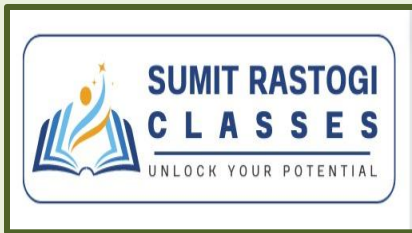
Ans. (B) ₹6

Working Note:

SP per unit = $70,000 / 7,000 = ₹10$

VC per unit = $28,000 / 7,000 = ₹4$

Contribution per unit = $10 - 4 = ₹6$ per unit.



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25. GI can produce 100 units of a necessary component part with the following costs:

Direct Materials	₹40,000
Direct Labour	₹18,000
Variable Overhead	₹42,000
Fixed Overhead	₹16,000

If GI purchases the component externally, ₹4,000 of the fixed costs can be avoided. Below what external price for the 100 units would GI choose to buy instead of make?

- (A) ₹1,04,000
- (B) ₹1,16,000
- (C) ₹1,00,000
- (D) ₹1,20,000

Ans. (A) ₹1,04,000

Working Note:

Total Cost of making excluding unavoidable Fixed Cost
 = 40,000 + 18,000 + 42,000 + 4,000 = ₹1,04,000
 Below ₹1,04,000 external price it is better to buy.

26. If there were 60,000 kgs of raw materials on hand on January 1, 1,20,000 kgs are desired for inventory at January 31, and 3,60,000 kgs are required for production in January after a normal loss of 10% of input, how many kgs of raw materials should be purchased in January?

- (A) ₹4,20,000 kgs
- (B) ₹4,40,000 kgs
- (C) ₹4,60,000 kgs
- (D) ₹4,80,000 kgs

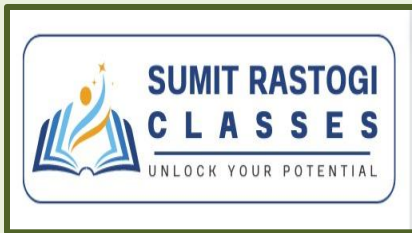
Ans. (C) ₹4,60,000 kgs

Working Note:

Material Required for Production = 3,60,000/90% = ₹4,00,000 kgs
 Purchases = 4,00,000 + 1,20,000 - 60,000 = ₹4,60,000 kgs.

27. The Income statement of BOMA Ltd. is summarized as below:

	(₹ in Lakhs)
Net Revenue	120
Less: Expenses (including ₹60 lakh of fixed cost)	132
Net Loss	12



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The Manager (F&A) believes that an increase of ₹30 lakh as fixed expenditure in advertising outlays will increase the sales substantially. At what sales volume will the company have break-even?

- (A) ₹250 lakh
- (B) ₹225 lakh
- (C) ₹200 lakh
- (D) None of the above

Ans. (B) ₹225 lakh

Working Note:

Contribution = Fixed Cost - Loss = 60 - 12 = ₹48 lakhs

PV Ratio = $48 \times 100 / 120 = 40\%$

BEP (₹) = Fixed Cost / PV Ratio = $(60 + 30) / 40\% = ₹225 \text{ Lakhs}$

28. MN Ltd. sales for the years 2018 and 2019 were 8,00,000 and 7,92,000. The cost of goods sold correspondingly were 4,80,000 and 4,64,000. In the year 2019 selling price was reduced by 10% as compared to 2018. What was the decrease in gross profit caused by the change in selling price?

- (A) ₹8000
- (B) ₹72,000
- (C) ₹79,200
- (D) ₹88,000

Ans. (D) ₹88,000

Working Note:

Decrease in Gross Profit due to selling price = $7,92,000 \times 10 / 90 = ₹88,000$.

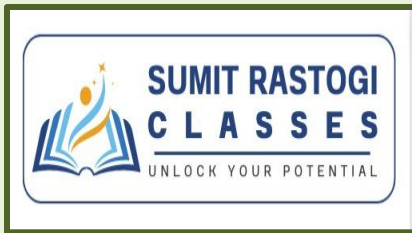
29. The Holiday Card Company, a producer of specialty cards, has asked you to complete several calculations based upon the following information:

Income tax rate	30%
Selling price per unit.	₹6.60
Variable cost per unit.	₹5.28
Total fixed costs.	₹46,200

How many cards must be sold to earn an after-tax net income of 18,480?

- (A) 60,000 units
- (B) 45,000 units
- (C) 75,000 units
- (D) 55,000 units

Ans. (D) 55,000 units



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Working Note:

Contribution per unit = $6.60 - 5.28 = ₹1.32$

Desired Profit before tax = $18,480 / (1 - 0.30) = ₹26,400$

Sales to earn desired profit = $(46,200 + 26,400) / 1.32 = 55,000$ units

30. SINT Ltd. determine its selling price by marking up the variable cost 50%. In addition, the company uses frequent selling price mark down to stimulate sales. If the mark down average is 20%, what is the company's contribution margin Ratio?

- (A) 16.67%
(B) 18.50%
(C) 20.30%
(D) None of the above

Ans. (A) 16.67%

Working Note:

Suppose VC = ₹100 than SP = ₹150

Revised SP = $150 - (150 \times 20\%) = ₹120$

Contribution margin ratio = $(120 - 100) \times 100 / 120 = 16.67\%$

31. X Ltd. has annual turnover of ₹200 lakhs and an average C/S ratio of 40%. It makes 10% profit on sales before charging depreciation and interest which amount to ₹10 lakhs and ₹15 lakhs respectively. The fixed cost of X Ltd. will be:

- (A) ₹70 lakhs
(B) ₹85 lakhs
(C) ₹90 lakhs
(D) ₹60 lakhs

Ans. (B) ₹85 lakhs

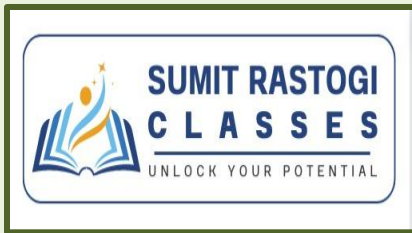
Working Note:

Profit $200 \times 10\% = ₹20$ Lakhs

Contribution = $200 \times 40\% = ₹80$ Lakhs

Fixed Cost (excluding Depreciation & interest) = $80 - 20 = ₹60$ Lakhs

Total Fixed Cost = $60 + 10 + 15 = ₹85$ Lakhs.



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32. ASH Ltd. a manufacturing company produced 300 units of product-HB and sold 240 units @₹600 per unit during the year. The following information pertains to production and sale for the year:

Variable cost per unit	₹330
Fixed costs for the year:	
Manufacturing overheads	₹21,000
Selling and Administration Overheads	₹30,000

There was no beginning inventory. What will be the income under absorption costing for the year?

- (A) ₹24,000
(B) ₹18,000
(C) ₹15,000
(D) None of the above

Ans. (B) ₹18,000

Working Note:

Manufacturing Cost per unit = $330 + (21,000/300) = ₹400$

Sales = $240 \times 600 = ₹1,44,000$

Total Cost = $(400 \times 240) + 30,000 = ₹1,26,000$

Profit = $1,44,000 - 1,26,000 = ₹18,000$

33. The profit volume ratio of Divon Ltd. is 30%, while the margin of safety is 40%. If fixed cost of the company is 1,80,000, what will be its profit (net)?

- (A) ₹1,20,000
(B) ₹1,50,000
(C) ₹1,60,000
(D) None of the above

Ans. (A) ₹1,20,000

Working Note:

BEP Sales = $₹1,80,000/30\% = ₹6,00,000$

BEP % = $100 - 40 = 60\%$

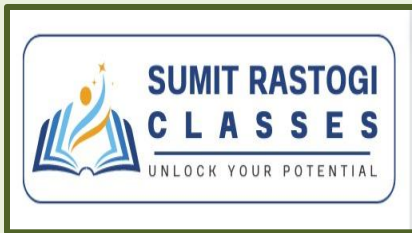
MOS = $6,00,000 \times 40/60 = ₹4,00,000$

Profit = $MOS \times PV \text{ Ratio} = 4,00,000 \times 30\% = ₹1,20,000$.

34. An increase in the selling price per unit will cause:

- (A) A decrease in the number of units required to breakeven.
(B) An increase in the contribution margin ratio.
(C) An increase in the margin of safety.
(D) All of the above

Ans. (D) All of the above



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35. ROBINSON Ltd., a manufacturing company has a break-even point, when sales are ₹10 lakh and fixed costs of ₹4 lakh. To realize profits of ₹2 lakh from sales of 3,00,000 units, the selling price per unit will be:

(A) ₹6
(B) ₹5
(C) ₹4
(D) ₹2

Ans. (B) ₹5

Working Note:

BEP Sales = Fixed Cost/PV ratio

10,00,000 = 4,00,000/PV Ratio

PV Ratio = 40%

Sales to Earn Desired profit = $(4,00,000 + 2,00,000)/40\% = ₹15,00,000$

SP per unit = $15,00,000/3,00,000 = ₹5$

36. ROTIZ Ltd., a manufacturing company has a break-even point when sales are ₹12,00,000 and fixed costs at that level of sales are ₹4,80,000. If the margin of safety (MOS) and sales of the company are 40% and 5,00,000 units respectively, what will be the sale price per unit?

(A) ₹6
(B) ₹5
(C) ₹4
(D) None of the above

Ans. (C) ₹4

Working Note:

MOS = 40%, so BEP Sales = 60%

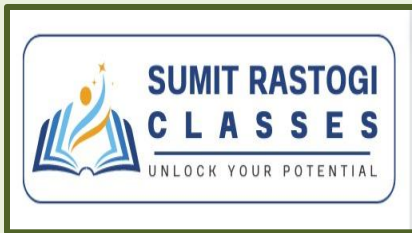
Total Sales = $12,00,000/60\% = ₹20,00,000$

SP per unit = $20,00,000/5,00,000 = ₹4$

37. In cost-plus pricing, the markup consists of:

(A) total cost and desired ROI.
(B) selling and administrative costs.
(C) Manufacturing costs.
(D) desired ROI

Ans. (D) desired ROI



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38. ABC Ltd. has current PBIT of ₹19.20 lakhs on total assets of ₹96 lakhs. The company has decided to increase assets by ₹24 lakhs, which is expected to increase the operating profit before depreciation by ₹8.40 lakhs. There will be a net increase in depreciation by ₹4.80 lakhs. This will result in ROI:

- (A) To increase by 1%
 (B) To decrease by 1%
 (C) To decrease by 1.5%
 (D) To remain the same

Ans. (B) To decrease by 1%

Working Note:

	Before installing new assets	After Installing new assets
PBIT	₹19.20 Lakhs	= ₹19.20 Lakhs + (₹8.40 Lakhs - ₹4.80 Lakhs) = ₹22.80 Lakhs
Value of Assets	₹96.00 Lakhs	₹96.00 Lakhs + ₹24.00 Lakhs = ₹120.00 Lakhs
ROI	= 20%	= 19%

There will be a decrease of 1% in ROI.

39. Sab Ltd. fixes the inter-divisional transfer prices for its products on the basis of cost plus a return on investment in the division. The budget for division X for 2016-17 appears as under:

	₹
Fixed Assets	5,00,000
Current Assets	3,00,000
Debtors	2,00,000
Annual Fixed Cost of the Division	8,00,000
Variable cost per unit of product	10
Budgeted Volume	4,00,000 units per year
Desired R.O.I	28%

Transfer price for division X is

- (A) ₹12.70
 (B) ₹10.70
 (C) ₹8.70
 (D) ₹14.70

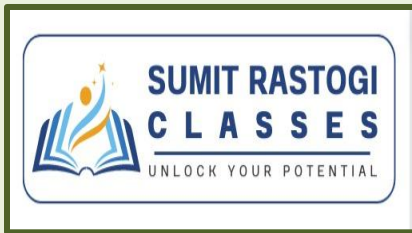
Ans. (A) ₹12.70

Working Note:

VC = 10; FC per unit = ₹8,00,000 ÷ 4,00,000 = ₹2; Total Cost = 10 + 2 = ₹12

Required Return = (₹10,00,000 × 28%) / 4,00,000 = 0.70

Transfer Price = ₹12 + 0.70 = ₹12.70



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40. H Group has two divisions, Division P and Division Q. Division P manufactures an item that is transferred to Division Q. The item has no external market and 6,000 units produced are transferred internally each year. The costs of each division are as follows?

