

MCQ

— **CMA FINAL** —

**STRATEGIC COST
MANAGEMENT**



CA Satish Jalan

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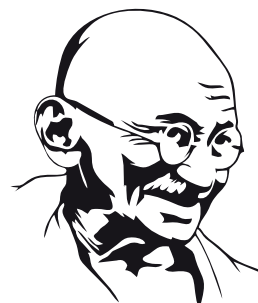
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Contents

SI No.	Module Name	Page No.	Weight
1.	ICMAI study material		
	Section A: Strategic Cost Management for Decision Making		
1.1	Introduction to Strategic Cost Management	3	
1.2	Quality Cost Management	5	
1.3	Decision Making Techniques	7	
1.4	Activity Based Management and Just in Time (JIT)	12	
1.5	Evaluating Performance	16	
	Section B: Quantitative Techniques in Decision Making		
1.6	Transportation	18	
1.7	Assignment	26	
1.8	Game Theory	31	
1.9	Simulation	37	
1.10	Network Analysis – PERT, CPM	43	
1.11	Learning Curve Theory	46	
1.12	Business Application of Maxima and Minima	50	
1.13	Business Forecasting Models (Time Series and Regression Analysis)	54	
1.14	Introduction to Tools for Data Analytics	64	
2.	BIT Questions	67	
3.	MCQ Bank	95	
4.	MQP Objectives	129	
5.	Termwise Objectives	151	
6.	Postal Test Papers	167	



ICMAI
Study Material
Objectives

Introduction to Strategic Cost Management

Multiple Choice Questions

- Which of the following is not a primary activity of Value Chain?
 - Inbound Logistics
 - Operations
 - Service
 - Infrastructure
- Which of the following is not a secondary activity of Value Chain?
 - Procurement
 - Human Resource Development
 - Service
 - Technology Development
- Which of the following is not a term normally used in value analysis?
 - Resale value
 - Use value
 - Esteem value
 - Cost value
- A company has forecast sales and cost of goods sold for the coming year as Rs. 25 lakhs and Rs. 18 lakhs respectively. The inventory turnover has been taken as 9 times per year. In case the inventory turnover increases to 12 times and the short-term interest rate on working capital is taken as 10%, what will be the saving in cost?
 - Rs. 10,000
 - Rs. 20,000
 - Rs. 15,000
 - Rs. 5,000

Answer

1	2	3	4
d	c	a	d

State True or False.

- Strategic cost management refers to the cost management that specifically focuses on strategic issues.
- 'VA' and 'VE' are closely related terms so much so that they are, frequently, used interchangeably.

- 3. Cost reduction refers to the real and permanent reduction in the unit costs of goods manufactured or services rendered without considering their suitability for the use intended.
- 4. Supply Chain Management is not an avenue of cost reduction.

Answer

1	2	3	4
T	T	F	F

Quality Cost Management

Multiple Choice Questions

- 1 TQM stands for:
 - a. Technical Quantitative Management
 - b. Total Quality Management
 - c. Theory of Queuing Management
 - d. None of the Above

- 2 Four Ps of Total Quality Management:
 - a. Principles, Project, Problem, & Process
 - b. People, Process, Problem & Preparation
 - c. Product identification, Product quality, Product utility & Product expectation
 - d. None of the Above

- 3 PRAISE stands for:
 - a. Appreciating someone
 - b. Product, Recognition, Adoption, Invention, Solution & Evaporation
 - c. Problem Identification, Ranking, Analysis, Innovation, Solution & Evaluation
 - d. None of the Above

- 4 Six Sigma is about
 - A. Quality systems
 - B. Quality control process
 - C. Statistical technique
 - D. None of the above

- 5 DMIADV is a methodology associated with:
 - a. Pareto Analysis
 - b. PRAISE
 - c. Six Sigma
 - d. None of the Above

- 6 Pareto analysis recognizes:
 - a. 80:20 Rule
 - b. 50:50 Rule
 - c. 20:80 Rule
 - d. None of the Above

- 7 Cost of Rework is a cost related to:
- a. Internal failure
 - b. Appraisal
 - c. Prevention
 - d. None of the Above
- 8 The cost incurred to ensure that failures do not happen:
- a. External failure cost
 - b. Internal failure cost
 - c. Prevention cost
 - d. None of the Above
- 9 Which of the following is not the quality parameter for service organizations?
- A. Consistency
 - B. Friendliness
 - C. Durability
 - D. Promptness

Answer:

1	2	3	4	5	6	7	8	9
B	B	C	A	C	A	A	C	C

Decision Making Techniques

Multiple Choice Questions

- 1 The break-even point of a manufacturing company is Rs.1,60,000. Fixed cost is Rs.48,000. Variable cost is Rs.12 per unit. The PV ratio will be:
 - a. 20%
 - b. 40%
 - c. 30%
 - d. 25%

- 2 The higher the actual hours worked:
 - a. The lower the capacity usage ratio
 - b. The higher the capacity usage ratio
 - c. The lower the capacity utilization ratio
 - d. The higher the capacity utilization ratio

- 3 XYZ Ltd. has the following alternative planned activity levels: Total cost (Rs.): 1,00,000 (Level E) 1,50,000 (Level F) 2,00,000 (Level G) No. of units produced: 5,000 (Level E) 10,000 (Level F) 15,000 (Level G) If fixed overhead remains constant, then fixed overhead cost per unit at Level E is:
 - a. Rs. 20
 - b. Rs. 15
 - c. Rs. 13.33
 - d. Rs. 10

- 4 T Ltd. produces and sells a product. The company expects the following revenues and costs in 2024: Revenues (400 sets sold @ Rs.600 per product) = Rs. 2,40,000 Variable costs = Rs. 1,60,000 Fixed costs = Rs. 50,000 What amount of sales must T Ltd. have to earn a target net income of Rs. 63,000 if they have a tax rate of 30%?
 - a. Rs. 4,20,000
 - b. Rs. 4,29,000
 - c. Rs. 3,00,000
 - d. Rs. 4,89,000

- 5 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 1kg, 2kgs, 5kgs and 7kgs, respectively. Product-wise Selling Price and Variable Cost data are given hereunder: Selling Price of Products E, F, G & H are Rs.100, Rs.150, Rs.200 & Rs.300 respectively and variable costs are Rs.50, Rs.70, Rs.100 & Rs.125 respectively. 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

- 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
- 12 If project A has a net present value (NPV) of Rs.30,00,000 and project B has an NPV of Rs.50,00,000, what is the opportunity cost if project B is selected?
- a. Rs. 23,00,000 b. Rs. 30,00,000
- c. Rs. 20,00,000 d. Rs. 50,00,000
- 13 X Ltd. has 1000 units of an obsolete item which are carried in inventory at the original price of Rs.50,000. If these items are reworked for Rs. 20,000, they can be sold for Rs. 36,000. Alternatively, they can be sold as a scrap for Rs. 6,000 in the market. In a decision model used to analyse the reworking proposal, the opportunity cost should be taken as:
- a. Rs. 16,000 b. Rs. 6,000
- c. Rs. 30,000 d. Rs. 20,000
- 14 The shadow price of skilled labour for SD Ltd. is currently Rs. 10 per hour. What does this mean?
- a. The cost of obtaining additional skilled labour is Rs. 10 per hour. b. There is a hidden cost of Rs. 10 for each hour of skilled labour actively worked
- c. Contribution will be increased by Rs. 10 per hour for each extra hour of skilled labour that can be obtained. d. The total costs will be reduced by Rs. 10 for each additional hour of skilled labour that can be obtained.
- 15 A factory can make only one of the three products X, Y or Z in a given production period. The selling price per unit of Product X, Y & Z is Rs.1,500, Rs.1,800 & Rs.2,000 respectively and variable cost per unit is Rs.700, Rs.950 & Rs.1,000 respectively. 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. Rs. 850 b. Rs. 800
- c. Rs. 1,800 d. Rs. 1,500
- 16 A company has 2000 units of an obsolete item which are carried in inventory at the original purchase price of Rs. 30,000. If these items are reworked for Rs.10,000, they can be sold for Rs. 18,000. Alternatively, they can be sold as scrap for Rs.3,000 in the market. In a decision model used to analyse the reworking proposal, the opportunity cost should be taken as:
- a. Rs. 8,000 b. Rs. 12,000
- c. Rs. 3,000 d. Rs. 10,000

Activity Based Management and Just in Time (JIT)

Multiple Choice Questions

- 1 P operates an activity-based costing (ABC) system to attribute its overhead costs to cost objects. In its budget for the year ending 31st March 2022, the company expected to place a total of 2,895 purchase orders at a total cost of Rs. 1,10,010. This activity and its related costs were budgeted to occur at a constant rate throughout the budget year, which is divided into 13 four-week periods. During the four-week period ended 30 June 2021, a total of 210 purchase orders were placed at a cost of Rs. 7,650. The over- recovery of these costs for the four-week period was:
 - a. Rs. 330
 - b. Rs. 350
 - c. Rs. 370
 - d. Rs. 390

- 2 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
- 3 Process of Cost allocation under Activity Based Costing is:
 - a. Cost of Activities → Activities → Cost Driver → Cost allocated to cost objects
 - b. Cost Driver → Cost of Activities → Cost allocated to cost objects → Activities
 - c. Activities → Cost of Activities → Cost Driver → Cost allocated to cost objects
 - d. Activities → Cost Driver → Cost allocated to cost objects → Cost of Activities

- 15 The companies that would benefit from back-flush costing include companies:
- a. Which have fast manufacturing lead time
 - b. Whose inventory vary from period to period
 - c. Companies that require audit trails
 - d. None of these
- 16 Bench marking is:
- a. A continuous process
 - b. The practice of setting targets using external information
 - c. Method to provide performance assessment
 - d. All of the above
- 17 S Ltd. recently sold an order of 50 units having the following costs:

	₹
Direct materials	1,500
Direct labour (1000 hours @ ₹ 8.50)	8,500
Variable overhead (1000 hours @ ₹ 4.00) ¹	4,000
Fixed overhead ²	1,400
	15,400

Answer:

1	A	2	D	3	C	4	B	5	C	6	D
7	A	8	A	9	B	10	B	11	B	12	A
13	A	14	C	15	A	16	D	17	C		

Chapter 1.5

Evaluating Performance

Multiple Choice Questions

- Which of the terms is not used in Linear Programming?
 - Slack variables
 - Objective function
 - Concave region
 - Feasible region
- The area of the Feasible Region of the constraints $3x_1 + x_2 \geq 3$, $x_1 \geq 0$ and $x_2 \geq 0$ is –
 - Bounded
 - Unbounded
 - Convex
 - Concave
- For the LPP, Minimize $Z = x + y$ subject to the constraints $5x + 10y \leq 0$, $x + y \geq 1$, $y \leq 4$, $x \geq 0$ and $y \geq 0$
 - There is a bounded solution
 - There is no solution
 - There are infinite solutions
 - None of the above
- In a Linear Programming Problem –
 - Objective Function is linear.
 - Constraints are linear.
 - Both Objective Function and Constraints are linear.
 - None of the above
- Constraints mean –
 - Limitations are expressed in the form of mathematical inequalities or equalities.
 - Assumption
 - Goal to be achieved
 - None of the above

6. The region which satisfies all the constraints of LPP is known as –
 - a. Phisible region
 - b. Convex region
 - c. Feasible region
 - d. Concave region
7. In LPP while drawing the graph, y values on x axis are always –
 - a. 1
 - b. 0
 - c. -1
 - d. All of the above
8. The set of decision variables which satisfies all the constraints of LPP is called –
 - a. Solution
 - b. Basic solution
 - c. Feasible solution
 - d. None of the above
9. The value of the Objective Function is maximum under linear constraints –
 - a. At the centre of Feasible Region
 - b. At the origin
 - c. At a vertex of the Feasible Region
 - d. At the vertex of the Feasible Region which is farthest from the origin.
10. A solution which optimizes the Objective Function is called –
 - a. Solution
 - b. Basic solution
 - c. Feasible solution
 - d. Optimal solution

Answer:

1	2	3	4	5	6	7	8	9	10
c	b	a	d	a	c	b	c	d	d

Multiple Choice Questions

1. In NWCM, first allocation is made at –
 - (a) Upper left hand corner of the table.
 - (b) Lower right hand corner of the table.
 - (c) Upper right hand corner of the table.
 - (d) Lower left hand corner of the table.
2. One of the disadvantages of North West Corner rule for finding Initial Feasible Solution of Transportation problem is –
 - (a) It is complicated to use
 - (b) It leads to non-optimal solution
 - (c) It does not take into account unit cost of transportation.
 - (d) Generally it provides degenerate solution.
3. When total demand and supply are equal then the Transportation problem is said to be –
 - (a) A problem having multiple optimum solutions.
 - (b) A problem having degeneracy.
 - (c) A balanced one.
 - (d) None of the above.
4. Which one of the following is correct?
 - (a) The dummy source or destination is used in a Transportation problem to resolve degeneracy.
 - (b) The dummy source or destination is used in a Transportation problem to make it balanced.
 - (c) The dummy source or destination is used in a Transportation problem to ensure its cost effectiveness.
 - (d) All the above statements are correct.
5. For solving a maximization problem by Transportation algorithm, the very first step is to –
 - (a) Subtract smallest cost element of the matrix from all the other cost elements.
 - (b) Subtract all the cost elements of the matrix from the highest element of the same.