	Division P	Division Q
Variable Cost	₹100 per unit	₹120 per unit
Fixed Cost each year	₹1,20,000	₹90,000

Head Office management decided that a transfer price should be set that provides a profit of ₹30,000 to Division P. What should be the transfer price per unit?

- (A) ₹145
 (B) ₹125
 (C) ₹120
 (D) ₹135

Ans. (B) ₹125

Working Note:

Variable cost + (Fixed cost + Profit Desired) ÷ Volume
 = ₹100 + (1,20,000 + 30,000) ÷ 6000 = ₹125/-

41. X Ltd. has 1,000 units of an obsolete item which are carried in inventory at the original price of ₹50,000. If these items are reworked for 20,000, they can be sold for ₹36,000. Alternatively, they can be sold as a scrap for ₹6,000 in the market. In a decision model used to analyse the reworking proposal, the opportunity cost should be taken as

- (A) ₹16,000
 (B) ₹6,000
 (C) ₹30,000
 (D) ₹20,000

Ans. (B) ₹6,000

Working Note:

Original price is not relevant

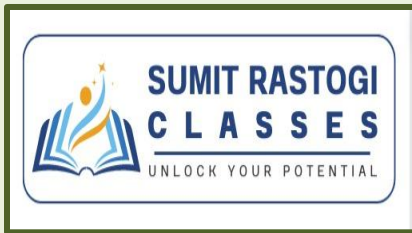
Rework income ₹36,000

Less: Cost of rework ₹20,000

Net inflow ₹16,000, it is relevant

The other alternative relevant cash flow is from sale as scrap = 6,000.

Hence the opportunity cost is ₹6,000.



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42. NM paid ₹5,30,000 for a machine used to powder wheat. The machine can be sold for ₹1,30,000. The sale value of wheat is ₹8,00,000 and its variable cost is ₹4,50,000. The opportunity cost of producing wheat flour is

(A) ₹5,30,000
(B) ₹3,50,000
(C) ₹8,00,000
(D) ₹1,30,000

Ans. (D) ₹1,30,000

43. Which of the following will always be a relevant cost?

(A) Fixed cost
(B) Opportunity cost
(C) Variable cost
(D) Sunk cost

Ans. (B) Opportunity cost

44. P Ltd. has old inventory on hand that cost ₹12,000. Its scrap value is ₹16,000. The inventory could be sold for ₹40,000 if manufactured further at an additional cost of ₹12,000. What should P Ltd. do?

(A) ₹40,000
(B) ₹28,000
(C) ₹48,000
(D) ₹20,000

Ans. (A) ₹40,000.

Working Note:

Scrap Value = ₹16,000

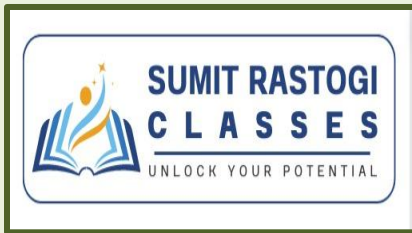
Profit on manufacture and sale = 40,000 - 12,000 = ₹28,000.

Better option is to manufacture and sell.

45. A production of ZON Ltd. has the capacity to produce either 4,000 units of A, or 3,500 units of B or 5,000 units of C. Only one product can be made in a production period. The contributions per unit of A, B and C are ₹10, ₹11 and ₹8 respectively. The opportunity cost of A would be:

(A) ₹44,000
(B) ₹38,500
(C) ₹50,000
(D) ₹40,000

Ans. (D) ₹40,000



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Working Note:

Contribution of A = $4,000 \times 10 = ₹40,000$

Contribution of B = $3,500 \times 11 = ₹38,500$

Contribution of C = $5,000 \times 8 = ₹40,000$

Opportunity cost of producing A is the contribution foregone from next best option i.e. C = ₹40,000

46. A particular job MB requires 800 kgs of a material 500 kgs of the particular material is currently in stock. The original price of the material was ₹300 but current resale value of the same has been determined as ₹200. The current replacement price of the material is ₹0.80 per kg, what will be the relevant cost of material for job MB?
- (A) ₹640
(B) ₹440
(C) ₹300
(D) None of the above

Ans. (B) ₹440

Working Note:

Relevant Cost = $300 \text{ kg} \times 0.80 + \text{resale value of } 500 \text{ kg i.e. } 200 = ₹440$

47. A company has the capacity of production of 80,000 units and presently it sells 20,000 units at ₹100 each. The demand is sensitive to selling price and it has been observed that every reduction of ₹10 in selling price the demand is doubled. What should be the target cost at full capacity if profit margin on sales is taken at 25%?
- (A) ₹58 lakhs
(B) ₹52 lakhs
(C) ₹48 lakhs
(D) ₹50 lakhs

Ans. (C) ₹48 lakhs

Working Note:

Maximum Capacity

80,000 Units

Present Sale

20,000 Units @ ₹100/- per Unit

Selling Price/Unit

Demand

100

20,000

90

40,000

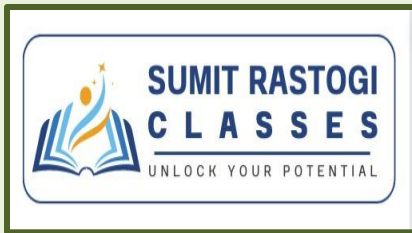
80

80,000

Target Price = ₹80

Target Cost/Unit $80 - 25\% \text{ of Sales} = 80 - 20 = ₹60/- \text{ per unit}$

Total Target Cost $80,000 \text{ Units} \times ₹60/- \text{ per unit} = ₹48 \text{ lakhs.}$



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48. Marketing department of an organisation estimates that 40,000 of new mixers could be sold annually at a price of ₹60 each. To design, develop and produce these new mixers an investment of ₹40,00,000 would be required. The company desires a 15% return on investment (ROI). Given these data, the target cost to manufacture, sell, distribute and service one mixer will be

(A) ₹37.50
(B) ₹40.00
(C) ₹45.00
(D) ₹48.60

Ans. (C) ₹45.00

Working Note:

Projected sales (40,000 mixers × ₹60 per mixer) (A) = ₹24,00,000
Less: desired profit (15% of ₹40,00,000) (B) = ₹6,00,000
Target Cost for 40,000 mixers (A - B) = ₹18,00,000
Target cost per mixer (₹18,00,000/40,000 mixer) = ₹45.00 per unit

49. 1,200 units of microchips are required to be sold to earn a profit of ₹1,06,000 in a monopoly market. The fixed cost for the period is ₹74,000. The contribution in the monopoly market is as high as 3/4th of its variable cost. Determine the target selling price per unit.

(A) 450
(B) 400
(C) 325
(D) 350

Ans. (D) 350

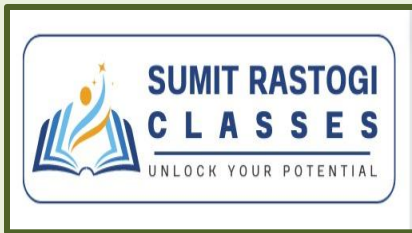
Working Note:

Contribution = 1,06,000 + 74,000 = ₹1,80,000
Contribution/Unit = 1,80,000/1,200 = ₹150
Variable cost/unit = 150 ÷ 3/4 = ₹200
Selling price = 200 + 150 = ₹350

50. A company that is a price-taker would most likely use which of the following methods?

(A) Target costing
(B) Cost plus pricing, contribution approach
(C) Cost plus pricing, absorption approach
(D) Time-and-material pricing

Ans. (A) Target costing



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51. _____ is the difference between the sales price needed to capture a predetermined market share and the desired profit per unit.
- (A) Gross profit
(B) Target cost
(C) Target price
(D) None of these.

Ans. (B) Target cost

52. Target Costing is the answer to:
- (A) Market Driven Prices
(B) Seller's Market
(C) No Profit Situation
(D) None of the Above

Ans. (A) Market Driven Prices

53. WYE Ltd. is using the target cost approach. The following data has been collected:
Expected sales revenue: ₹75,00,000 (15 per unit)
Projected selling and distribution cost: ₹3,00,000
Projected Variable Cost per unit: ₹10
Desired Profit: ₹9,50,000
What will be the target cost per unit?
- (A) ₹14.40
(B) ₹13.10
(C) ₹12.50
(D) None of the above

Ans. (B) ₹13.10

Working Note:

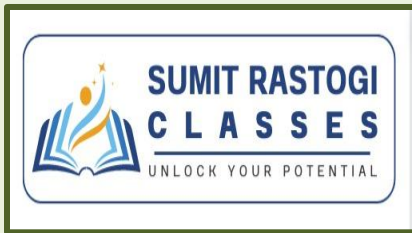
Sales Units = $75,00,000 / 15 = 5,00,000$

Target Cost = $75,00,000 - 9,50,000 = ₹65,50,000$

Target cost per unit = $65,50,000 / 5,00,000 = ₹13.10$

54. The _____ is a period of time when sales increase at a decreasing rate.
- (A) Maturity stage
(B) Growth stage
(C) Introduction stage
(D) Decline stage

Ans. (A) Maturity stage



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55. During which phase of the Product Life Cycle, sales rise at an increasing rate?

- (A) Introduction
- (B) Growth
- (C) Maturity
- (D) Decline

Ans. (B) Growth

56. If project A has a net present value (NPV) of ₹30,00,000 and project B has an NPV of ₹50,00,000, what is the opportunity cost if project B is selected?

- (A) ₹23,00,000
- (B) ₹30,00,000
- (C) ₹20,00,000
- (D) ₹50,00,000

Ans. (B) ₹30,00,000

57. SM Ltd., a manufacturing company produces a product which is sold at a price of ₹80 p.u. Its break even sales is ₹15 lakhs, while its fixed cost is ₹6 lakhs. What will be its desired quantity of sales to earn a profit of ₹4 lakhs?

- (A) 18,750 units
- (B) 31,250 units
- (C) 32,320 units
- (D) None of the above

Ans. (B) 31,250 units

58. BOS Ltd., a manufacturing company requires ₹90 Lakhs in sales to meet target net profit of ₹15 lakhs. The company's contribution margin is 30%. What will be its fixed cost?

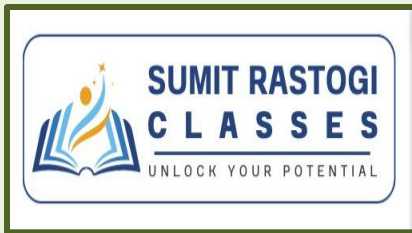
- (A) ₹15 lakhs
- (B) ₹12 lakhs
- (C) ₹10 lakhs
- (D) ₹20 lakhs

Ans. (B) ₹12 Lakhs

59. The shadow price of skilled labour for SD Ltd., is currently ₹10 per hour. What does this mean?

- (A) The cost of obtaining additional skilled labour is ₹10 per hour
- (B) There is a hidden cost of ₹10 for each hour of skilled labour activity worked
- (C) Contribution will be increased by ₹10 per hour for each extra hour of skilled labour that can be obtained
- (D) The total costs will be reduced by ₹10 for each additional hour of skilled labour that can be obtained

Ans. (C) Contribution will be increased by ₹10 per hour for each extra hour of skilled labour that can be obtained



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60. The product of XYZ company is sold at a fixed price of ₹1,500 per unit. As per company's estimate, 500 units of the product are expected to be sold in the coming year. If the value of investments of the company is ₹15 lakhs and it has a target ROI of 15%, the target cost would be:

(A) ₹930
(B) ₹950
(C) ₹1,050
(D) ₹1,130

Ans. (C) ₹1,050

Working Note:

Target Profit = $(15,00,000 \times 15\%) / 500 = ₹450$

Target Cost = $1,500 - 450 = ₹1,050$

61. RIM Ltd., has estimated the demand level of its product:

Sales (units)	5,000	10,000	15,000	20,000
Probability	0.10	0.20	0.40	0.30

It has estimated contribution of ₹4 per unit and total fixed costs of ₹60,000. What is the probability that the company will make a profit of at least ₹15,000?