- (c) Add smallest cost element of the matrix to all the other cost elements.
 - (d) Add highest cost element of the matrix to all the other elements.
6. Which of the following methods is used for finding an initial feasible solution of a Transportation Problem?
- (a) Simplex
 - (b) Least Cost
 - (c) Hungarian
 - (d) Big M
7. Which of the following is a method for improving an initial solution of a Transportation problem?
- (a) Stepping Stone
 - (b) North West Corner
 - (c) Intuitive Lowest Cost
 - (d) All of the above
8. Basic Feasible Solution for a Transportation problem is given as follows –

	To	Warehouse Supply		Supply
From		W1	W2	
A		5	7	10
		10		
B		8	9	40
		15	25	
Demand		25	25	50

Given, the Unit Transportation Costs are in Rupees. Can this solution be improved?

- (a) Yes the solution can be improved by ₹ 50
 - (b) Yes the solution can be improved by ₹ 100
 - (c) No the solution is optimal
 - (d) Yes the solution can be improved by ₹ 10.
9. The Initial Feasible Solution of a Transportation Problem can be obtained by different methods. The only restriction is that –
- (a) The edge constraints of supply and demand are satisfied.
 - (b) The solution must be obtained using VAM.
 - (c) The solution should be non-degenerate.
 - (d) All of the above.

10. The purpose of Stepping Stone Method is to –
- (a) Facilitate moving from a feasible solution to an optimal solution.
 - (b) Test optimality of a solution.
 - (c) Both the two above.
 - (d) None of the above.
11. Which one of the following is the purpose of a dummy source or dummy destination in a Transportation Problem?
- (a) To convert the problem from unbalanced to balanced.
 - (b) To make the solution non-degenerate.
 - (c) To provide a means of a dummy problem.
 - (d) To make sure that the total cost is not exceeding a predetermined figure.
12. An important assumption of Transportation technique is –
- (a) There is only one optimal solution for each problem
 - (b) There are no economies of scale if huge quantities are transported from one source to one destination.
 - (c) The number of dummy sources and destinations must be equal.
 - (d) None of the above.
13. The equation $C_{ij} = u_i + v_j$ is used to calculate –
- (a) An improvement index for the Stepping Stone Method.
 - (b) The MODI cost values u_i and v_j
 - (c) The Degeneracy index.
 - (d) None of the above
14. For an unbalanced problem of Transportation, the cost coefficients for each of the created cells is –
- (a) Very high positive value
 - (b) Very high negative value
 - (c) Zero
 - (d) One
15. A degenerate solution of a Transportation Problem means –
- (a) Total supply is not equal to the total demand.
 - (b) Some allocations have become negative.
 - (c) The obtained solution is not feasible.
 - (d) Both (a) and (b) but not (c).

16. Multiple optimum solutions exist for a Transportation Problem when –
 - (a) There is at least one unoccupied cell of the obtained optimal solution which has zero opportunity cost.
 - (b) There is unused route of Transportation having all the cells with positive opportunity cost.
 - (c) There is unused route of Transportation with further scope of reducing total cost of transportation.
 - (d) There is one and only one unoccupied cell of the obtained optimal solution with zero opportunity cost.

17. In an iteration while moving from one solution to the next, degeneracy occurs when –
 - (a) The closed loop indicates a diagonal move.
 - (b) Two or more of the allocated cells in the closed loop with minus sign have same lowest allocation.
 - (c) Two or more allocated cells are on the closed loop but neither of them represent a corner of the loop.
 - (d) Either one of the above

18. Left hand side of the equation $\Delta_{ij} = C_{ij} - (u_i + v_j)$ is known as –
 - (a) Opportunity Cost
 - (b) Improvement Index
 - (c) Both (a) and (b)
 - (d) None of the above

19. 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.

20. Which of the following statements is best suited to the Transportation solution given below?

To		Warehouse Supply			Supply
From		W1	W2		
A		3	5	9	10
		(20)	(50)		

To	Warehouse Supply			Supply
From	W1	W2		
B	5	4	7	30
		(30)		
C	10	8	3	120
	(40)		(80)	
Demand	60	80	80	220

- (a) The solution is degenerate.
- (b) The solution can be improved by shipping from C to W2
- (c) The solution can be improved by shipping from B to W1
- (d) NWCM has been used to develop the solution.

21. The Total Cost of Transportation for the Solution Matrix given in the Q. No. 28 is –

- (a) ₹1070
- (b) ₹1130
- (c) ₹1350
- (d) ₹1050

22. Which of the following statement is true in respect of the solution of a Transportation Problem?

To	Warehouse Supply			Supply
From	W1	W2		
A	25	17	25	300
		(300)		
B	15	10	18	500
	(300)		(200)	
C	0	0	0	300
			(300)	
Demand	300	300	500	1100

- (a) The problem is an unbalanced one with Demand > Supply.
- (b) Plant C is a Dummy Plant.
- (c) Demand of Warehouse W3 will not be completely fulfilled.
- (d) All of the above.

23. In a problem of Travelling Salesman, the diagonal elements of the matrix from top left corner are all –
- Zeros
 - Negative
 - Ones
 - Infinitely large
24. The similarity between Assignment Problem and Transportation Problem is –
- Both are rectangular matrices
 - Both are square matrices
 - Both can be solved by graphical method
 - Both have objective function and non-negativity constraints.
25. When we try to solve the Assignment problem by Transportation algorithm the following difficulty arises.
- There will be a tie while making allocations.
 - The problem will get alternate solution.
 - The problem degenerates and we have to use epsilon to solve degeneracy.
 - The Assignment problem cannot be solved by Transportation algorithm.
26. The following character dictates that the Assignment matrix is a square one.
- The allocations in Assignment problem are one to one.
 - Because we find row opportunity cost matrix.
 - Because we find column opportunity cost matrix.
 - Because after making allocations, horizontal and vertical lines are to be drawn.

Answer

1	2	3	4	5	6	7	8	9	10	11
a	c	c	b	b	b	a	c	a	c	a
12	13	14	15	16	17	18	19	20	21	22
b	b	c	c	a	b	c	a	b	a	d

State True or False

- The first step of solving Transportation problem is to find Basic Feasible Solution.
- Transportation algorithm is basically meant for minimization of Objective Function. So maximization problems cannot be solved using this algorithm.
- While finding an improved solution in course of getting the optimal Transportation solution, a closed loop is drawn through even number of cells of the matrix, of which one is unallocated and the rest are allocated.

4. Basic feasible solution of a Transportation problem by VAM always gives optimal or near optimal solution.
5. Total cost of Transportation as per the schedule of Q. No. 30 of MCQ Section above is ₹ 13000/-
6. LCM is the most popular method of carrying out Optimality test of Initial Solution of a Transportation problem.
7. Transportation technique was first developed while studying the problem of distribution of a product from several sources to numerous locations.
8. Using Graphical Method of Linear Programming to solve a problem of Transportation is very common.
9. Situation of Transportation under prohibition on usage of particular route occurs due to natural calamity.
10. Improved solution of a Transportation problem is obtained by creating a closed loop using at least four allocated cells of the existing solution.
11. For a (5×4) Transportation Matrix the Basic Feasible Solution is seen to have 6 allocations. The solution can be called non-degenerate.
12. Problems of Transportation with Degeneracy generally have multiple optimum solutions.
13. Basic feasible solution of a Transportation problem should have at least one allocation in each row and column of the matrix.
14. In NWCM if the resource availability of the 1st row is exhausted first then we move down the 2nd row and 1st column to make an allocation which either exhausts the resource availability of 2nd row or satisfies the remaining demand of the destination represented in 1st column.
15. Full form of LCM, as used in finding Basic Feasible Solution of a Transportation problem is Least Common Multiple.

Answers:

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
T	F	T	T	F	F	T	F	T	F	F	T	T	T	F

Fill in the blanks

1. In a problem of transportation with prohibited routes, the cells having restriction are considered to have unit cost of transportation equal to _____.
2. Any transportation problem can be solved as a special case of LPP using _____ method.
3. Degeneracy can occur at _____ different stages while solving a Transportation Problem.
4. By converting a given Profit Matrix to _____ Matrix a problem of maximization can be solved by using Transportation algorithm.
5. To resolve Degeneracy during Initial Feasible Solution of a Transportation problem an infinitely small quantity ϵ is allocated to the least cost unoccupied cell of the solution.

6. From the point of view of optimality, the Transportation solution given in Q. No. 30 above is _____.
7. From the point of view of degeneracy, the Transportation solution given in Q. No. 30 above is _____.
8. The objective of using Transportation algorithm is to _____ the Total Cost of Transportation.
9. In a Transportation Table an ordered set of _____ or more cells is said to form a closed loop.
10. Transportation problems are also called _____ problem after the name of its inventor F. L. Hitchcock.
11. Chance of getting optimal solution is _____ when Basic Feasible Solution is obtained by NWCM than by VAM.
12. MODI is a _____ time consuming method to test optimality of a solution than Stepping Stone Method.
13. The column number v_1 for the solution in Q. No. 16 above is _____.
14. To calculate Row and Column numbers (u_i & v_j) for a Transportation Table only the _____ cells are used.
15. Equality of Supply and Demand is a constraint of Transportation algorithm and is called condition.

Answers:

- | | |
|----------------|---------------------------------|
| 1. Infinity | 2. Simplex |
| 3. Two | 4. Relative or Opportunity Loss |
| 5. Independent | 6. Optimal |
| 7. Degenerate | 8. Minimize |
| 9. Four | 10. Hitchcock |
| 11. Less | 12. Less |
| 13. 8 | 14. Allocated |
| 15. Rim | |

Chapter 1.7 Assignment

Multiple Choice Questions

1. An Assignment problem is considered as a special case of Transportation problem because –
 - (a) The number of rows is equal to the number of columns
 - (b) All $x_{ij} = 0$ or 1
 - (c) All rim conditions are equal to 1
 - (d) All of these

2. An Assignment problem can be solved by –
 - (a) Simplex method
 - (b) Transportation method
 - (c) Both (a) and (b)
 - (d) Only (b) but not (a)

3. The Hungarian Method for solving an Assignment problem can also be used to solve –
 - (a) Transportation problem
 - (b) Travelling Salesman problem
 - (c) Both (a) and (b)
 - (d) Not (a) but (b)

4. 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 is –

ITEMS	VENDORS		
	V1	V2	V3
I	110	120	130
II	115	140	140
III	125	145	165

- (a) ₹ 375
- (b) ₹ 385

- (c) ₹ 390
 (d) None of the above

5. In a machine shop four jobs need to be assigned to four machines. Each of the jobs is to be assigned to one machine only at a time. The time in minutes required to complete different jobs in different machines is given in the table below.