(A) 40%
(B) 30%
(C) 20%
(D) None of the above

Ans. (B) 30%

Working Note:

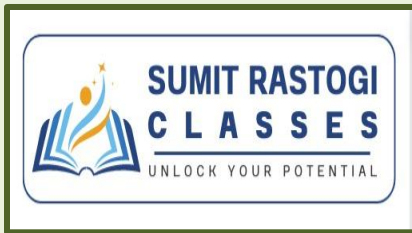
Sales required to earn Profit for ₹15,000 = $(60,000 + 15,000) / 4 = 18,750$ units

Probability = 0.30

62. A company has a break-even point when sales are ₹3,20,000 and variable cost at that level of shares are ₹2,00,000. How much would P/V ratio increase or decrease if variable expenses are dropped by ₹30,000?

(A) Increase by 27.5%
(B) Increase by 9.375%
(C) Increase by 9.375%
(D) Increase by 37.5%

Ans. (B) Increase by 9.375%



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Working Note:

At BEP Sales, Contribution = 3,20,000 - 2,00,000 = ₹1,20,000

PV Ratio = $1,20,000 \times 100 / 3,20,000 = 37.5\%$

If variable expenses are reduced than contribution shall increase to ₹1,50,000

Revised PV ratio = $1,50,000 \times 100 / 3,20,000 = 46.875\%$

Increase in PV ratio = $46.875 - 37.5 = 9.375\%$

63. A firm has a fixed cost of ₹ 1,00,000 and a break-even sale of ₹ 8,00,000. What is its projected profit at 12,00,000 sales?

- (A) ₹50,000
(B) ₹1,50,000
(C) ₹2,00,000
(D) None of the above

Ans. (A) 50,000

Working Note:

BEP Sales = Fixed Cost / PV Ratio

8,00,000 = 1,00,000 / PV Ratio

PV Ratio = 12.5%

At Sales of ₹12,00,000:

Contribution = $12.5\% \times 12,00,000 = ₹1,50,000$

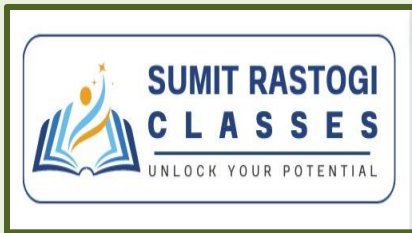
Profit = 1,50,000 - 1,00,000 = ₹ 50,000

64. Marketing department of Axis Ltd. estimates that 40,000 of new mixers could be sold annually at a price of ₹ 60 each. To design, develop and produce these new mixers, an investment of ₹ 40,00,000 would be required. The company desires a 15% return on investment (ROI). Given these data, the target cost to manufacture and sell one mixer will be:

- (A) ₹37.50
(B) ₹40.00
(C) ₹45.00
(D) ₹48.60

Ans. (C) ₹45.00

65. LDT Manufacturers is evaluating its research and development programs for the upcoming year. The four products under consideration all appear to offer favourable profitability if they can be carried out successfully. But, due to budget constraint one product can be launched. The following information is relevant:



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Product	Probability of success		Expected Profit (₹in crore)
	Commercially	Technically	
P01	0.7	0.4	10
P02	0.8	0.5	12
P03	0.5	0.9	9
P04	0.4	0.8	14

Which product should be launched?

- (A) P01
- (B) P02
- (C) P03
- (D) P04

Ans. (B) P02

Working Note:

Expected Monetary Value = Probability of Commercial Success × Probability of Technical Success × Expected profit

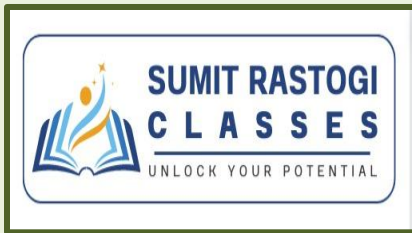
P01 $0.7 \times 0.4 \times 10 = ₹2.8$ Crores

P02 $0.8 \times 0.5 \times 12 = ₹4.8$ Crores

P03 $0.5 \times 0.9 \times 9 = ₹4.05$ Crores

P04 $0.4 \times 0.8 \times 14 = ₹4.48$ Crores

Based on expected monetary value P02 should be selected.



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MODULE – 4 ACTIVITY BASED MANAGEMENT AND JUST IN TIME **(JIT)**

1. The operation of Activity Based Cost Management system involves the use of the following terms, except
- (A) Blanket overhead recovery
 - (B) Resources
 - (C) Cost pools
 - (D) Cost drivers

Ans. (A) Blanket overhead recovery

2. The following tasks are associated with ABC system:

- I. Allocation of costs to products
- II. Identification of cost pools
- III. Identification of cost drivers
- IV. Calculation of pool rates

The proper order of the preceding tasks is:

- (A) III, II, IV, I
- (B) I, II, III, IV
- (C) III, IV, II, I
- (D) IV, III, II, I

Ans. (A) III, II, IV, I

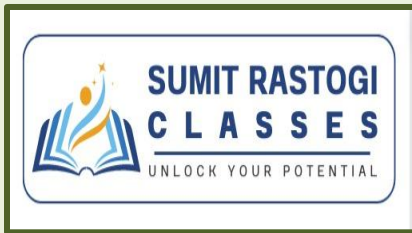
3. A company uses traditional standard costing system. The inspection and set-up costs are actually ₹1,760 against a budget of ₹2,000. ABC system is being implemented and accordingly the number of batches is identified as the cost driver for inspection and set up. The budgeted production is 10,000 units in batches of 1,000 units whereas actually 9,000 units were produced in 11 batches. The cost per batch under ABC system will be

- (A) ₹160
- (B) ₹200
- (C) ₹180
- (D) ₹220

Ans. (B) ₹200

Working Note:

Std. Cost per batch under ABC = Budgeted Cost/Batch
= 2000/10 = ₹200



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4. The following information relate to ABC

Activity level	60%	80%
Variable costs (₹)	12,000	16,000
Fixed costs (₹)	20,000	22,000

The differential cost for 20% capacity is:

- (A) ₹4,000
- (B) ₹2,000
- (C) ₹6,000
- (D) ₹5,000

Ans. (C) ₹6,000

Working Note:

Differential Costs = Differences in Fixed and Variable Cost = 4000 + 2,000 = 6,000.

5. A company operates an activity-based costing (ABC) system to attribute its overhead costs to cost objects. In its budget for the year-ending 31st August, 2018. The company expected to place a total of 2000 purchase orders at a total cost of ₹1,00,000. This activity and its related costs were budgeted to occur at a constant rate throughout the budget year which is divided into 13 four weeks periods.

During the four weeks period ended 30th June 2017, a total of 200 purchase orders were placed at a cost of ₹9,000. The over recovery of these costs for the four weeks period was

- (A) ₹2,000
- (B) ₹3,000
- (C) ₹1,500
- (D) ₹1,000

Ans. (D) ₹1,000

Working Note:

Cost driver rate for order = $1,00,000 / 2,000 = 50$ per order.

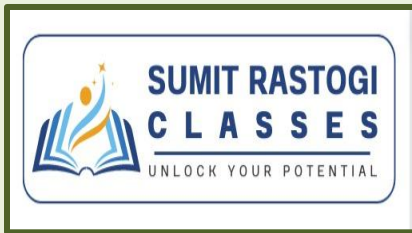
Cost recovered = $50 \times 200 = 10,000$.

Actual = 9,000

Over recovery = ₹1,000.

6. AB company is a supermarket group that incurs the following costs:

1. The bought-in price of the goods
 2. Inventory finance costs
 3. Self refilling costs
 4. Costs of repacking or 'pack out' prior to storage before sale
- AB company's calculating of direct product profit (DPP) would include



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- (A) Costs (1) and (3) only.
 (B) All of the above cost except (2)
 (C) All of the above costs except (4)
 (D) All of the above costs.

Ans. (D) All of the above costs.

7. A company manufactures and sells packaging machines. It recently introduced activity-based costing to refine its existing system. Each packaging machine requires direct materials costs of ₹50,000; 50 equipment parts; 12 machine hours; 15 assembly line hours and 4 inspection hours. The details about the cost pools, allocation bases and allocation rates are given below:

Indirect Cost Pool	Cost Allocation Base	Budgeted Allocation Rate
Material Handling	No. of component parts	₹8 per part
Machining	Machine Hours	₹68 per machine hour
Assembly	Assembly Line Hours	₹75 per assembly hour
Inspection	Inspection Hours	₹104 per inspection hour

The company has received an order for 40 can-packaging machines from a customer. Using activity-based costing, indirect costs allocated to the order of the customer would be:

- (A) ₹1,30,850
 (B) ₹1,25,280
 (C) ₹1,15,050
 (D) ₹1,10,280

Ans. (D) ₹1,10,280

Working Note:

Indirect costs per machine:

Material handling 8×50

Machining 68×12

Assembly 75×15

Inspection 104×4

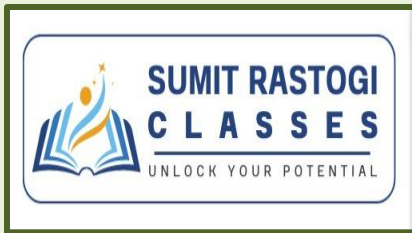
For the order: $₹2,757 \times 40 = ₹1,10,280$

₹
 400
 816
 1,125
 416
 2,757

8. Which of the following is not a correct match?

	Activity	Cost Drivers
(A)	Production Scheduling	Number of production runs
(B)	Dispatching	No. of Dispatch orders
(C)	Goods Receiving	Goods received order
(D)	Inspection	Machine hours

Ans. (D)



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9. At KL Company, the cost of the personnel department has always been charged to production departments based upon number of employees. Recently, opinions gathered from the department managers indicate that the number of new hires might be a better predictor of personnel costs. Total personnel department costs are ₹2,00,000.

Department	A	B	C
Number of employees	30	270	100
The number of new hires	8	12	5

If number of new hires is considered the cost driver, what amount of personnel costs will be allocated to Department A?

- (A) ₹64,000
 (B) ₹54,000
 (C) ₹50,000
 (D) ₹60,000

Ans. (A) ₹64,000

Working Note:

Personnel Cost per new hire = $2,00,000 / 25 = ₹8,000$

Personnel Cost allocated to Department A = $8,000 \times 8 = ₹64,000$.

10.

Activities	Total Costs ₹	Activity Cost Drivers
Account Inquiry hours	4,00,000	10,000 hours
Account Billing Lines	2,80,000	40,00,000 Lines
Account Verification Accounts	1,50,000	40,000 Accounts
Correspondence Letters	50,000	4,000 Letters
Total Cost	8,80,000	

M provides the above ABC information. The above activities are used by Departments A and B as follows:

	Dept. A	Dept. B
Account Inquiry Hours	2,000	4,000
Account Billing Lines	4,00,000	2,00,000

How much of the account inquiry cost will be assigned to Department A?

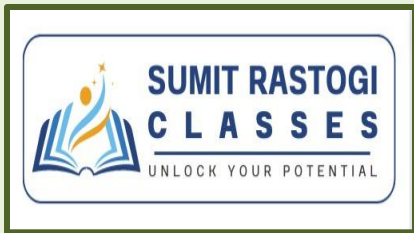
- (A) ₹60,000
 (B) ₹10,000
 (C) ₹80,000
 (D) ₹40,000

Ans. (C) ₹80,000.

Working Note:

Inquiry cost per hour = $4,00,000 / 10,000 = 40$

Inquiry cost assigned to Department A = $2,000 \times 40 = ₹80,000$.



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11. Production overheads of XYZ Ltd. for 500 units of product X are:

Machine oriented activity cost: ₹1,35,400

Material ordering overheads: ₹69,570

Machine hours are 1.50 hours per unit and No. of material orders are 6 per unit.

What is the Machine Oriented Cost per unit and Material Ordering Cost per unit respectively?

- (A) ₹270.80 & ₹139.14
(B) ₹180.53 & ₹23.19
(C) ₹23.19 & ₹180.53
(D) ₹139.14 & ₹270.80

Ans. (A) 270.80 & 139.14

Working Note:

Machine oriented Cost per unit = $1,35,400 / 500 = ₹270.80$

Material Ordering Cost per unit = $69,570 / 500 = ₹139.14$

12. Nulook Ltd. uses a JIT system and backflush accounting. It does not use a raw material stock control account. During May, 8,000 units were produced and sold. The standard cost per unit is 100. This includes materials of ₹45. During May, ₹4,80,000 of conversion costs were incurred.

The debit balance on Cost of Goods Sold Account for May was:

- (A) ₹8,00,000
(B) ₹8,40,000
(C) ₹8,80,000
(D) ₹9,20,000

Ans. (B) ₹8,40,000

Working Note:

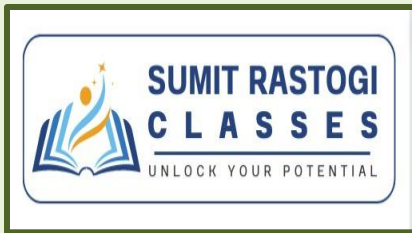
Cost of Goods Sold = Material Cost + Conversion Cost

= $(8,000 \text{ units} \times ₹45) + ₹4,80,000 = ₹8,40,000$.

13. A factory has a key resource (bottleneck) of Facility A which is available for 31,300 minutes per week. The time taken by per unit of Product X and Y in Facility A are 5 minutes and 10 minutes respectively. Last week's actual output was 4750 units of product X and 650 units of Product Y. Actual factory cost was ₹78,250. The throughput cost for the week would be:

- (A) ₹75,625
(B) ₹76,225
(C) ₹77,875
(D) ₹79,375

Ans. (A) ₹75,625



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Working Note:

Cost per Factory Minute = Total Factory Cost/Minutes Available = ₹78,250/31,300 = ₹2.50

Standard Minutes of throughput for the week = (4,750 × 5) + (650 × 10) = 30,250 minutes

Therefore, throughput Cost for the week = 30,250 × ₹2.50 = ₹75,625

14. Which of the following is TRUE about the theory of constraints?

- (A) TOC recognizes that lower inventories means slower response to customers.
- (B) TOC recognizes that lowering inventory decreases carrying costs and thus decreases operating expenses and improves net income.
- (C) TOC recognizes that lower inventories means more defects.
- (D) TOC recognizes that EOQ is important.

Ans. (B) TOC recognizes that lowering inventory decreases carrying costs and thus decreases operating expenses and improves net income.

15. If the unit level of inventory increases during an accounting period, then:

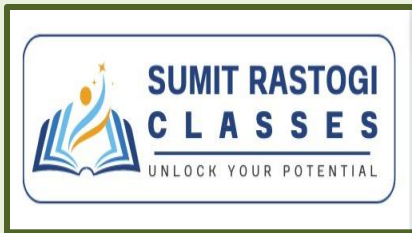
- (A) Operating income will be the same under absorption costing and variable costing.
- (B) The exact effect on operating income cannot be determined.
- (C) More operating income will be reported under absorption costing than variable costing.
- (D) less operating income will be reported under absorption costing than variable costing.

Ans. (C) more operating income will be reported under absorption costing than variable costing.

16. AMRIT Ltd., a manufacturer of doors using a Throughput costing system, is experiencing a bottleneck in its plant. Set-up time at one of its work stations has been identified as the offender. The Manager (Finance) has proposed a plan to reduce the set-up time at a cost of ₹5,24,000. The change will result in 500 additional doors. The selling price per door is ₹19,300, Direct Labour costs are ₹2,400 per door and the cost of Direct Materials is ₹8,000 per door. All units produced can be sold. The change will result in an increase in the Throughput Contribution of:

- (A) ₹60,20,000
- (B) ₹56,50,000
- (C) ₹44,50,000
- (D) None of the above

Ans. (B) ₹56,50,000



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Working Note:

Increase in throughput contribution $(19,300 - 8,000) \times 500 = ₹56,50,000$.

17. Producing more non-bottleneck output:

- (A) Creates more inventory and in-creases throughput contribution.
- (B) Creates more inventory but does not increase throughput contribution.
- (C) Creates less pressure for the bottleneck workstations.
- (D) Allows for the maximization of overall contribution.

Ans. (B) Creates more inventory but does not increase throughput contribution.

18. DYAM Ltd. operates Throughput Accounting System. The details of product-D per unit are as under:

Selling Price	60
Material Cost	24
Conversion Cost	18
Time on Bottleneck resources	10 minutes

The return per hour for the product-D will be:

- (A) ₹180
- (B) ₹210
- (C) ₹216
- (D) ₹300

Ans. (C) 216

Working Note:

Throughput Return per unit = $60 - 24 = ₹36$

Throughput return per hour = $36 \times 60 \text{ minutes} / 10 \text{ minutes} = ₹216$

19. A factory of ROGO Ltd. has a key resource (bottleneck) of a facility M which is available for 48,000 minutes per week. The time taken per unit of product A in facility M is 6 minutes. Last week's actual output was 5,000 units of product A and actual factory cost (excluding material cost) was ₹1,20,000. What is throughput cost per week?

- (A) ₹1,20,000
- (B) ₹1,00,000
- (C) ₹75,000
- (D) Insufficient information

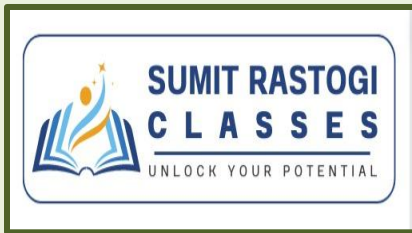
Ans. (C) ₹75,000

Working Note:

Factory Cost per minute = $1,20,000 / 48,000 = ₹2.5$

Throughput cost per unit = $2.5 \times 6 \text{ min.} = ₹15$

Throughput cost per week = $15 \times 5,000 = ₹75,000$.



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20. Backflush costing is most likely to be used when:

- (A) Management desires sequential tracking of costs
- (B) A Just in Time inventory philosophy has been adopted
- (C) The company carries significant amount of inventory
- (D) Actual production costs are debited to work-in-progress

Ans. (B) A Just in Time inventory philosophy has been adopted.

21. When you wait until the manufacture of a product has been completed and then record all of the related issuances of inventory from stock that were required to create the product, it is called:

- (A) Forensic Accounting
- (B) Back-flush Accounting
- (C) Tax Accounting
- (D) Lean Accounting

Ans. (B) Back-flush Accounting

22. Companies that would benefit from back-flush costing include companies:

- (A) None of these.
- (B) Whose inventories vary from period to period.
- (C) Which have fast manufacturing lead times.
- (D) Companies that require audit trails.

Ans. (C) Which have fast manufacturing lead times.

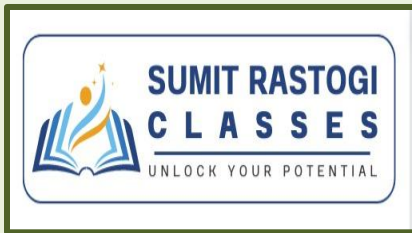
23. Tonz Ltd., manufactures two products BX and BZ using common material handling facility. The total budgeted material handling cost is ₹80,000. The other details are:

	Product BX	Product BZ
Number of units produced	20	40
Material moves per product line	15	5
Direct Labour hour per unit	100	100

Under Activity Based Costing System the material handling cost to be allocated to product BZ (per unit) would be:

- (A) ₹400
- (B) ₹500
- (C) ₹1,500
- (D) None of the above

Ans. (B) ₹500



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Working Note:

Cost per Material Move = $80,000/20 = ₹4,000$

Material Handling Cost allocated to Product BZ = $4,000 \times 5 = ₹20,000$

Material Handling Cost for Product BZ per unit = $20,000/40 = ₹500$

24. Kanban Japanese System under JIT Approach ensures

- (A) Continuous supply of inventory or product
- (B) Minimum and maximum level of stock to be maintained
- (C) Inventory valuation
- (D) All of the above

Ans. (A) Continuous supply of inventory or product

25. AON Ltd. following Activity Based Costing expected to place a total of 2,895 purchase orders at a total cost of ₹ 1,10,010. These costs are expected to occur at a constant rate throughout the budget year, which is divided into 13 four-week periods. During the four-week period ended on 30th September 2025, a total of 210 purchase orders were placed at a cost of ₹ 7,650. The over-recovery of these costs for the four-week period was:

- (A) ₹330
- (B) ₹350
- (C) ₹370
- (D) ₹390

Ans. (A) ₹330

Working Note:

Budgeted ordering cost = $1,10,010/2,895 = ₹38$ per order

Actual Ordering cost for 4-week period = ₹7,650

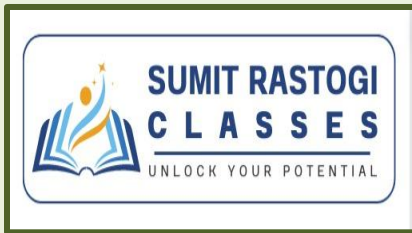
Recovered Ordering Cost = $210 \times 38 = ₹7,980$

Over-recovery = $7,980 - 7,650 = ₹330$

26. A Kanban is a visual signal that indicates that it is time to replenish stock and possibly reorder. In which of the following this is referred to?

- (A) JIT Systems
- (B) JIT Strategy
- (C) Both (a) and (b)
- (D) None of the above

Ans. (A) JIT Systems



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MODULE – 5 EVALUATING PERFORMANCE

1. The budgeted fixed overhead for the year 2015 amounted to ₹14,400. It is anticipated that 288 days would be worked during the year. During the month of February, 2015 only 20 days were worked. Find out Calendar Variance.

- (A) ₹100 (A)
(B) ₹200 (A)
(C) ₹200 (F)
(D) ₹400 (A)

Ans. (B) ₹200 (A)

Working Note:

Budgeted Fixed Overheads $14,400/12 = ₹1,200$

Budgeted Days $= 288/12 = 24$

Revised Budgeted Fixed Overheads = Budgeted Fixed overheads x Budgeted Days/Actual Days $= 1,200 \times 20/24 = ₹1,000$

Fixed Overhead Calendar Variance = Revised Budgeted Fixed Overheads - Budgeted Fixed Overheads $= 1,000 - 1,200 = 200$ (A).

2. The information relating to the direct material cost of a company is as follows:

Standard price per unit	₹7.20
Actual quantity purchased in units	1600
Standard quantity allowed for actual production in units	1450
Material price variance on purchase (Favourable)	480

What is the actual purchase price per unit?