	MACHINES			
JOBS	I	II	III	IV
A	15	13	14	17
B	11	12	15	13
C	13	12	10	11
D	15	17	14	16

In order to ensure that the total time to complete the jobs is minimum, the optimal assignment of the jobs is –

- (a) A to IV, B to II, C to III and D to I
 (b) A to II, B to I, C to IV and D to III
 (c) A to II, B to I, C to III and D to IV
 (d) A to IV, B to II, C to I and D to III
6. If there are n jobs and n workers, there would be –
- (a) $n!$ solutions
 (b) $(n - 1)!$ solutions
 (c) $(n!).n$ solutions
 (d) n solutions
7. The Assignment problem
- (a) Requires that only one activity be assigned to each resource
 (b) Is a special case of Transportation problem
 (c) Can be used to maximise the resources
 (d) All of the above
8. To proceed with the MODI algorithm for solving an assignment problem, the number of dummy allocations need to be added are –
- (a) n
 (b) $n - 1$
 (c) $2n$
 (d) $2n - 1$

9. An optimal solution of an assignment problem can be obtained only if –
 - (a) Each row and column has only one zero element
 - (b) Each row and column has at least one zero element
 - (c) Both the diagonals of the matrix have zero element
 - (d) None of the above
10. The procedure used to solve Assignment problems wherein one reduces the original assignment costs to a table of opportunity costs is called
 - (a) Stepping Stone Method
 - (b) Matrix Reduction
 - (c) MODI Method
 - (d) Northwest Reduction
11. When a maximisation assignment problem is converted to minimisation problem, the resultant matrix is called
 - (a) Cost matrix
 - (b) Profit matrix
 - (c) Regret matrix
 - (d) Dummy matrix

Answers:

1	2	3	4	5	6	7	8	9	10	11
d	c	d	b	b	a	d	b	d	b	c

State True or False

1. In the optimal solution of Travelling Salesman problem all the assignments might not occur at the cells having zero entries.
2. As Assignment is a Linear Programming Problem, it can be solved using Graphical Method.
3. Square type cost matrix is the prime requirement of an Assignment Problem. Thus, an Assignment Problem with unequal number of rows and columns is not possible.
4. It is true that an Assignment problem can be solved using Transportation algorithm, but the reverse is not true.
5. To test optimality of an Assignment solution we have to cover all the zero entries of the matrix by only horizontal or only vertical straight lines.
6. While formulating an Assignment problem, described in a matrix of order 3, as a Linear Programming problem the total number of decision variables should be nine.
7. Hungarian Method is applicable for solving only the minimisation problems.

8. For problems with preferred assignment, we start with zero entries at the cells having preference.
9. If a dummy column is introduced to make an assignment problem balanced, then after row subtraction the matrix remains same as before.
10. Assignment problems are more frequently solved by Simplex Method.
11. An improvement of a non-optimal assignment solution is done by subtracting all the uncovered elements from the highest uncovered element and adding the same at the junction elements.
12. After getting an optimal solution, the first step to start assignment is to find out a row with a single zero entry.
13. While making an assignment at a cell with zero entry, the other cells with zero entry in the corresponding row or column should be crossed out because that is what we are supposed to do.
14. Assignment matrix of order 'n' yields only 'n' allocations where as a non-degenerate solution of Transportation demands $(2n - 1)$ cell allocations. Thus, solution of Assignment problem by Transportation method is not possible.
15. In an optimal solution, while assigning cells arbitrary choice of zero entry cell is necessary when not a single row or column is available with only one zero.

Answers:

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
T	F	F	T	F	T	T	F	T	F	F	T	F	F	T

Fill in the blanks

1. When a particular assignment in the given problem is not possible or restricted as a condition, it is called a _____ problem.
2. Assignment problem is a special case of Linear Programming and can be solved by _____ method.
3. The method of solving Assignment problem is called Hungarian to honour two Hungarian mathematicians based on whose earlier work _____ developed the same in 1955.
4. If the number of rows and columns are not equal in an Assignment matrix then it is called _____ problem.
5. The first step of solution of Assignment problem by Hungarian method is _____ subtraction operation.
6. The _____ test of Hungarian Method refers to checking whether the minimum number of horizontal and vertical straight lines to cover all the zero entries of the matrix is equal to the order of the matrix or not.
7. For a non-optimal solution of Assignment problem, the improvement of solution matrix is done by subtracting the _____ of the uncovered elements from all the uncovered

elements and adding the same to the elements at the junctions of the horizontal and the vertical lines.

8. Assignment problem is a degenerate type _____ problem.
9. For an unbalanced Assignment problem, introduction of a _____ row or column is necessary.
10. In case of Assignment problem with multiple optimum solutions, the minimum value for all the solutions is _____.
11. All the entries in a dummy row or column are considered to be _____ .
12. The table shows _____ solution of an Assignment problem.

	A	B	C
1.	40	10	0
2.	0	0	30
3.	0	20	10

13. For the given Assignment Matrix, the number of zeros after row subtraction operation will be _____

	A	B	C
1.	120	100	80
2.	80	90	110
3.	110	140	120

14. In the problem of Travelling Salesman, the basic requirement is a _____ trip of the person.
15. If the matrix shown in Q. No. (13) above is for a problem of maximisation then all the elements of it should be subtracted from the element _____ to get a regret matrix.

Answers:

- | | | | |
|---------------|---------------|------------|-------------------|
| 1. Prohibited | 2. Simplex | 3. Kuhn | 4. Unbalanced |
| 5. Row | 6. Optimality | 7. Minimum | 8. Transportation |
| 9. Dummy | 10. Same | 11. Zero | 12. Optimal |
| 13. 3 | 14. Round | 15. 140 | |

Chapter 1.8
Game Theory**Multiple Choice Questions**

1. When the sum of the gains of one player is equal to the sum of the losses to another player then it is called
 - (a) Fair game
 - (b) Zero sum game
 - (c) Both option (a) and option (b)
 - (d) Only option (b) and not option (a)
2. When no saddle point is found in the payoff matrix of a game, the value of the game is found by
 - (a) Reducing the size of the game to apply the odds method
 - (b) Solving any one of the (2×2) sub game
 - (c) Finding the average of the values of the payoff matrix
 - (d) None of these
3. A saddle point exists when
 - (a) Maximin value = Maximax value
 - (b) Minimax value = Minimum value
 - (c) Minimax value = Maximin value
 - (d) Minimax value = Minimin value
4. In a pure strategy game
 - (a) Any strategy can be selected arbitrarily
 - (b) A particular strategy is selected by each player
 - (c) Both players select their optimal strategy
 - (d) None of these
5. In a mixed strategy game
 - (a) No saddle point exists
 - (b) Each player selects the same strategy without considering the choice of the other
 - (c) Each player always selects the same strategy
 - (d) None of these

6. Game theory is the study of
 - (a) Selecting optimal strategies
 - (b) Resolving conflict between players
 - (c) Giving equal outcome to the participants
 - (d) None of the above
7. If the value of the game is zero, then the game is known as
 - (a) Fair strategy
 - (b) Pure strategy
 - (c) Pure game
 - (d) Mixed strategy
8. The games with saddle points are
 - (a) Probabilistic in nature
 - (b) Normative in nature
 - (c) Stochastic in nature
 - (d) Deterministic in nature
9. When the game is played on a predetermined course of action, which does not change throughout the game then it is known as
 - (a) Pure strategy game
 - (b) Fair strategy game
 - (c) Mixed strategy game
 - (d) Unsteady game
10. If the losses of Player A are the gains of Player B, then it is called
 - (a) Lump sum game
 - (b) Zero sum game
 - (c) Unfair game
 - (d) None of the above
11. Identify the incorrect one
 - (a) A game without saddle point is probabilistic
 - (b) Game with saddle point will have pure strategies
 - (c) Game with saddle point cannot be solved with dominance rule
 - (d) Game without saddle point has mixed strategies
12. In case there is no saddle point in a game then the game is
 - (a) Deterministic game

- (b) Fair game
 - (c) Mixed strategy game
 - (d) Multi player game
13. When Minimax and Maximin criteria matches then
- (a) A fair game exists
 - (b) An unfair game exists
 - (c) Mixed strategy exists
 - (d) Saddle point exists
14. When there is dominance in a game then
- (a) Least of the row \geq Highest of another row
 - (b) Least of the row \leq Highest of another row
 - (c) Every element in a row \geq Corresponding element of another column
 - (d) Every element in a row \leq Corresponding element of another row
15. A game is played when
- (a) The manager gives signal
 - (b) Each player chooses one of his courses of action simultaneously
 - (c) The player who comes to the field first says he will start the game
 - (d) When the latecomer starts the game
16. In a game the list of the courses of action with each player is
- (a) Finite
 - (b) Infinite
 - (c) Only 3
 - (d) None of the above
17. When the game is having a saddle point then the method used to solve the game is
- (a) Linear Programming method
 - (b) Minimax and Maximin criteria
 - (c) Odds method
 - (d) Graphical method
18. Linear Programming method should be used to determine the value of the game when the size of the payoff matrix is
- (a) 2×2
 - (b) 3×4

- (c) $m \times 2$
 - (d) $2 \times n$
19. If there are more than two persons in a game then the game is known as
- (a) Non zero sum game
 - (b) Open game
 - (c) Multiplayer game
 - (d) Big game
20. A competitive situation is known as
- (a) Competition
 - (b) Marketing
 - (c) Game
 - (d) All the above
21. Which one of the following is an assumption of Game Theory?
- (a) All players act rationally and intelligently
 - (b) The winner alone acts rationally
 - (c) The loser acts intelligently
 - (d) Both believes in luck
22. For the Payoff Matrix
- (a) The first strategy
 - (b) Average of the two strategies
 - (c) The second strategy
 - (d) All the above strategies

Answers:

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
d	a	c	c	a	a	c	d	a	b	c	c	d	d	b
16	17	18	19	20	21	22								
a	b	b	c	c	a	c								

State True or False

1. The name Game is derived from the fact that the end result always gives lot of fun to the players.
2. Strategies are the different courses of action of the players.
3. In Pure Strategy the objective of the maximizing player is to maximize the Gain, but in Mixed Strategy the objective is to maximize the Expected Gain.

4. Both Pure and Mixed Strategy problems can be solved by the Rules of Dominance.
5. A fair game results when the value of the game is zero.
6. Mixed Strategy Games are deterministic in nature.
7. Zero sum games always have two participants only.
8. A pure strategy may be dominated if it is inferior to average of two or more other pure strategies.
9. Columns of a payoff matrix represent the strategies of the maximising player
10. Graphical Method can be used for mixed strategy games having any size of payoff matrix.
11. In a game the players act rationally and intelligently.
12. In a (m×2) mixed strategy game the graphical method is used to find out the maximin point.
13. Equality of minimax and maximin values result in the existence of Saddle Point.
14. Optimal strategy is that course of action which puts a player in most preferred position.
15. Military operations are examples of game.

Answers:

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
F	T	T	T	T	F	F	T	F	F	T	F	T	T	T

Fill in the blanks

1. For the Payoff Matrix $\begin{pmatrix} 1 & 5 \\ 4 & 2 \end{pmatrix}$ the _____ strategy of the minimising player is dominated by the third.
2. "Teesta" water distribution conflict between India and Bangladesh can be considered as a situation of _____
3. Arithmetic Method is used to solve _____ strategy problems of Game.
4. Value of the Game _____ is _____.
5. As per the Rules of Dominance, a strategy of the maximising player is said to dominate another if all the elements of a row of the payoff matrix are _____ than or equal to the corresponding elements of the other.
6. Pure strategy games are _____ in nature.
7. Dominance principle has _____ rules.
8. Strategies of maximising player of a game are represented along the _____ of the payoff matrix.
9. For (2×n) matrix Mixed strategy Games _____ method is used to find the solution.
10. Columns of the payoff matrix of a game represent the strategies of the _____ player.
11. Game with payoff matrix (m×n) is solved using Simplex Method, if both m and n are

greater than _____.

12. In a game, all relevant information is available to _____ player.
13. In (2×2) mixed strategy game, sum of the probabilities of the minimising player taking its two strategies is _____.
14. Pure strategy games always have a _____ point.
15. In problems of game negative payoff of the maximising player indicates a _____.
16. Odds Method is applicable to _____ matrix games only.
17. In practical business situations most of games have _____ than two players.
18. Multiplayer games are also known as _____ person game .
19. In graphical method for (2 × m) game the Maximin value is determined from the _____ point of the lower envelope.
20. A participant of any game is called a _____.

Answers:

- | | |
|--------------|------------------|
| 1. Second | 2. Game |
| 3. Mixed | 4. 2 |
| 5. Greater | 6. Deterministic |
| 7. Three | 8. Row |
| 9. Graphical | 10. Minimising |
| 11. 2 | 12. Each |
| 13. 1 | 14. Saddle |
| 15. Loss | 16. (2×2) |
| 17. More | 18. N |
| 19. Highest | 20. Player |

Multiple Choice Questions

1. Select the valid reasons for using Simulation.
 - (a) Relationship between the variables is non-linear.
 - (b) Optimized solutions are obtained.
 - (c) Conduct experiment without disrupting the real system.
 - (d) Both (a) and (c)
2. Simulation uses logical relationship and mathematical expressions of the –
 - (a) Real system
 - (b) Computer model
 - (c) Performance measures
 - (d) Inferences
3. While assigning random numbers in Monte Carlo Simulation, it is –
 - (a) Not necessary to assign the exact range of random number interval as the probability.
 - (b) Necessary to develop a cumulative probability distribution.
 - (c) Necessary to assign the particular appropriate random numbers.
 - (d) All of the above.
4. Random numbers are used –
 - (a) To give random outcomes.
 - (b) To describe the uncertainty of the input values.
 - (c) To assign values to the parameters.
 - (d) To change the problem solution.
5. Simulation can keep track of several different kinds of information, including orders, inventory, financial planning
 - (a) Correct
 - (b) Partly correct
 - (c) Totally incorrect
 - (d) None of the above

6. Monte Carlo Simulation ensures that –
 - (a) The simulated probability distribution will be the same as the actual probability distribution.
 - (b) Only one uncertain decision can be taken in any simulation model.
 - (c) Probabilities will have at most two decimal place values.
 - (d) Each one of the above statement is true.
7. What should a Project Manager do when his preliminary task estimate differs from Monte Carlo Simulation?
 - (a) Perform more Monte Carlo Simulation runs.
 - (b) Use this information to assess project uncertainty and risk and to review and possibly change crucial variables.
 - (c) Scrap the project as untenable.
 - (d) Discuss these differences at future project team meetings.
8. What can be expected at the end of a Monte Carlo Simulation exercise?
 - (a) A conservative outcome.
 - (b) A decision backed by number that makes the decision maker confident about moving forward.
 - (c) All outcomes from all possible probabilities exercise.
 - (d) None of the above.
9. Analytical results are taken into consideration before a simulation study so as to -
 - (a) Identify suitable values of the system parameter
 - (b) Determine the optimal decision.
 - (c) Identify the suitable values of the decision variables for the specific choice of the system.
 - (d) All of the above.
10. Which of the following statements are applicable for Pseudo Random Numbers?
 - (a) They are numbers similar to Random Numbers.
 - (b) They are generated by using Remainder Method.
 - (c) They satisfy the statistical test for randomness.
 - (d) All of the above
11. Large complicated simulation models are appreciated because –
 - (a) Their average costs are not well defined
 - (b) It is difficult to create the appropriate events
 - (c) Both (a) and (b) are true.
 - (d) None of the above is true.

12. Simulation should not be applied in all cases because it –
 - (a) Requires considerable talent for model building and extensive computer programming efforts.
 - (b) Consumes too much computer time.
 - (c) Provides at best an approximate solution to the problem.
 - (d) All of the above.
13. Simulation is defined as –
 - (a) A technique that uses computers.
 - (b) An approach for reproducing the processes by which events by chance and changes are created by computers.
 - (c) A procedure for testing and experimenting on models to answer what if, then so and so type questions.
 - (d) All of the above.
14. Few causes of simulation analysis failure are –
 - (a) Inadequate level of user participation.
 - (b) Inappropriate levels of detail.
 - (c) Incomplete mix of essential skills.
 - (d) All of the above.
15. To make simulation more popular –
 - (a) Large cost overruns need to be avoided.
 - (b) Prolonged delays need to be avoided.
 - (c) User dissatisfaction with simulation results need to be avoided.
 - (d) All of the above.
16. The important step required for simulation approach in solving a problem is –
 - (a) Test and validate the model.
 - (b) Design the experiment.
 - (c) Conduct the experiment.
 - (d) All of the above.
17. The general purpose system simulation language –
 - (a) Requires program writing
 - (b) Does not require program writing.
 - (c) Requires predefined coding forms.
 - (d) Needs a set of equations to describe a system.

18. An advantage of simulation as opposed to optimization is that –
 - (a) Several options of measure of performance can be examined.
 - (b) Complex real life problems can be studied.
 - (c) It is applicable to cases where there is randomness in a system
 - (d) All of the above.
19. The purpose of using simulation technique is to –
 - (a) Imitate a real world situation.
 - (b) Understand properties and operating characteristics of complex real life problems.
 - (c) Both (a) and (b) above.
 - (d) Only (b) but not (a).
20. As simulation is not an analytical model, its solution should be viewed as –
 - (a) Exact
 - (b) Unrealistic
 - (c) Approximation.
 - (d) Simplified
21. All of the following are advantages of simulation except –
 - (a) Facilitates in finding the optimal solution.
 - (b) It is a low cost process.
 - (c) It deals with playing Games.
 - (d) Time compression is an issue with it.
22. 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
Relative Frequency	0.30	0.45	0.20	0.05

Customer	1	2	3	4	5	6	7	8	9	10
Random No.	1048	2236	2413	4216	3757	1501	4657	4836	9309	3997

- (a) 2 minutes
- (b) 4 minutes
- (c) 1 minute
- (d) 3 minutes

23. The drive up window of a fast food centre was being studied using simulation for a variety of operating characteristics. As part of the study data was collected on Customer Arrivals as given in the following table. Using expected value calculations determine the expected time between customer arrivals.

Inter arrival time (Minutes)	0.5	1.0	2.0	3.0	4.0	5.0	6.0
Probability	0.10	0.25	0.20	0.30	0.05	0.05	0.05

- (a) 2.35 minutes
 (b) 2.00 minutes
 (c) 2.70 minutes
 (d) 1.65 minutes

Answers:

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
d	a	b	b	a	a	b	b	c	d	b	d	d	d	d
16	17	18	19	20	21	22	23							
d	b	d	c	c	b	a	a							

Fill in the blanks

- Congruence Method is used to generate _____ numbers.
- Monte Carlo Simulation is also known as _____ Simulation.
- In _____ model of simulation, input and output variables are not random.
- The expression $[r_{i+1} = (a \cdot r_i) \pmod{m}]$ is for _____ type Congruence Random Number generator.
- Planetarium is an example of _____ Simulation for the solar system.
- _____ simulation is used for solving complex problem of managerial decision making.
- The ever first large scale deployment of simulation was done during World War II to model the process of _____
- Aircraft _____ is an application area of simulation.
- _____ types of Congruence Methods are used to generate Pseudo Random Numbers.
- _____ technique can be used to solve Queuing problems.

Answers:

- | | |
|-----------------------|-------------------|
| 1. Pseudo Random | 2. Probability |
| 3. Deterministic | 4. Multiplicative |
| 5. Analogue | 6. Computer |
| 7. Nuclear detonation | 8. Scheduling |
| 9. Three | 10. Monte Carlo |

State True or False

1. Simulation is a modelling and analysis tool.
2. Probability of occurrence of any single digit Random number is 1/10.
3. Simulation models are designed to generate optimal solutions which can then be applied to real world situations.
4. One of the major advantage of simulation is time compression i.e the ability to study in a relatively short period of the activities which normally take months if considered in real world terms.
5. While it is powerful, Simulation is not considered to be a flexible quantitative analysis tool.
6. Simulation can use any probability distribution that the user defines. It does not require standard distributions.
7. Simulation of a business or process is generally performed by building a mathematical model to represent the process or system.
8. A major advantage of using simulation techniques is to be able to study the interactive effect of individual components or variables.
9. To simulate is to try to duplicate the features, appearance and characteristics of a real world system.
10. Simulations are called Models because they make use of mathematics.
11. Simulations are very flexible. Thus its solutions and inferences are transferable to other problems.
12. If the Monte Carlo Simulation is used then it is expected to get same result for each set of random numbers used.
13. Simulation is a numerical technique for conducting experiments on a computer which involves certain type of mathematical and logical relationship necessary to describe the behaviour of a complex real world system.
14. Calculation of cumulative probability is a step in Monte Carlo model.
15. "Some situations are not amenable to simulation" – is a limitation of simulation.

Answers:

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
T	T	F	T	F	T	T	T	T	F	F	F	T	T	T

Network Analysis – PERT, CPM

Multiple Choice Questions

- Which of the following is true when a project is scheduled by Critical Path Analysis?
 - Work breakdown structure is used to divide the project into different activities.
 - Duration for each activity is established.
 - Precedence relationship of the activities is determined.
 - All of the above.
- Total Project Cost versus Duration curve is –
 - Parabolic
 - S shaped
 - U shaped
 - Linear
- Activities P, Q and R are the immediate successors of the activity N. If their current starting times are 10, 11 and 17 respectively then what is the latest finishing time of the activity N?
 - 10
 - 11
 - 17
 - None of the above
- Activity in a Network diagram is represented by –
 - Circle
 - Rectangle
 - Square
 - Arrow
- The particular task performance in CPM is known as –
 - Event
 - Activity
 - Dummy
 - Contract

4. The particular task performance in CPM is known as –
 - (a) Event
 - (b) Activity
 - (c) Dummy
 - (d) Contract
5. Among the following, critical path and slack time analysis mostly help
 - (a) Managers define the project activities
 - (b) Highlight relationships among project activities.
 - (c) Point out who is responsible for various activities
 - (d) Pinpoint activities that need to be closely watched.

Answers:

1	2	3	4	5	6
d	c	a	d	b	d

State True or False

1. Full form of PERT is Program Evaluation and Robot Technology.
2. The difference between the maximum time available and the actual time needed to perform an Activity is called the Total Float of the Activity.
3. PERT Network is Activity oriented and CPM Network is Event oriented.
4. An activity can have three different types of floats.
5. PERT and CPM are both project evaluation techniques.
6. The objective of Network Analysis is to minimize total project duration.
7. For any activity, Independent Float \leq Free Float \leq Total Float
8. Events neither consume any resource nor any time.
9. $P(Z \leq 2.33) = 95\%$, is a very important result used for finding the duration of a project which has 95% chance of completion within time.
10. In a CPM Network diagram completion of an activity is known as Event or Node or Connector
11. Project crashing is possible for both CPM and PERT.
12. As per Backward Pass technique, Latest allowable Event Time is $L_i = L_j - t_{ij}$ & for Burst Events $L_i = \text{Min.}(L_j - t_{ij})$
13. In a Network diagram Activities are represented by arrows having special importance on the lengths of the same according to the duration of the activity.
14. In a Construction project, "Curing of Concrete" is an Activity but "Concrete Cured" is an Event.

15. Critical Path of a Network helps the Project Manager to divert the resources from non-critical advanced activities to critical activities.

Answers:

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
F	T	F	T	F	T	T	T	F	T	F	T	F	T	T

Fill in the blanks

- The activity with minimum _____ should be crashed first.
- _____ Pass technique is used to get the Earliest Event times.
- For any Merge Event, earliest time is obtained by taking _____ value of the Earliest Finish times of all the activities ending there.
- Drawing unnecessary dummy activity in a Network diagram is called _____ error.
- Simultaneous accomplishment of those activities in a Network is possible which are _____ .
- Slack of the event at the arrowhead end of an activity is known as _____ .
- In a PERT Activity, probability of Most Likely Time is _____
- Standard rule of Network drawing says that the value of i is _____ times of that of Optimistic Time that of j always, for the Activity (i – j).
- For R & D type Projects, _____ is the most suitable technique of drawing Network diagrams
- Dummy activities are drawn to make activities with _____ beginning and ending events distinguishable.
- An Event where more than one activity ends and also from where more than one activity begins is called _____ Event.
- In a PERT Network, probability of completion of a project within a stipulated time is estimated by using _____ -approximation to β Distribution.
- Network is a technique, used for Planning, Scheduling and _____ of any project.
- The value of Slack of all the events in the Critical Path of a Network is _____ .
- Sum of the Free float and Head slack gives _____ float of an activity.

Answers:

- | | |
|---------------------|---------------|
| 1. Cost slope | 2. Forward |
| 3. Maximum | 4. Redundancy |
| 5. Concurrent | 6. Head Slack |
| 7. Four | 8. Less than |
| 9. PERT | 10. Common |
| 11. Merge and Burst | 12. Normal |
| 13. Controlling | 14. Zero |
| 15. Total | |

Learning Curve Theory

Multiple Choice Questions

1. A Learning Curve describes
 - (a) The increase in number of units produced per unit time as the total number of units produced increases
 - (b) The rate at which an organisation acquires new information.
 - (c) The amount of production time per unit as the total number of units produced increases.
 - (d) The increase in production time as the total number of units produced increases.
2. Limitations of the Learning Curve approach include –
 - (a) Learning Curves must be redeveloped whenever the product or the production process is modified.
 - (b) Learning Curves are applicable when considering a highly automated process.
 - (c) Learning Curves are only valid when considering simple production process.
 - (d) Learning Curves are only valid when the total number of units produced is relatively small.
3. Which of the following statements about Learning Curve is incorrect?
 - (a) A change in the process disrupts the Learning Curve.
 - (b) The rate of learning varies depending on the quality of management.
 - (c) The Learning Curve can be disrupted by the change in personnel.
 - (d) Learning Curves show that the time saved in completing each subsequent unit increases.
4. Which of the following is not an application of Learning Curve?
 - (a) Learning Curves allow a manager to predict the time required for new employee orientation on company policies and procedures.
 - (b) Learning Curves permit a manager to prepare a work schedule.
 - (c) Learning Curves allow a manager to forecast the labour requirements while preparing a departmental employee budget.
 - (d) Learning Curves can be employed in supply chain negotiations.