- (A) ₹7.50
(B) ₹6.40
(C) ₹6.50
(D) ₹6.90

Ans. (D) ₹6.90

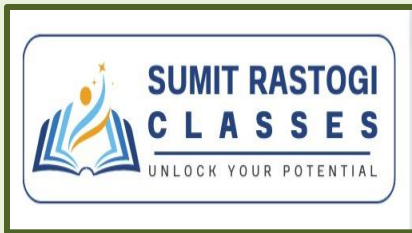
Working Note:

Material Price Variance (MPV) = Standard cost of Actual Quantity - Actual Cost

$480 = 7.20 \times 1,600 - \text{Actual Cost}$

or, Actual Cost $= 11,520 - 480 = 11,040$

Actual Price/Unit $= 11,040 \div 1,600 = ₹6.90$.



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3. The preparation and use of standard cost, their comparison with actual costs and the measurement and analysis of variances to originating causes is defined as:
- (A) Marginal Costing
 - (B) Standard Costing
 - (C) Throughput Costing
 - (D) Kaizen Costing

Ans. (B) Standard Costing

4. The following figures are extracted from the books of a company: Budgeted O/H ₹10,000 (Fixed ₹6,000, Variable ₹4,000)
Budgeted Hours 2,000
Actual O/H ₹10,400 (Fixed ₹6,100, Variable ₹4,300) Actual Hours 2,100
Variable O/H cost variance and Fixed O/H cost variance will be:
- (A) 100 (A) and 200 (A)
 - (B) 100 (F) and 200 (F)
 - (C) 100 (A) and 200 (F)
 - (D) 200 (A) and 100 (F)

Ans. (C) 100 (A) and 200 (F)

Working Note:

VOH per hour = $4,000 / 2,000 = ₹2$ per hour

FOH per hour = $6,000 / 2,000 = ₹3$ per hour

Variable O/H Cost variance = $(2,100 \times 2) - 4,300 = 4,200 - 4,300 = 100$ (A)

Fixed O/H Cost variance = $(2,100 \times 3) - 6,100 = 6,300 - 6,100 = 200$ (F).

5. In a factory where standard costing system is followed, the production department consumed 1,100 kgs of a material @ 8 per kg for product X resulting in material price variance of ₹2,200 (Fav) and material usage variance of ₹1,000 (Adv). What is the standard material cost of actual production of product X?
- (A) 11,000
 - (B) 20,000
 - (C) 14,000
 - (D) 10,000

Ans. (D) 10,000

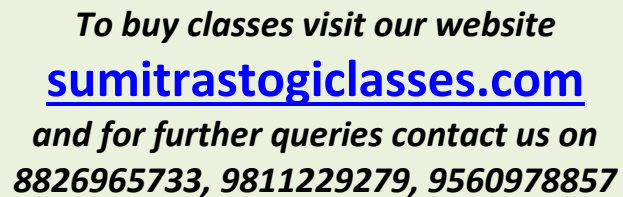
Working Note:

Actual Cost + Favourable Cost Variance = Standard Cost

$(1,100 \times 8) + (2,200 - 1,000) = \text{Standard Cost}$

$8,800 + 1,200 = \text{Standard Cost}$

Standard Cost = **10,000**.



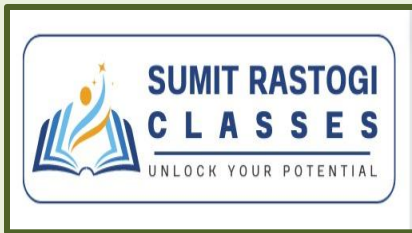
- Ans. (A) ₹40,000 over absorbed.**

40,000

- Ans. (C) 2,200**

AH = 2,200 hours

- Ans. (D) The higher the capacity utilization ratio.**



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9. A manufacturing company uses two types of materials. X and Y, for manufacture of a standard product. The following information is given:

Standard Mix			
Materials			
X	120 kg	₹5	₹600
Y	80 kg	₹10	₹800
	200		₹1,400
30% loss	(60)		25% Loss
	140		1,400

Actual Mix		
112 Kg	₹5	₹560
88 Kg	₹10	₹880
200		₹1,440
(50)		
150		₹1,440

Direct Materials Mix Variance is:

- (A) ₹40 (fav.)
 (B) ₹40 (unfav.)
 (C) ₹80 (fav.)
 (D) ₹80 (unfav.)

Ans. (B) ₹40 (unfav.)

Working Note:

RSQ for X = $200 \times \frac{3}{5} = 120$

RSQ for Y = $200 \times \frac{2}{5} = 80$

Material Mix Variance

A = 5 (120 - 112) = 40 (fav.)

B = 10 (80 - 88) = 80 (unfav.)

= 40 (unfav.)

10. A manufacturing company has the following information pertaining to a normal monthly production of 10,000 units of a product.

Standard factory overhead rates are based on a normal monthly volume of one standard direct hour per unit. Standard factory overhead rates per direct labor hour are:

Fixed	₹6.00
Variable	₹10.00
	₹16.00

Units actually produced in current month 9,000 units

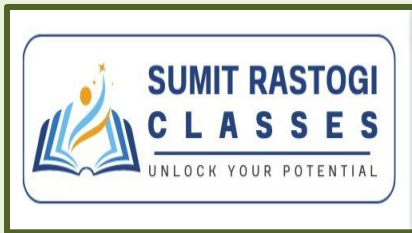
Actual factory overhead costs incurred (Includes ₹70,000 fixed) ₹1,56,000

Actual direct labour hours 9,000 hours

The variable overhead spending variance is:

- (A) ₹0
 (B) ₹10,000 (F)
 (C) ₹4,000 (F)
 (D) ₹86,000 (A)

Ans. (C) 4,000 (F)



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Working Note:

Actual VOH = 1,56,000 - 70,000 = ₹86,000

Standard Hours for Actual Output = 9,000 × 1 = 9,000

VOH Spending Variance = AH (SR - AR) = (9,000 × 10) - 86,000 = ₹4,000 (F)

11. A factory is trying to establish standard time for a certain job. Workers arrive at 8:00 am, during the day take tea and lunch breaks for 1½ hours, machines need set up for 1½ an hour and workers leave by 4 p.m. A worker can ideally produce a unit of output if he is at his job for two hours. How much is the standard labour hour per unit?
- (A) 2.00 hours
 (B) 2.50 hours
 (C) 2.67 hours
 (D) 3.00 hours

Ans. (C) 2.67 hours

Working Note:

Time available at job = 8 hours (8:00 am to 4:00 pm)

Working Time = 8 - 1.50 - 0.50 = 6 hours

In a day 3 units can be made in 6 hours. (1 unit in 2 hours)

So, Standard time = 8/3 = 2.67 hours.

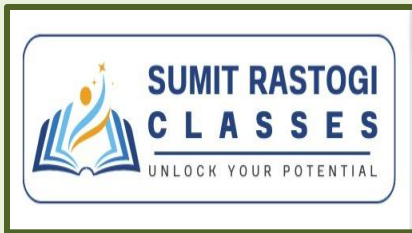
12. RON Ltd., a manufacturer of product CEMO using a standard costing system provides the following information pertaining to the Direct Materials for the month of November, 2022:

1 tonne of material input yields standard output of (units)	1,00,000
Standard price of material per kg (₹)	20
The Actual quantity of material used (Tonnes)	10
Actual price of material per kg (₹)	21
Actual output obtained for the month (units)	9,00,000

Material Cost Variance will be:

- (A) ₹40,000 (Adv)
 (B) ₹40,000 (Fav)
 (C) ₹30,000 (Adv)
 (D) ₹25,000 (Adv)

Ans. (C) ₹30,000 (Adv)



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Working Note:

Standard quantity for actual output = $9,00,000 \times 1/1,00,000 = 9$ tonnes

SP per tonne = $20 \times 1,000 = ₹20,000$

Standard Cost = $20,000 \times 9 = ₹1,80,000$

Actual Cost = $10 \times 21 \times 1,000 = ₹2,10,000$

Material Cost Variance = $1,80,000 - 2,10,000 = ₹30,000$ (Adv)

13. BOSAN Ltd. using standard costing system provides the following information pertaining to Direct Labour for its product JUM for the month of May, 2023:

Standard Direct Labour Rate per hour: ₹16

Actual Direct Labour Rate per hour ₹14.50

Labour Rate variance ₹15,000 (Fav)

Standard hours allowed for Actual production 8,000 hours

Actual output is 800 units.

How many Direct Labour hours were worked during the month of May, 2023?

(A) 12,000 hours

(B) 11,000 hours

(C) 10,000 hours

(D) None of the above

Ans. (C) 10,000 hours

Working Note:

Labour rate Variance = AH (SR-AR)

$15,000 = AH (16 - 14.50)$

$15,000 = 1.50 AH$

AH = 10,000

14. A Co. producing output X and Y uses standard costing. The standard overhead contents of each product is:

X: 3 per unit and Y: ₹2.25 per unit.

The budgeted overhead is ₹860 and budgeted time is 3,440 hours.

Actual Output:

X 200 units and Y 100 units.

Actual time: 3,200 hours

Actual overhead: ₹875. Compute Overhead Volume variance.

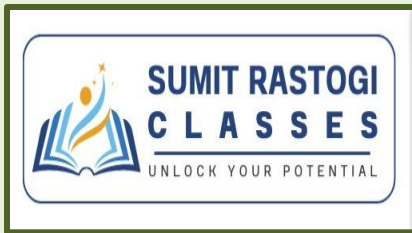
(A) ₹35 (A)

(B) ₹35 (F)

(C) ₹25 (F)

(D) ₹15 (A)

Ans. (A) ₹35 (A)



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Working Note:

Recovered Fixed Overheads = $(200 \times 3) + (2.25 \times 100) = ₹825$

Fixed OH Volume Variance = $825 - 860 = ₹35 \text{ (A)}$

15. Uniform Costing may not be successfully applied in the following case:

- (A) In a single enterprise having a number of branches, each of which manufactures the same set of products with the same facilities.
- (B) In a number of entities in the same industry bound by a trade association.
- (C) In a number of units across different geographical locations manufacturing one or more of a given set of products.
- (D) In different branches of the same company, each branch making a different product using a unique process.

Ans. (D) In different branches of the same company, each branch making a different product using a unique process.

16. YEN Ltd., adopting Standard Costing System in its factory, budgets for fixed overhead of ₹50,000 and production of 10,000 units for a month of year 2025. Actual production is 9,500 units. If the fixed overhead cost is increased to ₹52,000, the fixed overhead volume variance will be

- (A) ₹1,000 (Adv.)
- (B) ₹2,000 (Fav.)
- (C) ₹2,500 (Fav.)
- (D) ₹2,500 (Adv.)

Ans. (C) ₹2,500 (Adv.)

Working Note:

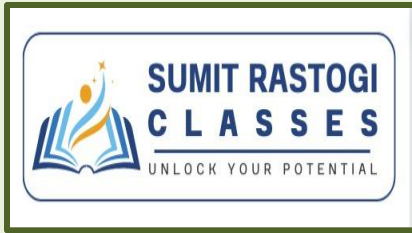
Recovered Fixed OH = $50,000 \times 9,500/10,000 = ₹47,500$

Fixed OH Volume Variance = $47,500 - 50,000 = ₹2,500 \text{ (Adv.)}$

17. Standard Cost and Budgeted Cost are

- (A) Interrelated but not interdependent
- (B) Interdependent but not interrelated
- (C) Interrelated and interdependent
- (D) None of the above

Ans. (A) Interrelated but not independent



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18. AB Ltd. uses standard cost system. The following information pertains to direct labour for Product X for the month of March, 2026:

Standard rate per hour = ₹8

Actual rate per hour = ₹ 8.40

Standard hours allowed for actual production = 2000 hours

Labour Efficiency variance= ₹1,600(Adverse)

What were the actual hours worked?