5. The Learning Curve remains valid –
 - (a) When applied to different firms in the same industry.
 - (b) For product modification that will simplify the product assembly.
 - (c) As long as process revisions involve only the addition of automated machinery.
 - (d) As long as production volume increases and processes are consistent.
6. A 100% Learning Curve implies that –
 - (a) Organisational learning has taken place.
 - (b) The Learning Curve can be applied universally across an industry.
 - (c) No learning has been achieved.
 - (d) Direct labour time is reduced 100% for each doubling of production.
7. Which of the following statement is true?
 - (a) The Learning Curve displays the relationship between process time per unit and the cumulative number of units produced.
 - (b) Learning Curves are most easily developed for one off type orders.
 - (c) Learning Curves are based on the Normal distribution.
 - (d) The standard time for a process is determined from the Learning Curve when cumulative production is fifty units.
8. Learning Curve is also known as –
 - (a) Growth curve
 - (b) Production curve
 - (c) Exponential curve
 - (d) Experience curve
9. For organisations with wide variety of product range which of the following statement is correct?
 - (a) Different product will have different Learning Curves.
 - (b) Learning percentage for different product will be different.
 - (c) Both (a) and (b)
 - (d) None of the above

Answers:

1	2	3	4	5	6	7	8	9
c	b	d	d	d	c	a	d	c

State True or False

1. Learning Curves are based on the premise that employees and organisations get better at their tasks as they are repeated.
2. Learning Curves are based on the doubling of output.
3. Disruption of Learning Curve is possible if the members of a crew are changed.
4. Reduction rate of time to produce an item is higher for the curves with higher learning percentage.
5. Costs tend to decline more for standardized products and processes.
6. In Service sectors, the concept of Learning Curve is not applicable.
7. The steeper the Learning Curve, the faster is the decrease in time.
8. Time needed to complete a job is reduced by 90% when the learning percentage is 90.
9. Regardless of the industry, the Learning Curve remains same if the products or processes are same.
10. Lowering costs through a learning effect is not a natural consequence of the passage of time. These costs must be managed down.
11. If the learning percentage is 80 and the fourth unit took 16 hours to complete then the first unit should have taken 24 hours.
12. The equation $\log Y = \log a + b \log X$ is by no means related to the theory of Learning Curve.
13. For very large one off type jobs learning has a very minimal effect on its cost of production.
14. In case of Surgery, the effect of learning is most predominant.
15. Theory of Learning Curve is established on the assumption that no interruptions are there in the process of production.
16. Completion time of a product follows a G.P with common ratio same as learning percentage when the production process is repetitive in nature.
17. The process of learning is applicable to all the living beings of the world.
18. Consideration of Learning Curve is not important while deciding on the working capital requirement.
19. Force majeure situations like strike, lock out, shut down, natural calamities etc. have no effect on the Learning Curve.
20. Learning Curve has three phases, of which the last one is very steep.

Answers:

1	2	3	4	5	6	7	8	9	10
T	T	T	F	T	F	T	F	F	T
11	12	13	14	15	16	17	18	19	20
F	F	T	T	T	T	T	F	F	F

Fill in the blanks

1. When the concept of learning was discovered then its curve was named as _____ curve.
2. Firms leapfrog the experience curve by means of innovation and _____
3. The Learning Curve is exponential in nature. In a log scale it is represented by _____ line.
4. Experience curve was developed by _____ Group in the year 1960.
5. Frequent training of new entrants is required for the industries with high _____ of employees.
6. _____ of the Learning Curve depends on the method of production.
7. Knowledge of Learning Curve assists in planning _____ of materials.
8. Learning Curve shows that the crew size need not be _____ at the same rate of increment of production.
9. Sensitive _____ bargaining with the union is possible when a clear knowledge of learning rate is there.
10. In the formula $Y = aX^b$ the symbol b stands for _____
11. As per the theory of Learning Curve the time required to produce an item follows a _____ with each doubling of production.
12. 80% Learning Curve shows a _____ reduction in average labour cost for every doubling of production.
13. Any Learning Curve shows _____ decrease in average production time in the first phase.
14. Today's concept of Learning Curve is the result of a study by a German _____ named Ebbinghaus.
15. Learning effect is very predominant for _____ type task.
16. Studies show that there is no _____ accepted learning rate applicable anywhere & everywhere.

Answers:

- | | |
|---------------------------|----------------------|
| 1. Forgetting | 2. Invention |
| 3. Straight | 4. Boston consulting |
| 5. Turnover | 6. Slope |
| 7. Inventory | 8. Increased |
| 9. Wage | 10. Learning Index |
| 11. Geometric Progression | 12. 20% |
| 13. Steep | 14. Psychologist |
| 15. Repetitive | 16. Universally |

Business Application of Maxima and Minima

Multiple Choice Questions

- Optimization is the method of finding
 - The maximum point
 - The minimum point
 - The critical point
 - All of the above
- Choose the correct answer
 - Optimization problems should have only one objective function
 - Constraint functions are compulsory for any optimization problem.
 - Objective function must be a continuous function
 - None of the above
- The process of finding relative maximum or minimum of a function is known as
 - Optimization
 - Maximization
 - Minimization
 - Any of these
- For a Cost Function $TC = 3Q^2 + 7Q + 12$, MC is –
 - 6Q
 - $6Q + 7$
 - $3Q + 12$
 - None of the above
- MR is
 - First order derivative of TC
 - Second order derivative of TR
 - First order derivative of TR
 - Second order derivative of TC
- In unconstrained optimization with single variable the sufficient condition for maximization is –
 - Second order derivative of the objective function must be zero.

- (b) Second order derivative of the objective function must be less than zero
 - (c) Second order derivative of the objective function must be less than zero.
 - (d) None of the above
7. In case of unconstrained optimization involving two variables the necessary condition is –
- (a) First order derivative of the objective function with respect to the variables should be zero.
 - (b) First order partial derivative of the objective function with respect to the variables should be zero.
 - (c) Either one of (a) and (b)
 - (d) Both (a) and (b)
8. A Firm is said to achieve Condition of equilibrium when
- (a) Its objective is optimized.
 - (b) Its profit is maximized.
 - (c) Its loss is minimized
 - (d) All of the above.
9. In the expression $D = AC - B^2$ used for describing the sufficient conditions for unconstrained optimization involving two variables (x and t), the meaning of A and C are –
- (a) 2nd order partial derivative of the objective function (f) with respect to x and y respectively.
 - (b) 2nd order partial derivative of $\partial f / \partial x$ with respect to y
 - (c) Both (a) and (b)
 - (d) Only (a) but not (b)
10. A price discriminating Monopolist Firm operates in –
- (a) Such a Market where it is the sole supplier.
 - (b) More than one Market.
 - (c) Markets where it sells same product but in different prices.
 - (d) All of the above.
11. In the expression $D = AC - B^2$ used for describing the sufficient conditions for a dual variable unconstrained optimization the term D is known as –
- (a) Hessian Matrix of order 2
 - (b) Determinant for Hessian Matrix of order 2.
 - (c) Matrix of partial derivatives of order 2.
 - (d) Determinant of the Matrix of partial derivatives
12. For a dual plant Monopolist Firm with respective production costs C_1 & C_2 in the two plants, the necessary condition of equilibrium is
- (a) $MC_1 = MC_2 \neq MR$

- (b) $MC = MR$
 - (c) $MC_1 = MC_2 = MR$
 - (d) $MC_1 = MR_1$ & $MC_2 = MR_2$
13. Use of Lagrange's Multiplier is seen while –
- (a) Solving a problem of unconstrained optimization with single variable.
 - (b) Solving a problem of optimization with inequality constraints.
 - (c) Solving a problem of optimization with one equality constraint.
 - (d) Solving a problem of optimization having no constraint.
14. For a firm the total cost function is $C(x) = -0.5x^2 + 11x + 600$. Which of the following statement is incorrect?
- (a) Average variable cost function is $AVC(x) = -0.5x + 11$
 - (b) Marginal cost function is $MC(x) = -x + 11$
 - (c) Cost of producing 10 units is ₹ 710/-
 - (d) Average cost function is $AC(x) = -0.5x + 11 + 600/x$
15. Which one of the following statement is not correct?
- (a) Average Revenue of a Firm is same as the price at which its product is sold.
 - (b) Total Profit is the product of quantity sold and the difference of Average Revenue and Average Cost.
 - (c) When Marginal Revenue is zero then Total Revenue is maximum
 - (d) None of the above.

Answers:

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
d	a	a	b	c	b	b	d	d	d	b	c	c	c	d

State True or False

1. Profit maximization is not the sole objective of a Firm.
2. Static Optimization & Dynamic Optimization are two types of Unconstrained Optimization.
3. For unconstrained optimization involving single variable the sufficient condition to get a Minima is $\frac{d^2y}{dx^2} < 0$.
4. Bordered Hessian Matrix is a square matrix of order 3.
5. If for a firm the Cost function is $C = wl + rk$. To minimize Cost subject to the constraint $y = k^\alpha \cdot l^\beta$, the Lagrangian Function is given by $L = C - \lambda(k^\alpha \cdot l^\beta - y)$
6. The critical values of x and y for optimization of the function $z = x^2 + y^2 + 0.5xy$ subject to $y = 90 - 2x$ are respectively $x = 39.375$ and $y = 11.25$
7. For multivariate unconstrained optimization involving two variables x and y, the necessary conditions require $\frac{df}{dx}$ as well as $\frac{df}{dy}$ are not equal.

8. The value of Hessian Determinant to be zero is the condition of getting a Saddle Point in the unconstrained optimization involving variables x and y.
9. Lagrangian Method can be used for constrained optimization problems involving two equality constraints.
10. The problem, Minimize $Z = -7x^2 + 6xy - 9y^2$ subject to $2x + y = 165$ can be solved only by using Lagrangian Method.
11. If the Lagrangian function is $L = 4x^2 - 5xy + 6y^2 + \lambda(x + y - 30)$ then the critical values of x and y are 17 & 13 respectively.
12. Problems of constrained optimization with multiple equality constraints cannot be solved by Lagrangian Method.
13. A multiproduct firm has profit function given by $\pi = 100x - x^2 - 2xy + 200y - 3y^2$. The value of Hessian determinant will be (- 8).
14. $D = 0$ gives inconclusive result for a problem of dual variable unconstrained optimization, where D is the Hessian Determinant.
15. Price discriminating Monopolists operate in different markets with different products.

Answers:

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
T	F	F	T	T	T	F	F	T	F	T	F	T	T	F

Fill in the blanks

1. Business is an activity or enterprise entered into for _____
2. Unconstrained and _____ optimization are the two situations under which optimization is carried out.
3. Unconstrained optimization is also known as _____ Maxima technique.
4. Calculus approach of _____ is used to optimize Objective Functions not subjected to any restriction.
5. $\frac{d^2y}{dx^2} = 0$ indicates existence of a _____ for the curve of the Objective Function.
6. $\begin{vmatrix} f_{xx} & f_{xy} \\ f_{yx} & f_{yy} \end{vmatrix}$ is known as _____ determinant and used in unconstrained optimization of multivariate function.
7. To optimize an objective function with single equality constraint _____ method is used.