- (A) 1,800
- (B) 1,810
- (C) 2,200
- (D) 2,190

Ans.(C) 2,200

Working Note:

Labour Efficiency Variance = SR (SH - AH)

-1,600 = 8 (2,000 - AH)

-200 = 2,000 - AH

AH = 2,200

19. The higher the actual hours worked:

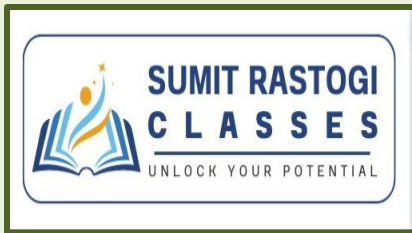
- (A) the lower is the capacity usage ratio.
- (B) the higher is the capacity usage ratio.
- (C) the lower is the capacity utilisation ratio.
- (D) the higher is the capacity utilisation ratio.

Ans. (D) the higher is the capacity utilisation ratio.

20. Uniform Costing may not be successfully applied in the following case:

- (A) In a single enterprise having a number of branches, each of which manufactures the same set of products with the same facilities
- (B) In a number of entities in the same industry bound by a trade association
- (C) In a number of units across different geographical locations manufacturing one or more of a given set of products
- (D) In different branches of the same company, each branch making a different product using a unique process

Ans. (D) In different branches of the same company, each branch making a different product using a unique process



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MODULE – 6 LINEAR PROGRAMMING

1. Which of the following is a valid constraint for a linear programming problem?

(A) $3x^2 + 4x + 1 = 0$
(B) $5x_1 + 2x_2 \leq 10$
(C) $4x_1 + 3x_2 > 7$
(D) $(12x_1 + 4x_2)/3x_2 < 8x_1$

Ans. (B) $5x_1 + 2x_2 \leq 10$

2. Hefty Company produces A and B with contribution margins per unit of ₹40 and ₹30, respectively. Only 500 labour hours and 300 machine hours are available for production.

Time requirements to produce two unit of A and three units of B are as follows:

	A	B
Labour Hours	5	2
Machine Hours	1	4

Write the constraint on labour in a linear programming model considering x units of A and y units of B before simplifying the coefficients.

(A) $5x + 2y \leq 500$
(B) $(5/2)x + (2/3)y \leq 500$
(C) $2.5x + 0.67y \leq 300$
(D) $5x + 3y \leq 500$

Ans. (B) $(5/2)x + (2/3)y \leq 500$

3. The constraints in a linear programming Model are:

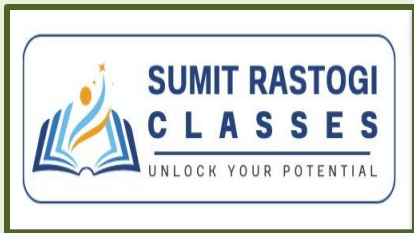
(A) Included in the objective function
(B) Costs
(C) Scarce Resources
(D) Dependent Variables

Ans. (C) Scarce Resources

4. If (50, 0), (50, 14), (25, 50) and (13, 50) are the Corner Points of the feasible region of the Linear Programming problem, Maximize $Z = 2x_1 + 3x_2$, then maximum value of the objective function will be:

(A) ₹200
(B) ₹270
(C) ₹240
(D) ₹120

Ans. (A) ₹200



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Working note:

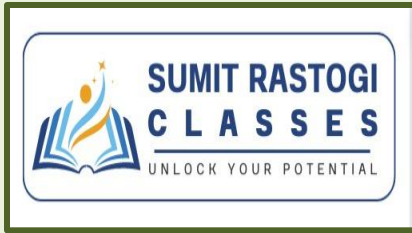
For (50, 0) $Z = 2(50) + 3(0) = ₹100$

For (50, 14) $Z = 2(50) + 3(14) = ₹142$

For (25, 50) $Z = 2(25) + 3(50) = ₹200$

For (13, 50) $Z = 2(13) + 3(50) = ₹176$

Maximum value of $Z = ₹200$.



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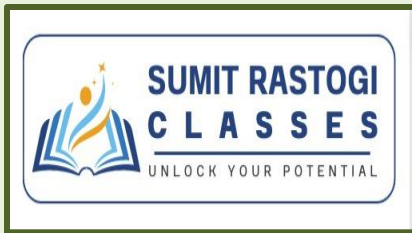
MODULE – 7 TRANSPORTATION

1. In a transportation matrix (where R_i are rows and C_j are columns), the second allocation under the North West Corner Rule can be:
- (A) R_1C_2
 - (B) R_2C_3
 - (C) R_1C_3
 - (D) None of these

Ans. (A) R_1C_2

2. When fewer than $m + n - 1$ shipment exist in a feasible solution
- (A) The problem is capacitated
 - (B) An occupied cell must be created artificially
 - (C) A dummy source must be created
 - (D) The problem is unbalanced

Ans. (B) An occupied cell must be created artificially.



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MODULE – 8 ASSIGNMENT

1. In a 4×4 assignment algorithm carried out by a student, the number of lines used to cover the zeroes was 4, though he could have covered them in three lines. What will he face in the next step?
- (A) Adjustment of the matrix by subtracting the least uncovered element
 - (B) Re-covering of zeroes using fewer lines
 - (C) Three allotments can be made and the zeroes will be exhausted
 - (D) Introduction of a dummy row or column

Ans. (C) Three allotments can be made and the zeroes will be exhausted

2. Assignment Problem can be considered as a particular case of

- (A) Transportation problem
- (B) Sequencing problem
- (C) Queuing problem
- (D) All of the above

Ans. (A) Transportation Problem

3. The highest negative opportunity cost value in an unused cell of a Transportation Matrix is chosen to improve the current solution because:

- (A) It represents maximum possible cost reduction per unit.
- (B) It ensures no violation of Rim Condition.
- (C) It represents per unit cost improvement.
- (D) Either one of the above

Ans. (A) It represents maximum possible cost reduction per unit.

4. When a maximization assignment problem is converted to minimization problem, the resultant matrix is called:

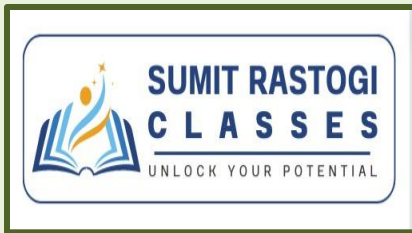
- (A) Profit Matrix
- (B) Regret Matrix
- (C) Cost Matrix
- (D) Dummy Matrix

Ans. (B) Regret Matrix

5. In marking assignments, which of the following should be preferred?

- (A) Only row having single zero
- (B) Only column having single zero
- (C) Column having more than one zero
- (D) Only row/column having single zero

Ans. (D) Only row/column having single zero



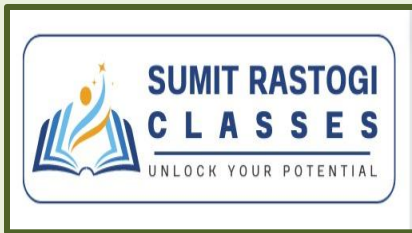
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6. A firm is required to procure three items I, II & III from three vendors V₁, V₂ & V₃, respectively. The quoted prices in Rupees are given in the table below. The management policy clearly states that each item should be procured from only one vendor and each vendor should supply only one item. The minimum total cost of procurement following the principle of Assignment is:

ITEMS	VENDORS		
	V ₁	V ₂	V ₃
I	220	240	260
II	230	280	280
III	250	290	330

- (A) ₹750
(B) ₹770
(C) ₹780
(D) ₹790

Ans. (B) ₹770



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MODULE – 9 GAME THEORY

1. The value of the game of

		Player B	
Player A		B1	B2
	A1	4	6
	A2	- 10	10

is _____. Fill in the above.

- (A) 4
(B) 6
(C) 8
(D) None of the above

Ans. (A) 4

2. The Pay-off Matrix of a game is given below:

$$\begin{matrix} & \text{Player B} \\ \text{Player A} & \begin{pmatrix} 3 & -1 & 4 \\ -1 & 8 & 2 \\ 16 & 8 & 6 \end{pmatrix} \end{matrix}$$

What is the value of Game to Player A (using Maximin-Minimax Principle)?

- (A) 6
(B) 8
(C) 16
(D) None of the above

Ans. (A) 6

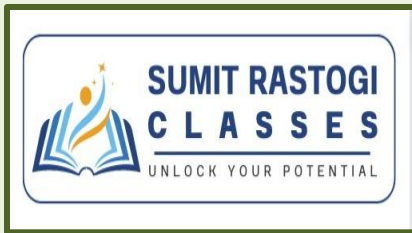
3. The pay-off matrix of a game for the Company S and Company T is given below:

$$\begin{matrix} & \text{Company T} \\ \text{Company S} & \begin{bmatrix} 25 & 12 & 10 & 30 \\ 15 & 13 & 6 & 8 \\ 30 & 5 & 8 & 6 \end{bmatrix} \end{matrix}$$

Using Maximin-Minimax principle what will be the value of the game?

- (A) 15
(B) 12
(C) 10
(D) None of the above

Ans. (C) 10



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MODULE – 10 SIMULATION

1. The drive-up window of a fast food operation was being studied using simulation for a variety of operating characteristics. As part of the study, data was collected on Order Processing Time as given in the following table. Using the first two digits of the Random Numbers, determine the processing time that would be used to simulate the fifth sample.

Processing Time (Minutes)	1	2	3	4
Probability	0.30	0.45	0.20	0.05

Customer	1	2	3	4	5	6	7	8	9
Random No.	1048	2236	2413	4216	3757	1501	4657	4836	9309

- (A) 2 minutes
(B) 4 minutes
(C) 1 minute
(D) 3 minutes

Ans. (A) 2 minutes

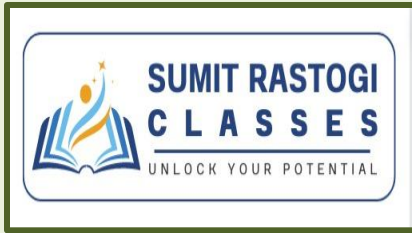
Working Note:

Processing Time (Minutes)	Probability	Cumulative Prob.	Random No. Interval
1	0.30	0.30	00 – 29
2	0.45	0.75	30 – 74
3	0.20	0.95	75 – 94
4	0.05	1.00	95 – 99

Random Number for fifth Sample is 37, so the processing time is 2 minutes.

2. The important steps required for simulation approach in solving a problem is/are:
- (A) Test and validate the Model
(B) Design the Experiment
(C) Conduct the Experiment
(D) All of the above

Ans. (D) All of the above



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3. Children's Park in a city with various signals and crossing is the simulated model of city traffic. This is a type of
- (A) Analogue Simulation
 - (B) Computer Simulation
 - (C) Monte Carlo Simulation
 - (D) Both (a) and (c) of the above

Ans. (A) Analogue Simulation

4. The daily demand for a product follows the distribution below:

Demand(units)	0	1	2	3	4
Probability	0.10	0.20	0.30	0.20	0.20

Random number intervals are assigned as below:

00 - 09	10 - 29	30 - 59	60 - 79	80 - 99
0	1	2	3	4

A simulation is run for 4 days using the random numbers: 14,67,85,33 What is the average simulated demand over these 4 days?