Answers:

1. Profit	2. Constrained
3. Unbounded	4. Derivatives
5. Point of Inflexion	6. Hessian
7. Lagrangian	

Business Forecasting Models (Time Series and Regression Analysis)

Multiple Choice Questions

- In Exponential Smoothing Method which one of the following is true?
 - $0 \leq \alpha \leq 1$ and high value of α is used for stable demand.
 - $0 \leq \alpha \leq 1$ and high value of α is used for unstable demand.
 - $\alpha \geq 1$ and high value of α is used for stable demand.
 - $\alpha \leq 0$ and high value of α is used for unstable demand.
- Which of the following is not a Casual Forecasting Method?
 - Trend adjusted Exponential Smoothing
 - Econometric models
 - Linear Regression
 - Multiple Regression
- Which of the following is a Forecasting technique?
 - PERT / CPM
 - Exponential Smoothing
 - Gantt Chart
 - Control Chart
- The number of averaging period in the Simple Moving Average Method of forecasting is increased for greater smoothing but at the cost of –
 - Accuracy
 - Stability
 - Visibility
 - Responsiveness to changes
- In a Time Series forecasting model, the demands for five time periods are 10, 13, 15, 18 and 22. A linear regression fit resulted in the equation $y_t = 6.9 + 2.9t$, where y_t is the forecast for the period t . The sum of the absolute deviations for the five data with respect to their corresponding forecasts (taking $t = 1$ for the first one) is
 - 2.3

- (b) 0.2
 - (c) 1.2
 - (d) 2.2
6. Which of the following is not a part of Quantitative type of Forecasting Model
- (a) Moving Average
 - (b) Simple Average
 - (c) Delphi Method
 - (d) Exponential Smoothing
7. Which of the following Forecasting technique uses three types of participants: Decision Makers, Staff personnel and Respondents?
- (a) Expert's Opinion
 - (b) Sales Force Survey
 - (c) Consumer Survey
 - (d) Delphi Method
8. Sales data for the numbers sold for a particular product during January to May 2007 shows the values 10, 11, 16, 19 and 25. Regarding forecast for the month of June which one of the following statement is true?
- (a) Moving Average will forecast a higher value compared to regression.
 - (b) Exponential Smoothing will forecast a higher value compared to regression
 - (c) Regression will forecast a higher value compared to moving average.
 - (d) None of the above.
9. The Time Series forecasting method that gives equal weightage to each of the N most recent observations is –
- (a) Moving Average Method
 - (b) Exponential Smoothing with linear Trend
 - (c) Triple Exponential Smoothing
 - (d) None of the above
10. Which of the following is not a forecasting technique?
- (a) Trend line estimate
 - (b) Delphi Method
 - (c) Hungarian Method
 - (d) Judgemental technique
11. 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) 0.5
 - (d) 1
12. Which of the following is not true for forecasting?
- (a) Forecasts are rarely perfect.
 - (b) The underlying casual system will remain same in the future.
 - (c) Forecast for group of items is accurate than individual item
 - (d) Short range forecasts are less accurate than long range forecasts.
13. In which of the following forecasting technique, data obtained from past experience is analysed?
- (a) Judgemental forecast
 - (b) Time Series forecast
 - (c) Associative model
 - (d) All of the above
14. Delphi Method is used for –
- (a) Judgemental forecast
 - (b) Time Series forecast
 - (c) Associative model
 - (d) All of the above
15. Short term regular variations related to the calendar or time of the day is known as –
- (a) Trend
 - (b) Seasonality
 - (c) Cycles
 - (d) Random variations
16. A linear Trend equation has the form –
- (a) $F = a - bt$
 - (b) $F = a + bt$
 - (c) $F = 2a - bt$
 - (d) $F = 2a + bt$
17. The actual demand for a period is 100 units. But forecast demand was 90 units. The forecast error is –
- (a) – 10

- (b) 10
 - (c) 5
 - (d) None of the above
18. Which of the following is not a forecasting technique?
- (a) Judgemental
 - (b) Time Series
 - (c) Time Horizon
 - (d) Associative
19. Which of the following is not a Qualitative Forecasting technique?
- (a) Surveys of consumer expenditure plans
 - (b) Perspective of foreign advisory councils
 - (c) Consumer intention polling
 - (d) Time Series analysis
20. Which of the following is not one of the four types of variation that is estimated in the Time Series analysis?
- (a) Predictable
 - (b) Trend
 - (c) Cyclical
 - (d) Irregular
21. In Time Series Analysis which source of variation can be estimated by the ratio to trend method?
- (a) Cyclical
 - (b) Trend
 - (c) Seasonal
 - (d) Irregular
22. A qualitative forecast
- (a) Predicts the quality of a new product
 - (b) Predicts the direction but not the magnitude of change in a variable.
 - (c) Is a forecast that is classified on a numerical scale from 1 (poor quality) to 10 (perfect quality).
 - (d) Is a forecast that is based on econometric methods.
23. The first step in Time Series analysis is to –
- (a) Perform preliminary Regression calculations.

- (b) Calculate a moving average.
 - (c) Plot the data on a graph
 - (d) Identify relevant correlated variables.
24. If the estimate of the Trend Component is 158.2, the estimate of Seasonal Component is 94%, the estimate of the Cyclical Component is 105% and the estimate of the Irregular Component is 98%, then the multiplicative model will produce a forecast of –
- (a) 1.53
 - (b) 1.53%
 - (c) 153.02
 - (d) 153,020,532
25. From the first two supplied values of a Time Series and its corresponding Exponential Smoothing forecast as given below, the forecast for the time period 3, assuming Smoothing Constant = 0.3, will be

Time Period (t)	Value (yt)	Exponential Smoothing Forecast (ut)
1	18	18
2	22	18

- (a) 18
 - (b) 19.2
 - (c) 20
 - (d) 40
26. For the Regression Equations $y = 0.516x + 33.73$ and $x = 0.512y + 32.52$, the Arithmetic Mean values of x and y are nearly
- (a) 67.6 and 68.6
 - (b) 68.6 and 68.6
 - (c) 67.6 and 58.6
 - (d) 68.6 and 58.6
27. For a bivariate dataset (x,y), if the Means, Standard Deviations and Correlation Coefficient are respectively $\bar{x} = 1$, $\bar{y} = 2$, $\sigma_x = 3$, $\sigma_y = 9$ and $r = 0.8$. The regression line y on x is –
- (a) $y = 1 + 2.4(x - 1)$
 - (b) $y = 2 + 0.27(x - 1)$
 - (c) $y = 2 + 2.4(x - 1)$
 - (d) $y = 1 + 0.27(x - 2)$

28. The data about Sales and Advertisement Expenditure of a firm is given below

	Sales (₹ Crores)	Advertisement Expenditure (₹ Crores)
Mean	40	6
S.D	10	1.5

The Correlation Coefficient between Sales and Advertisement Expenditure is 0.9. The likely Sales for a proposed Advertisement Expenditure of ₹ 10 Crores is –

- (a) ₹ 64 Crores
 - (b) ₹ 67 Crores
 - (c) ₹ 70 Crores
 - (d) ₹ 58 Crores
29. Given the Regression Lines $x + 2y - 5 = 0$ and $2x + 3y - 8 = 0$ and $\text{Var}(X) = 12$. The value of $\text{Var}(Y)$ is –
- (a) $3/4$
 - (b) $4/3$
 - (c) 16
 - (d) 4
30. The equations of the two lines of Regression are $4x + 3y + 7 = 0$ and $3x + 4y + 8 = 0$. The Coefficient of Correlation between x and y is –
- (a) 1.25
 - (b) 0.25
 - (c) - 0.75
 - (d) 0.92

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
b	a	b	d	d	c	d	c	a	c	d	d	b	a	b
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
b	b	c	d	a	c	b	c	c	b	a	c	a	d	c

State True or False

1. Surveys and Opinion Polls are Qualitative Techniques
2. The Delphi Method generates forecasts by surveying consumers to determine their opinions.
3. Irregular or random influences on time series data give rise to secular trend.
4. The linear trend equation can be estimated by ordinary least squares Regression Analysis.
5. The ratio to trend method is used to find a linear trend equation.
6. Forecasts based on lead indicators are qualitative.

7. The long run increase or decrease in time series data is referred to as Cyclical Fluctuation.
8. The choice of a forecasting method should be based on an assessment of costs and benefits of each method in a specific application.
9. Barometric forecasting methods are most useful for long term forecasts.
10. Qualitative forecasts based on surveys tend to perform particularly well during periods of unexpected international political upheaval.
11. Councils of distinguished foreign dignitaries and business people are used to obtain qualitative forecasts with a foreign perspective.
12. Time analysis generates forecasts by identifying cause and effect relationship between variables.
13. Time Series data are observations on a variable at different points of time.
14. A time series that displays regular seasonal variation is said to exhibit cyclical fluctuation.
15. Smoothing techniques are most useful for time series data that is primarily influenced by irregular variation.

Answers:

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
T	F	F	T	F	T	F	T	F	F	T	T	T	F	T

Fill in the blanks

1. Shortfall in supply of a commodity may lead to a rise in its price. Here the shortfall is a _____ of the likely increase in price.
2. Multiple linear regression or _____ is an extension to the Simple linear regression.
3. Deseasonalisation is _____ of Seasonal Variation component from Time Series data.
4. Two regression lines _____ if $b_{yx} \cdot b_{xy} = 1$.
5. Signs of Regression Coefficients and Correlation Coefficient should be _____ always.
6. In the regression line x on y the independent variable is _____.
7. Coordinates of the point of intersection of two regression lines give _____ values of the variables.
8. $r(\sigma_y / \sigma_x)$ is known as the _____ of the regression line $y = a + bx$.
9. _____ Forecasting is based on current and future assets and liabilities as well as predictions for liquid capital and cash flow estimates.
10. Business allows a company to make long term plans and prepare for any changes in the market.

Answers:

- | | |
|--------------|-----------------|
| 1. Barometer | 2. MLR |
| 3. Removal | 4. Coincide |
| 5. Same | 6. y |
| 7. Mean | 8. Slope |
| 9. Capital | 10. Forecasting |

Introduction to Tools for Data Analytics

Multiple Choice Questions

1. Tableau is a –
 - a. Business Intelligence Tool
 - b. Visualisation Tool
 - c. Both (a) and (b)
 - d. None of the above
2. Which of the following statement is correct?
 - a. Functioning of ETL Tool is same as that of ELT Tool.
 - b. For Data Analytics the purpose of ETL Tool is same as that of ELT Tool.
 - c. Both (a) and (b)
 - d. None of the above
3. Which of the following statement is incorrect?
 - a. Microsoft Excel is most popular among all the available spreadsheets.
 - b. Zoho Analytics is a tool used for Financial Data analysis.
 - c. Visualisation Tools are the Reporting Tools.
 - d. None of the above.
4. Prescriptive Analytics is very important because –
 - a. It tells about the action to be taken.
 - b. It tells about what is likely to happen.
 - c. It tells about how something has happened.
 - d. It tells about what has happened.
5. 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. Visualisation 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.

6. Which of the following is related to Financial Data Analytics?
 - a. Value driver analytics
 - b. Financial ratio analytics
 - c. Predictive sales analysis
 - d. All the above
7. Analysis of a dataset has revealed the fact that profit of a business has reduced for the financial year 2023-24. What category of data analytics it comes under?
 - a. Descriptive Analytics
 - b. Predictive Analytics
 - c. Diagnostic Analytics
 - d. Prescriptive Analytics
8. #Script Ends – is related to which type of programming language?
 - a. R Programming
 - b. SAS
 - c. Python
 - d. SPSS
9. Which one of the following is a Key feature of SAS language?
 - a. Capability of handling data analysis related to Operations Research and Project Management.
 - b. Capability of report formation with perfect graphs.
 - c. Capability to interact with multiple host systems
 - d. All the above
10. Which one of the following is not a spreadsheet?
 - a. Google Sheets
 - b. MS Excel
 - c. EViews
 - d. Quip

Answers:

1	2	3	4	5	6	7	8	9	10
c	b	d	a	c	d	a	c	d	c

State True or False

1. Data Analytics encompasses many diverse types of data analysis.
2. Purpose of Predictive Analytics and Prescriptive Analytics are same.

3. There is no hypothesis stated in Confirmatory data analytics.
4. PowerBI is a business intelligence tool but more popular as data visualisation tool.
5. The process of Data Mining is also known as the process of data discovery.
6. Ease of using multiple databases is not a necessity for Visualisation Tools.
7. Use of cloud data storage system to aggregate diverse datasets in a common location is common for Business Intelligence software.
8. Rating of different BI Software products are based on their capability of Data Analytics, Natural language processing, Real time reporting and Embedded analytics
9. In data analytics the term Mart is related to a place where purchase of data is done.
10. R Programming is incapable of handling any statistical data analysis and that's why SAS is developed.