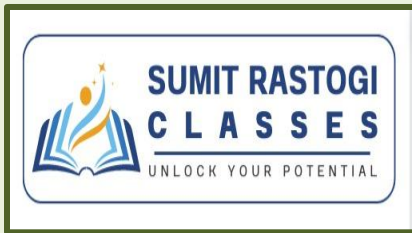
- (A) 2 units
- (B) 2.25 units
- (C) 2.50 units
- (D) None of the above

Ans. (C) 2.50 units

Working Note:

Simulated Demand is 1, 3, 4 & 2

Average simulated demand = $(1 + 3 + 4 + 2)/4 = 2.50$ units



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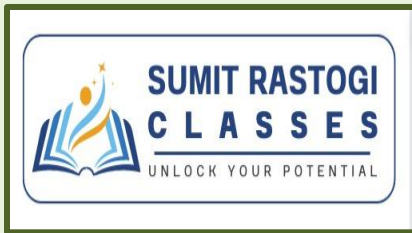
MODULE – 11 NETWORK ANALYSIS – PERT, CPM

1. Which of the following is correct in the context of network analysis?
(A) There can be one or more activities without a predecessor in a network.
(B) Where two activities have the same start and end events, the end event of one activity is numbered differently and then connected by a dummy to the original start event.
(C) When crashing is carried out, the non-critical paths have to remain non critical.
(D) If the critical path is longer than the other paths, the project may be completed by using a path having a shorter duration.
Ans. (A) There can be one or more activities without a predecessor in a network.
2. In the context of Critical Path Analysis, the portion of the float of an activity which cannot be consumed without affecting adversely the float of the subsequent activities is called
(A) Free float
(B) Interfering float
(C) Independent float
(D) Total float
Ans. (B) Interfering float
3. In CPA (Critical Path Analysis) which of the following is not a correct step in sequence?
(A) Understanding the logic of the system under consideration
(B) Constructing the network
(C) Providing estimates for activity duration.
(D) Implementing and controlling the network.
Ans. (D) Implementing and controlling the network.
4. In a PERT network, the optimistic time for a particular activity is 9 weeks and the pessimistic time is 21 weeks. Which one of the following is the best estimate of the standard deviation for the activity?
(A) 12
(B) 9
(C) 6
(D) 2
Ans. (D) 2

Working Note:

Standard Deviation = $[(\text{pessimistic time} - \text{optimistic Time})/6] = [(21-9)/6] = 2.$

5. The following will be the appropriate action to finish a project early



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- (A) Crash activities on the non-critical path so that they become critical
- (B) Crash activities on the non-critical paths so that they remain non critical
- (C) Crash activities on the critical path so that they become non critical
- (D) Crash activities on the critical paths such that the critical paths remain critical

Ans. (D) Crash activities on the critical paths such that the critical paths remain critical.

6. In a network, can you have nodes 1 and 2 to be starting nodes, so that the activities 1-3 and 2-3 have no predecessors?

- (A) Yes. 1-2 is a dummy.
- (B) No. A network can have only one starting node.
- (C) Yes. Provided both activities start at the same time without any dummy.
- (D) No. Such a network violates the rules of precedence relationships.

Ans. (A) Yes. 1-2 is a dummy.

7. Activity 1-2 lies on the critical path which has three other activities, each of the same duration of 1 week. If the project can be completed in 4 weeks, what is the earliest finish time of 1-2?

- (A) 2 weeks
- (B) 4 weeks
- (C) 1 week
- (D) 3 weeks

Ans. (C) 1 week.

8. A PERT network has only two activities on its critical Path. The Standard Deviation of these activities are 6 and 8 respectively. What is the Standard Deviation of the Project completion time?

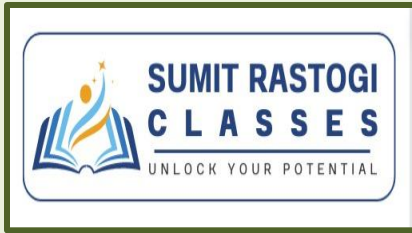
- (A) 7
- (B) 10
- (C) 14
- (D) 100

Ans. (B) 10

Working Note:

Standard time for the project = $[(6)^2 + (8)^2]^{1/2} = 10$.

9. In PERT CHART, the Activity time distribution is



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- (A) Normal
- (B) Binomial
- (C) Beta
- (D) Poisson

Ans. (C) Beta

10. The expected time for an activity of BS Project (t) is 19 days. If the Optimistic(t) and the most likely (t) times are 15 days and 18 days the pessimistic (t) time Estimate will be

- (A) 17 days
- (B) 21 days
- (C) 27 days
- (D) 28 days

Ans. (C) 27 days

Working Note:

$$t = (t_o + 4t_m + t_p)/6$$

$$19 = (15 + (4 \times 18) + t_p)/6$$

$$114 = 87 + t_p$$

$$t = 114 - 87 = 27 \text{ days}$$

11. The slack time of tail event of activity Z of a project is 2 days. If the Total Float and Free float of the activity Z are 10 days and 7 days respectively, the Independent float of activity Z will be:

- (A) 5 days
- (B) 6 days
- (C) 7 days
- (D) 2 days

Ans. (A) 5 days

Working Note:

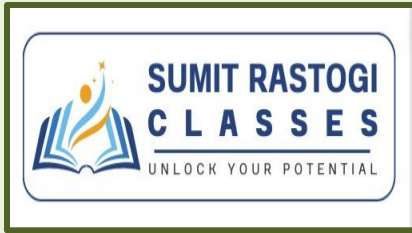
$$\text{Independent Float} = \text{Free Float} - \text{Tail event Slack} = 7 - 2 = 5 \text{ days.}$$

12. The expected time for an activity of Project LM is 20 days. If the most likely and pessimistic time are 19 days and 28 days, what will be the variance of the activity?

- (A) 1.36
- (B) 1.78
- (C) 4
- (D) 0

Ans. (C) 4

Working Note:



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$$\begin{aligned}T_e &= (t_o + 4t_m + t_p)/6 \\20 &= (t_o + (4 \times 19) + 28)/6 \\120 &= 104 + t_o \\T_o &= 120 - 104 = 16 \text{ days} \\S_1^2 &= [(t_p - t_o)/6]^2 \\&= [(28 - 16)/6]^2 \\&= 4 \text{ days}\end{aligned}$$

13. Optimistic and pessimistic time of an activity respectively are 4 days and 16 days. Variance of the duration of the activity will be:

(A) 4 days
(B) 2 days
(C) 3 days
(D) None of the above

Ans. (A) 4 days

Working Note:

$$\begin{aligned}S_t^2 &= [(t_p - t_o)/6]^2 \\&= [(16 - 4)/6]^2 = 4 \text{ days}\end{aligned}$$

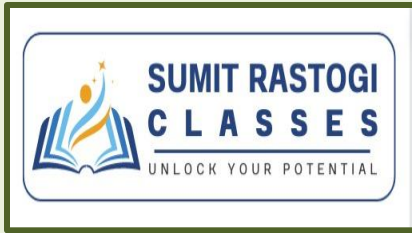
14. The normal duration and normal cost of an activity of project BOZ are 12 days and ₹400 respectively. The cost slope is ₹80 per day, if the crash cost of the activity is ₹560, what will be the crash duration of the activity?

(A) 12 Days
(B) 10 Days
(C) 8 Days
(D) 6 Days

Ans. (B) 10 Days

Working Note:

$$\begin{aligned}\text{Slope} &= [\text{Crash Cost} - \text{Normal Cost}]/(\text{Normal Time} - \text{Crash Time}) \\80 &= (560 - 400)/(12 - \text{Crash Time}) \\80 &= 160/(12 - \text{Crash Time}) \\(12 - \text{Crash Time}) &= 2 \\ \text{Crash Time} &= 10 \text{ days}\end{aligned}$$



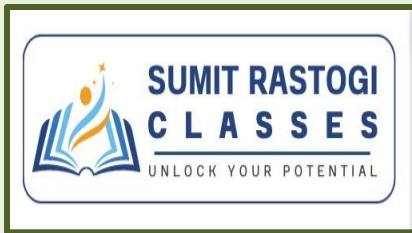
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15. A PERT Network has four activities on its Critical Path. The Standard Deviation of each activity on the Critical path is 4 days. What will be the standard deviation of the CRITICAL PATH?
- (A) 8 days
 - (B) 4 days
 - (C) 2 days
 - (D) None of the above

Ans. (A) 8 days

Working Note:

Standard Deviation of critical Path = $[(4)^2 + (4)^2 + (4)^2 + (4)^2]^{1/2} = 8 \text{ days}$



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MODULE – 12 LEARNING CURVE

1. For a Learning Curve percentage of 72%, the line to be taken to complete the 4th unit of a 12-unit job involved in the assembly line, if the initial unit requires 80 hours, will be
- (A) 43.50 hrs.
(B) 41.47 hrs.
(C) 46.71 hrs.
(D) 40.95 hrs.

Ans. (B) 41.47 hrs.

Working Note:

Time taken by the 4th Unit = $80(0.72)^3$
 $(0.72)^3 = 41.47\text{hrs.}$

2. An operation has a 90% learning curve and the first unit produced took 28 minutes. The labour cost is ₹20 per hour. How much should the second unit cost?
- (A) ₹9.80
(B) ₹7.60
(C) ₹8.40
(D) ₹6.60

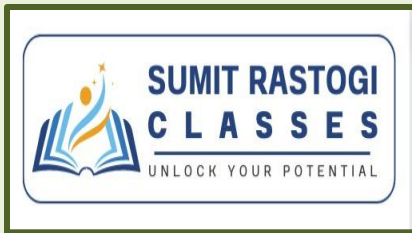
Ans. (B) ₹7.60

Working Note:

1st Unit = 28 min.
Average time p.u. for 2 units = $0.9 \times 28 = 25.2$ min
Total time for 2 units = $25.2 \times 2 = 50.4$
Time for second unit = $50.4 - 28 = 22.4\text{min}$
Cost for second unit = $22.4 \times 20/60\text{min} = ₹7.47$
Since, (b) is close to 7.47, b is acceptable.

3. S Ltd. manufacture a product whose time for the first unit is 1,000 hours. It experiences a learning curve of 80%. What will be the total time taken in hours for unit 5 to 8?
- (A) 4,096 hours
(B) 3,200 hours
(C) 1,536 hours
(D) 2,000 hours

Ans. (C) 1,536 hours



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Working Note:

At 8- % Learning Curve, the total time for 8 units will be 8×521 i.e. 4,096 hours and for 4 units it is 4×640 i.e. 2,560 hours.

Hence the time taken for units 5 to 8 will be **1,536 hours** (4096-2560)

4. S Ltd. recently sold an order of 50 units having the following costs:

Direct Materials	1,500
Direct Labour (1,000 hours @₹8.50)	8,500
Variable Overhead (1,000 hours @₹4.00) ¹	4,000
Fixed Overhead ²	1,400
	15,400

¹Allocated on the basis of direct labour-hours.

²allocated at the rate of 10% of variable cost.

The company has now been requested to prepare a bid for 150 units of the same product.

If an 80% learning curve is applicable Stone Isle's total cost on this order would be:

- (A) ₹38,500
- (B) ₹37,950
- (C) ₹26,400
- (D) ₹31,790

Ans. (C) ₹26,400

Working Note:

Cumulative hours = $200 \times (20 \times 0.8 \times 0.8) = 2,560$

Net hours for 150 units = $2,560 - 1,000 = 1,560$

Cost for Order of 150 units:

Direct Materials = $150 \times 30 = 4,500$

Direct Labour = $1,560 \times 8.50 = 13,260$

Variable Overhead = $1,560 \times 4 = 6,240$

Total Variable Cost = 24,000

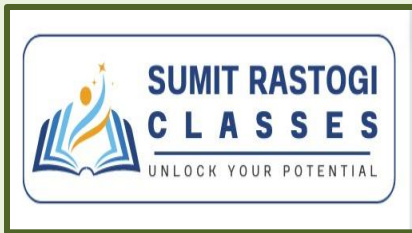
Allocated Fixed OH = $10\% = 2,400$

Estimated Cost of the Order = 26,400

5. X is a factory making a certain product where learning curve ratio of 80% and 90% apply respectively for two equally paid workers, A and B

- (A) The labour cost of manufacturing the 4th product will be more for A.
- (B) The labour cost of manufacturing the 4th product will be more for B.
- (C) The labour cost is the same for the fourth product.
- (D) Nothing can be said about the specific product since learning applies ratio to the average quantity of the product.

Ans. (B) The labour cost of manufacturing the 4th product will be more for B.