Answer:

1	2	3	4	5	6	7	8	9	10
T	F	F	T	T	F	T	T	F	F

Fill in the blanks

1. EViews is a statistical and _____ tool.
2. Python is closer to _____ language.
3. QuickBooks is a _____ Analytics tool.
4. Tools handling extract, transform and load functions of data are known as _____ tool.
5. CRAN is related to _____

Answer:

1.	Econometric	2.	English	3.	Financial
4.	ETL	5.	R programming		

NOTES

NOTES



BIT Questions

BIT Questions |

Multiple Choice Questions

- Which of the following is not a term normally used in value analysis?
(A) Resale value (B) Use value
(C) Esteem value (D) Cost value
- Which of the following is not suitable for a JIT production system?
(A) Batch production (B) Jobbing production
(C) Process production (D) Service production
- Which of the following is NOT a method of transfer pricing?
(A) Cost plus transfer price (B) Internal price transfer price
(C) Market-based transfer price (D) Two part transfer price
- When is market skimming pricing appropriate?
(A) If demand is very elastic
(B) If the product is new and different
(C) If there is little chance of achieving economies of scale
(D) If demand is inelastic
(E) If there is little competition and high barriers to entry
- Which of the following is a recognised method of arriving at the selling price for the products of a business?
(A) Life cycle pricing (B) Price skimming (C) Penetration pricing (D) Target costing
(A) (A) and (B) only
(B) (A), (B) and (C) only
(C) (B) and (C) only
(D) (A), (C) and (D) only
(E) (A), (B), (C) and (D)

6. A company has estimated the selling prices and variable costs of one of its products as follows:

Selling Price Per Unit		Variable Cost Per Unit	
₹	Probability	₹	Probability
40	0.30	20	0.55
50	0.45	30	0.25
60	0.25	40	0.20

The company will be able to supply 1,000 units of its product each week irrespective of the selling price. Selling price and variable cost per unit are independent of each other.

The probability that the weekly contribution will exceed ₹20,000 is ____% (round to the nearest whole %)

- (A) 40% (B) 42%
(C) 45% (D) 55%
7. An organisation is considering the costs to be incurred in respect of a special order opportunity.

The order would require 1,250 kgs of material D. This is a material that is readily available and regularly used by the organisation on its normal products. There are 265 kgs of material D in stock which cost ₹795 last week. The current market price is ₹3.24 per kg.

Material D is normally used to make product X. Each unit of X requires 3 kgs of material D, and if material D is casted at ₹3 per kg, each unit of X yields a contribution of ₹15. The relevant cost of material D to be included in the costing of the special order is nearest to:

- (A) ₹3,990 (B) ₹4,050
(C) ₹10,000 (D) ₹10,300
8. Aderholt uses activity based costing to allocate its overheads. The budgeted cost/ expected for the Supervisor cost pool was:

Budgeted units	5,000
Number of employees	75
Budgeted Cost	₹7,500
The actual costs incurred were:	
Actual Units	5,500
Actual Employees	77
Actual cost	₹8,085

What was the total variance for the setups?

- (A) ₹585 Adverse (B) ₹165 Favourable
(C) ₹5550 Favourable (D) ₹385 Adverse

9. P operates an activity based costing (ABC) system to attribute its overhead costs to cost objects.

In its budget for the year ending 31 August 2017, the company expected to place a total of 2,895 purchase orders at a total cost of ₹1,10,010. This activity and its related costs were budgeted to occur at a constant rate throughout the budget year, which is divided into 13 four-week periods. During the four-week period ended 30 June 2016, 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
10. A manufacturing company recorded the following costs in October for Product X:

	₹
Direct Materials	20,000
Direct Labour	6,300
Variable Production Overhead	4,700
Fixed Production Overhead	19,750
Variable Selling Costs	4,500
Fixed Distribution Costs	16,800
Total costs incurred for Product X	72,050

During October 4,000 units of Product X were produced but only 3,600 units were sold. At the beginning of October there was no inventory. The value of the inventory of Product X at the end of October using throughput accounting was:

- (A) ₹630 (B) ₹1,080
(C) ₹1,100 (D) ₹2,000
11. Company B uses a throughput accounting system. The details of product X per unit are as follows:

	₹
Selling Price	50
Material Cost	16
Conversion Costs	20
Time on bottle neck resource	8 minutes

The return per hour for product X is:

- (A) ₹105 (B) ₹225
(C) ₹255 (D) ₹375

12. Stock Control data for Material P are:

Annual usage: 3600 units; Cost per unit: ₹100; Cost of placing an order: ₹40; Stockholding Cost: 20% of the overall stock volume; Lead time: One month The EOQ based on the above data is:

- (A) 210 units (B) 175 units
(C) 90 units (D) 120 units

13. 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

14. The following details relate to Product P-1 of a manufacturing company

Level of Activity (units)	1000	2000
Cost per unit (₹)		
Direct Materials	4000	4000
Direct Labour	3600	7200
Production Overheads	3240	12960
Selling Overheads	2916	23328

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

15. 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) 2000 (B) 3000
(C) 3500 (D) 4000

16. 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

17. A company has the capacity of production of 80000 units and presently it sells 20000 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
18. 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
19. 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
20. 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
21. 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

22. The following figures are extracted from the books of a company:

Budgeted O/H ₹10,000 (Fixed ₹6,000, Variable ₹4,000)

Budgeted Hours 2000

Actual O/H ₹10,400 (Fixed ₹6,100, Variable ₹4,300)

Actual Hours 2100

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)

23. 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

24. 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

25. ABC Limited 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

26. For a Learning Curve percentage of 72%, the time 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

27. 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

28. 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

29. Match the following:

- | | |
|-----------------------------------|----------------------------|
| (A) Dr. Deming believes | (1) Common Causes |
| (B) Ishikawa Development | (2) To prevent defect |
| (C) Type of variation is due to | (3) Cause & Effect diagram |
| (D) Crosby's Objective of quality | (4) Histogram |

The correct order is

- (A) A-3, B-2, C-1, D-4 (B) A-2, B-3, C-4, D-1
(C) A-2, B-3, C-1, D-4 (D) A-4, B-3, C-1, D-2

30. 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

31. A company has the capacity of production of 80,000 units and presently sells 20,000 units at ₹100 each. The demand is sensitive to selling price and it has been observed that with every reduction of ₹10 in selling price the demand is doubled. What should be the target cost at full capacity if profit margin on sale is taken as 25%?

- (A) ₹75 (B) ₹90
(C) ₹60 (D) ₹25

32. If the direct labour cost is reduced by 20% with every doubling of output, what will be the cost of labour for the sixteenth unit produced as an approximate percentage of the cost of the first unit produced?
- (A) 51.2% (B) 40.96%
(C) 62% (C) None of these
33. A company determines its selling price by marking up variable costs 60%. In addition, the company uses frequent selling price mark down to stimulate sales. If the mark down average 10%, what is the company's contribution margin ratio?
- (A) 30.6% (B) 44%
(C) 86.4% (D) None of these
34. B Ltd. Has earned net profit of ₹1 lakh, and its overall P/V ratio and margin of safety are 25% and 50% respectively. What is the total fixed cost of the company?
- (A) ₹2,50,000 (B) ₹2,00,000
(C) ₹3,00,000 (D) ₹1,00,000

35. The total cost of manufacturing a component is as under at a capacity of 50,000 units of production:

	₹
Prime Cost	10.00
Variable Overheads	2.40
Fixed Overheads	4.00
	16.40

The selling price is ₹21 per unit. The variable selling and administrative expenses is 60 paise per component extra. During the next quarter only 10,000 units can be produced and sold. Management plans to shut down the plant estimating that the fixed manufacturing cost can be reduced to ₹74,000 per quarter. When the plant is operating, the fixed overheads are incurred at a uniform rate throughout the year.

Additional costs of plant shutdown for the quarter are estimated at ₹14,000. The shut down pint for the quarter in units of product will be:

- (A) ₹25,000 (B) ₹14,000
(C) ₹11,000 (D) ₹20,000
36. A company manufactures two products using common material handling facility. The total budgeted material handling cost is ₹60,000. The other details are:

	Product X	Product Y
Number of Units Produced	30	30
Material moves per product line	5	15
Direct Labour hour per unit	200	200

Under activity based costing system the material handling cost to be allocated to product X (per unit) would be:

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

37. A company operates throughput accounting system. The details of product X per unit are as under.

Selling Price	₹50
Material Cost	₹20
Conversion Cost	₹15
Time on bottleneck resources	10 minutes

The return per hour for product X is:

- (A) ₹210 (B) ₹300
(C) ₹180 (D) ₹90

38. The information relating to the direct material cost of a company is as under:

	₹
Standard Price per unit	3.60
Actual quantity purchased in units	1,600
Standard quantity allowed for actual production in units	1,450
Material Price Variance on purchase (favourable)	240

What is the actual purchase price per unit?

- (A) ₹3.45 (B) ₹3.75
(C) ₹3.20 (D) ₹3.25

39. If the time taken to produce the first unit of a product is 4000 hrs, what will be the total time taken to produce the 5th to 8th unit of the product, when a 90% learning curve applies?

- (A) 10,500 hours (B) 12,968 hours
(C) 9,560 hours (D) 10,368 hours

40. A company has forecast sales and cost of sales for the coming year as ₹25 lakhs and ₹18 lakhs respectively.

The inventory turnover has been taken as 9 times per year. In case the inventory turnover increases to 12 times and the short term interest rate on working capital is taken as 10%, what will be saving in cost?

- (A) ₹10,000 (B) ₹20,000
(C) ₹15,000 (D) ₹5,000

41. Which of the following would decrease unit contribution margin the most?
- (A) 15% decrease in selling price
 - (B) 15% increase in variable costs
 - (C) 15% decrease in variable costs
 - (D) 15% decrease in fixed costs
42. A company produces two joint products, P and V. In a year, further processing costs beyond split-off point spent were ₹8,000 and ₹12,000 for 800 units of P and 400 units of V respectively. P sells at ₹25 and V sells at ₹50 per unit. A sum of ₹9,000 of joint cost were allocated to product P based on the net realization method. What were the total joint cost in the year?
- (A) ₹20,000
 - (B) ₹10,000
 - (C) ₹15,000
 - (D) None of these

43. A company is to market a new product. It can produce up to 1,50,000 units of this product. The following are the estimated cost data:

	Fixed Cost	Variable Cost
For Production upto 75,000 units	₹ 8,00,000	60%
Exceeding 75,000 units	₹12,00,000	50%

Sale price is expected to be ₹25 per unit.

How many units must the company sell to break even?

- (A) 1,00,000 units
 - (B) 1,11,000 units
 - (C) 1,27,000 units
 - (D) 75,000 units
44. The following details relate to two competing companies, Alps and Himalayas, for identical projects:
- I. The net present value (NPV) of Alps is ₹20,000 and its internal rate of return (IRR) is 18%.
 - II. For the same life period, Himalayas estimated cash flows are:

Year	₹ '000
0	(450)
1	300
2	200
3	100

And its cost of capital is 15%.

Which one of the following combinations is correct concerning the NPV and the IRR of the two projects?

Projects	
Alps	Himalayas
A) Higher NPV	Higher IRR
B) Higher NPV	Lower IRR
C) Lower NPV	Higher IRR
D) Lower NPV	Lower IRR

45. Nulook Ltd. Uses a JIT system and back flush accounting. It does not use a raw material stock control account During May, 8000 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
46. A company has estimated the selling prices and the variable costs of one of its products as under:

Probability	Selling Price (Per unit)	Probability	Variable Cost (Per unit)
0.25	60	0.25	30
0.45	75	0.40	45
0.30	90	0.35	60

The company will be able to produce and sell 4,000 units in a month irrespective of the selling price. The selling price and variable cost per unit are independent of each other.

The specific fixed cost relating to this product is ₹20,000. The probability that the monthly net profit of the product will be \geq ₹1,20,000 is

- (A) 0.2525 (B) 0.4512
(C) 0.3825 (D) 0.3075
47. In calculating the life cycle costs of a product, which of the following items would be included?
- A. Planning and concept design costs
B. Preliminary and detailed design costs
C. Testing costs
D. Production costs
E. Distribution costs
- (A) All of the above (B) D and E
(C) B, D and E (D) D
48. A Ltd., developing a new product, makes a model for testing and goes for regular production. From past experience of similar models, it is known that a 90% learning curve

applies. If the time taken to make the model is 300 hours, what will be the total time taken to produce 3rd to 4th unit of the product?