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6. A learning curve is a function

- (A) Where unit costs increase as productivity increases.
- (B) That increases a greater rate as workers become more familiar with their tasks.
- (C) That is linear.
- (D) That measures the decline in labor-hours per unit due to workers becoming better at a job.

Ans. (D) that measures the decline in labor-hours per unit due to workers becoming better at a job.

7. To complete the first setup on a new machine took an employee 200 minutes. Using an 80% incremental unit-time learning model indicates that the second setup on the new machine is expected to take:

- (A) 120 minutes
- (B) 160 minutes
- (C) 60 minutes
- (D) 80 minutes

Ans. (A) 120 minutes

Working Note:

Average time for 2 set-ups = $200 \times 80\% = 160$ minutes

Total time for 2 set-ups = $160 \times 2 = 320$ minutes

Time for 2nd Set-up = $320 - 200 = 120$ minutes

8. SIXTT Ltd. has developed a new product and just completed the manufacture of the first four units of the product. The first unit took 3 hours to manufacture and the first four units together took 8.3667 hours to produce. The learning curve rate is

- (A) 83.50%
- (B) 75.00%
- (C) 60.65%
- (D) 58.50%

Ans. (A) 83.50%

Working Note:

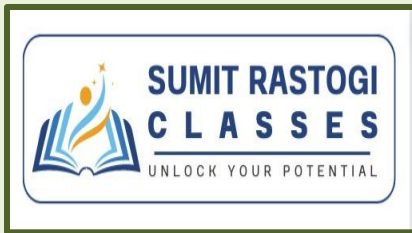
Average time for 4 units = $8.3667/4 = 2.0917$ hours

Average time for 4 units = time for 1st unit $\times$ learning rate $\times$ Learning rate

$2.0917 = 3 \times (\text{Learning rate})^2$

$0.69723 = (\text{Learning rate})^2$

Learning Rate = $0.835 = 83.50\%$



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9. MOB Ltd. has developed a new product and just completed the manufacture of first four units of the product. If the first unit took 4 hours to manufacture and the first 4 units together took 11.56 hours to produce, the Learning Curve (LC) rate would be:

(A) 69.50%
(B) 75.00%
(C) 80.10%
(D) 85.00%

Ans. (D) 85.00%

Working Note:

Average time for 4 units = $11.56/4 = 2.89$ hours

$4 \times \text{Learning rate} \times \text{Learning rate} = 2.89$

$(\text{Learning rate})^2 = 0.7225$

Learning Rate = $0.85 = 85\%$

10. DOXT Ltd., a manufacturing company, is preparing a quotation for a new product-D. The time taken for the first unit is 30 hours. The company expects 85% learning curve (Index is 0.2345). the company desires that the quotation should be based on the time taken for the final output within the Learning period which is expected to end after the company has produced 200 units. What will be the time per unit of product to be used for the quotation?

[Given: $199^{-0.2345} = 0.28901$, $200^{-0.2345} = 0.28867$ and $201^{-0.2345} = 0.28834$]

(A) 6.63 hours
(B) 10.34 hours
(C) 11.50 hours
(D) None of the above

Ans. (A) 6.63 hours

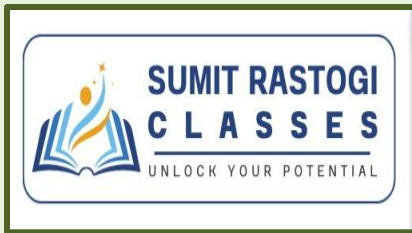
Working Note:

Final output within the learning period is 200th unit.

Total time for 200 units = $[(30)(200)^{-0.2345}] \times 200 = 30 \times 0.28867 \times 200 = 1,732.02$ hours

Total time for 199 units = $[(30)(199)^{-0.2345}] \times 199 = 30 \times 0.28901 \times 199 = 1,725.39$ hours

Time for final output (200th unit) = $1,732.02 - 1,725.39 = 6.63$ hours



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11. When 24 hours s required to produce a condenser of a particular type then the time required to produce the 16th unit with 85% Learning Curve is:

(A) Between 9 and 10 hours.
(B) Between 12 and 14 hours
(C) Between 15 and 17 hours
(D) Between 18 and 20 hours.

Ans. (B) between 12 and 14 hours

Working Note:

Production (Units)	Cumulative Average Time (Hours)
1	24
2	20.40
4	17.34
8	14.74
16	12.53

12. An operation of KON Ltd. has a Learning Curve 90% and the first unit produced took 30 minutes. The labour cost is ₹120 per hour. How much should the second unit labour cost?

(A) ₹60
(B) ₹54
(C) ₹48
(D) None of the above

Ans. (C) ₹48

13. Ross Ltd. has developed a new product and just completed the manufacture of first four units of the product. If the first unit took 4 hours to manufacture and the first 4 units together took 11.56 hours to produce, the Learning Curve (LC) rate would be:

(A) 69.50%
(B) 75.00%
(C) 80.10%
(D) 85.00%

Ans. (D) 85.00%

Working Note:

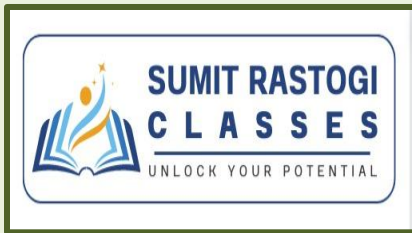
Average time for 4 units = $11.56/4 = 2.89$ hours

Let learning rate be x

$$2.89 = 4(x)(x)$$

$$2.89 = 4x^2$$

$$x^2 = 0.7225, x = 0.85 = 85\%$$



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MODULE-13 BUSINESS APPLICATION OF MAXIMA AND MINIMA

1. Total Revenue of ZOM Ltd., from the Sales of the quantity (units) is given by the equation $R = 1/3(x^3) - x^2 + 10x + 5$. The Marginal revenue is 25, what will be number of quantity (in units)?

- (A) 6
(B) 4
(C) 5
(D) None of the above

Ans. (C) 5

Working Note:

Marginal Revenue = 1st Derivative of Total Revenue

$$dy/dx = x^2 - 2x + 10$$

$$25 = x^2 - 2x + 10$$

$$x^2 - 2x - 15 = 0$$

$$x^2 - 5x + 3x - 15 = 0$$

$$x(x - 5) + 3(x - 5) = 0$$

$$(x + 3)(x - 5) = 0$$

$X = -3$ or 5 ; So, Output is **5 units** (Output cannot be negative)

2. The average cost function for a product is given by $AC = 1/3 x^2 + x + 8$, in terms of output x . if the marginal cost is 23 what will be the number of units (Output)?

- (A) 3
(B) 4
(C) 5
(D) 0

Ans. (A) 3

Working Note:

Total Cost = AC $\times$ Output

$$= (1/3 x^2 + x + 8)x$$

$$= (1/3 x^3 + x^2 + 8x)$$

Marginal Cost = 1st Derivative of Total Cost

$$dy/dx = x^2 + 2x + 8$$

$$23 = x^2 + 2x + 8$$

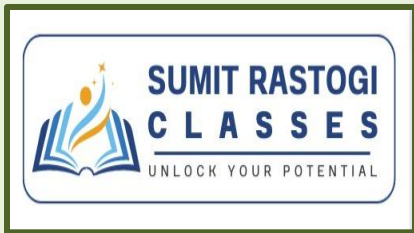
$$x^2 + 2x - 15 = 0$$

$$x^2 + 5x - 3x - 15 = 0$$

$$x(x + 5) - 3(x + 5) = 0$$

$$(x - 3)(x + 5) = 0$$

$X = 3$ or -5 ; So, output is **3 units** (Output cannot be negative)



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3. The Cost function of TNZ PIC is given by $C = x^3 - 4x^2 + 7x$ in terms of Output x . Assess at what level of output the average cost is minimum.
- (A) 3
(B) 2
(C) 4
(D) None of the above

Ans. (B) 2

Working Note:

$$\text{Average Cost} = (x^3 - 4x^2 + 7x)/x = x^2 - 4x + 7$$

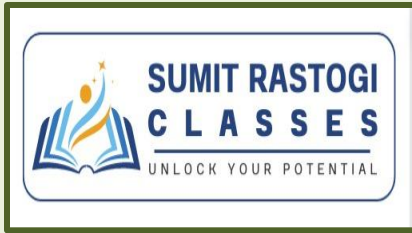
For Minimum Average Cost

$$dy/dx = 0$$

$$2x - 4 = 0$$

$$2x = 4$$

$$x = 2$$



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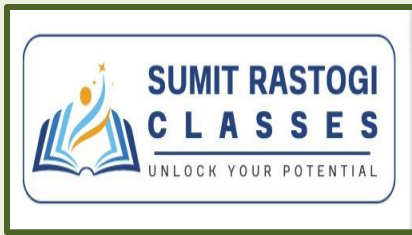
MODULE-14 BUSINESS FORECASTING MODELS (TIME SERIES AND REGRESSION ANALYSIS)

1. Which of the following is not a part of qualitative type of forecasting techniques?
- (A) Survey Technique
 - (B) Barometric Technique
 - (C) Exponential Smoothing
 - (D) Delphi Technique

Ans. (C) Exponential Smoothing

2. In Simple Exponential Smoothing forecast to give higher weightage to recent demand information, the smoothing constant must be close to
- (A) - 1
 - (B) 0
 - (C) 0.3
 - (D) 1

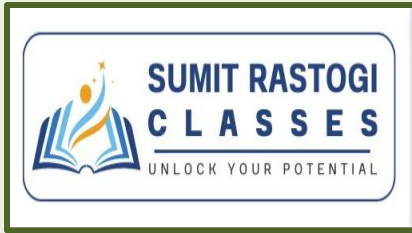
Ans. (D) 1



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MODULE-15 INTRODUCTION TO TOOLS FOR DATA ANALYTICS

1. Which of the following has no relation to Business Intelligence?
(A) A set of business analytics solutions to retrieve, analyse and transform data into useful business sights.
(B) Visualization Tools are primarily BI Tools.
(C) ABS Glue is a tool used for the purpose of Business Intelligence.
(D) Embedded Analytics is an important part of any Business Intelligence tool.
Ans. (C) ABS Glue is a tool used for the purpose of Business Intelligence.
2. Which of the following is/are the financial analytics tools?
(A) Hypper Anna
(B) Jedox
(C) NET Suite
(D) All of the above
Ans. (D) All of the above
3. Which of the following is/are not the features of Jedox tool?
(A) Deployable in the cloud as well as on premise server or Hybrid.
(B) BI and Analytics platform.
(C) Allows users to easily create and share powerful reports within minutes.
(D) (b) and (c) only
Ans. (D) (b) and (c) only
4. Analysis of a dataset has revealed the fact that profit of a business has reduced for the financial year 2022-23. What category of data analytics it comes under?
(A) Descriptive Analytics
(B) Predictive Analytics
(C) Diagnostic Analytics
(D) Prescriptive Analytics
Ans. (A) Descriptive Analytics
5. Which one of the following is not a Spread Sheet?
(A) QUIP
(B) Ms Excel
(C) E Views
(D) Google Sheets
Ans. (C) E Views



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6. **Script Ends** – is related to which type of Programming Language?

- (A) SPSS
- (B) Python
- (C) SAS
- (D) R Programming

Ans. (B) Python

7. **Which of the following is related to Financial Data Analytics?**

- (A) Value driver analytics
- (B) Financial ratio analytics
- (C) Predictive sales analysis
- (D) All of the above

Ans. (D) All of the above

8. **Python can be used on Linux, Windows, Macintosh, Solaris and many more. What category of language features of Python it comes under?**

- (A) Robust
- (B) Embeddable
- (C) High Level Language
- (D) Platform Independent

Ans. (B) Embeddable

9. **QuickBooks is primarily used for:**

- (A) Data visualization and dashboard creation
- (B) Accounting and financial management
- (C) Statistical analysis and modelling
- (D) Database management

Ans. (B) Accounting and financial management