- (A) 540 hours
- (B) 486 hours
- (C) 432 hours
- (D) None of the above

49. A particular job required 800 kgs of material – P. 500 kgs. of the particular material is currently in stock. The original price of the material – P was ₹300 but current resale value of the same has been determined as ₹200. If the current replacement price of the material – P is ₹0.80 per kg., the relevant cost of the material – P required for the job would be:

- (A) ₹640
- (B) ₹440
- (C) ₹300
- (D) None of these

50. A company has 2000 units of an obsolete item which are carried in inventory at the original purchase price of ₹30,000. If these items are reworked for ₹10,000, they can be sold for ₹18,000. Alternatively, they can be sold as scrap for ₹3,000 in the market. In a decision model used to analyze the reworking proposal, the opportunity cost should be taken as:

- (A) ₹8,000
- (B) ₹12,000
- (C) ₹3,000
- (D) ₹10,000

51. When allocation service department cost to production departments, the method that does not consider different cost behavior patterns is the

- (A) Step method
- (B) Reciprocal method
- (C) Single rate-method
- (D) Dual rate-method

52. ASHLIN LTD., has developed a new product just complete the manufacture of first four units of the product. The first unit took 2 hours to manufacture and the first four units together took 5.12 hours to produce. The Learning Curve rate is

- (A) 83.50%
- (B) 80.00%
- (C) 75.50%
- (D) None of (A), (B) or (C)

53. ANKIT LTD. operates Throughput Accounting System. The details of product A per unit are as under:

	₹
Selling Price	75
Material Cost	30
Conversion Cost	20
Time to Bottleneck Resources	10 minutes

The return per hour for product A is

- (A) ₹270
- (B) ₹150
- (C) ₹120
- (D) ₹90

54. A company has a capacity to make 4,00,000 units of a product. It has noted from market conditions that at a price of ₹50 per unit, it can sell 1,00,000 units but the demand would double for each ₹5 fall in the selling price. A minimum margin of 25% is required. The target cost for the company should be:

- (A) ₹50 (B) ₹40
(C) ₹30 (D) ₹20

55. Division A of a company manufactures a single product and the following data are provided:

Sales = 25,000 units	Fixed Cost = ₹4,00,000
Depreciation = ₹2,00,000	Residual Income = ₹30,000
Net Assets = ₹10,00,000	

Head Office assesses divisional performance by the method of Residual Income and uses cost of capital of 12%

- (A) ₹25 (B) ₹30
(C) ₹35 (D) None of these

56. A company makes components and sells internally to its subsidiary and also to external market. The external market price is ₹24 per component, which gives a contribution of 40% of sales. For external sales, variable costs include ₹1.50 per unit for distribution costs. This is, however not incurred in internal sales. There are no capacity constraints. To maximize company profit, the transfer price to subsidiary should be:

- (A) ₹9.60 (B) ₹12.90
(C) ₹14.40 (D) None of these

57. The information relating to the direct material cost of a company is as under:

	₹
Standard Price per unit	3.60
Actual quantity purchased in units	1,600
Standard quantity allowed for actual production in units	1,450
Material Price Variance on purchase (favourable)	240

What is the actual purchase price per unit?

- (A) ₹3.45 (B) ₹3.75
(C) ₹3.20 (D) ₹3.25

58. SUVAM Ltd., has the capacity of production of 80,000 units and presently sells 20,000 units at ₹100 each. The demand is sensitive to selling price and it has been observed that with every reduction of ₹10 in selling price, the demand is doubled. What should be the target cost at full capacity if profit margin on sale is taken as 25%?

- (A) ₹67.50 (B) ₹60.00
 (C) ₹45.00 (D) None of the above

59. A company makes and sells a single product. The selling price and marginal revenue equations are:

$$\text{Selling Price} = ₹50 - ₹0.001X$$

$$\text{Marginal Revenue} = ₹50 - ₹0.002X$$

Where X is the product the company makes. The variable cost amount to 20 per unit and the fixed costs are ₹1,00,000. In order to maximize the profit, the selling price should be

- (A) ₹25 (B) ₹30
 (C) ₹35 (D) ₹40

60. 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

61. In a factory where standard costing system is followed, the production department consumed 1100 kgs of a material @ ₹8 per kg for product X resulting in material price variance of ₹2200 (Fav) and material usage variance of ₹1000 (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

62. 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

63. 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

64. 1200 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) 325
(C) 400 (D) 350
65. 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
66. 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
67. 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 week periods.
- During the four week 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 week period was
- (A) ₹2,000 (B) ₹3,000
(C) ₹1,500 (D) ₹1,000
68. 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) 32193 (B) 30660
(C) 31660 (D) 30993
69. 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

70. 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%
71. Twin Ltd. uses JIT and back flush accounting. It does not use a raw material stock control account. During September 2018, 10000 units were produced and sold. The standard cost per unit is 150 which includes materials of 60. During September 2018, 9,90,000 of conversion costs were incurred. The debit balance in cost of goods sold account for September 2018 was
- (A) 14,00,000
 (B) 14,80,000
 (C) 15,90,000
 (D) 16,20,000
72. A company operates a standard absorption costing system. The budgeted fixed production overheads for the company for last year were 3,30,000 and budgeted output was 2,20,000 units. At the end of the company's financial year, the total of the fixed production overheads debited to the Fixed Production Overhead Control Account was 2,60,000 and the actual output achieved was 2,00,000 units. The under/over absorption of overhead was
- (A) 40,000 over absorbed (B) 40,000 under absorbed
 (C) 50,000 over absorbed (D) 50,000 under absorbed
73. 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	1500	1800	2000
Variable Cost	700	950	1000

- 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) 1800 (D) 1500

74. AB company is a supermarket group that incurs the following costs:
- The bought-in price of the goods
 - Inventory finance costs
 - Self refilling costs
 - Costs of repacking or 'pack out' prior to storage before sale
- AB company's calculating of direct product profit (DPP) would include
- Costs (a) and (c) only
 - All of the above cost except (b)
 - All of the above costs except (d)
 - All of the above costs
75. S Ltd. manufactures a product whose time for the first unit is 1000 hours. It experience a learning curve of 80%, What will be the total time taken in hours for unit 5 to 8?
- 4096 hours
 - 3200 hours
 - 1536 hours
 - 2000 hours
76. 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 6000 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?
- 145
 - 125
 - 120
 - 135
77. 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
- Free float
 - Interfering float
 - Independent float
 - Total float
78. In CPA (Critical Path Analysis) which of the following is not a correct step in sequence?
- Understanding the logic of the system under consideration
 - Constructing the net work
 - Providing estimates for activity duration
 - Implementing and controlling the net work

79. 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	5000	10000	15000

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

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

80. 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

81. 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 1kg, 2kgs, 5kgs and 7kgs, respectively. Product-wise Selling Price and Variable Cost data are given hereunder:

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

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

	₹
Direct materials	1,500
Direct labour (1000 hours @ ₹ 8.50)	8,500
Variable overhead (1000 hours @ ₹ 4.00) ¹	4,000
Fixed overhead ²	1,400
	15,400

¹ Allocated on the basis of direct labour-hours.

² Allocated 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

83. 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

84. AB Ltd. uses standard cost system. The following information pertains to direct labour for Product X for the month of March, 2019:

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

85. X Ltd. has 1000 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

86. 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
87. 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) $(12x_1 + 4x_2)/3x_2 \leq 8x_1$
88. 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
89. 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%
90. 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
91. 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

92. The higher the actual hours worked.
- (A) The lower the capacity usage ratio
(B) The higher the capacity usage ratio
(C) The lower the capacity utilization ratio
(D) The higher the capacity utilization ratio
93. 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
94. 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
95. 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 is expected to be sold in the coming year. If the value of investments of the company is ₹ 15 lakh and it has a target ROI of 15%, the target cost would be:
- (A) ₹ 930 (B) ₹ 950
(C) ₹ 1050 (D) ₹ 1130
96. Max 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 2019 – 20 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 the product	10
Budgeted volume	4,00,000 units per year
Desired ROI	28%

Transfer price for division X is

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

97. 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

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

	Standard Mix		Actual mix	
Materials X	120 Kg	@ ₹5 = 600	112 Kg	@ ₹5 = 560
Y	80 Kg	@ ₹10 = 800	88 Kg	@ ₹10 = 880
	200	1400	200	1440
30% loss	60		25% loss	50
	140	1400	150	1440

Direct Materials Mix Variance is:

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

Answer

- (1) (A) Resale Value
- (2) (A) Batch production
- (3) (B) Internal price transfer price
- (4) (B) If the product is new and different
- (5) (B) (A), (B) and (C) only
- (6) (C) 45%
- (7) (B) ₹4,050
- (8) (B) ₹ 585 Adverse
- (9) (A) ₹ 330
- (10) (D) ₹ 2,000
- (11) (C) ₹ 255
- (12) (D) 120 units

- (13) (C) Increase, Decrease
- (14) (D) 3,000;8.50
- (15) (A) 2000
- (16) (A) III, II, IV, I
- (17) (C) ₹48 lakhs
- (18) (D) ₹6.90
- (19) (B) A Just-in-Time inventory philosophy has been adopted
- (20) (B) Standard Costing
- (21) (A) 800 cases
- (22) (C) 100 (A) and 200 (F)
- (23) (B) 40,000 units
- (24) (C) ₹30,00,000
- (25) (B) to decrease by 1%
- (26) (B) 41.47 hrs
- (27) (C) ₹45.00
- (28) (B) Back-flush Accounting
- (29) (C) A-2, B-3, C-1, D-4
- (30) (B) ₹200
- (31) (C) ₹60
- (32) (B) 40.96%
- (33) (A) 30.6%
- (34) (D) ₹1,00,000
- (35) (B) ₹14,000
- (36) (B) ₹500
- (37) (C) ₹180
- (38) (A) ₹3.45
- (39) (D) 10,368 hours
- (40) (D) ₹5,000
- (41) (A) 15% decrease in selling price
- (42) (C) ₹15,000
- (43) (B) 1,11,000 units
- (44) (C) Lower NPV; Higher IRR
- (45) (B) ₹8,40,000
- (46) (D) 0.3075
- (47) (A) All of the above
- (48) (C) 432 hours
- (48) (C) 432 hours
- (50) (C) ₹3,000

- (51) (C) Single rate-method
- (52) (B) 80.00%
- (53) (A) ₹270
- (54) (C) ₹30
- (55) (B) ₹30
- (55) (B) ₹30
- (56) (B) ₹12.90
- (57) (B) ₹3.75
- (58) (B) ₹60.00
- (59) (C) ₹35
- (60) (A) ₹10,50,000
- (61) (D) 10,000
- (62) (C) ₹6,000
- (63) (B) 8,000 units
- (64) (D) 350
- (65) (B) ₹7.60
- (66) (B) ₹30,00,000
- (67) (D) ₹1,000
- (68) (A) 32193
- (69) (A) There can be one or more activities without a predecessor in a network.
- (70) (B) Increase by 9.375%
- (71) (C) ₹ 15,90,000
- (72) (A) ₹40,000 over absorbed
- (73) (A) ₹ 850
- (74) (D) All of the above costs
- (75) (C) 1536 hours
- (76) (B) 125
- (77) (B) Interfering float
- (78) (D) Implementing and controlling the net work
- (79) (D) ₹10
- (80) (A) ₹4,20,000
- (81) (B) E, F, H & G
- (82) (C) ₹26,400
- (83) (D) ₹1,10,280
- (84) (C) 2,200
- (85) (B) ₹6,000
- (86) (D) In different branches of the same company, each branch making a different product using a unique process
- (87) (B) $5xt + 2x2 \leq 10$

- (88) (C) Contribution will be increased by ₹10 per hour for each extra hour of skilled labour that can be obtained
- (89) (C) 30%
- (90) (A) ₹75,625
- (91) (D) 2
- (92) (D) The higher the capacity utilization ratio
- (93) (B) The labour cost of manufacturing the 4th product will be more for B
- (94) (D) Zero
- (95) (C) ₹1050
- (96) (A) ₹12.70
- (97) (D) Inspection, Machine hours
- (98) (B) ₹40 (unfav.)

NOTES

The cover features a large, light gray circular shape in the background. Overlaid on this is a thin black circle. Two thick, dark gray curved lines, resembling arcs of a circle, are positioned around the thin circle, one on the left and one on the right, creating a frame for the central text.

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Multiple Choice Questions

- 1 Which of the following is not a primary activity of Value Chain?
 - a. Inbound Logistics
 - b. Operations
 - c. Service
 - d. Infrastructure
- 2 Which of the following is not a secondary activity of Value Chain?
 - a. Procurement
 - b. Human Resource Development
 - c. Service
 - d. Technology Development
- 3 Which of the following is not a term normally used in value analysis?
 - a. Resale value
 - b. Use value
 - c. Esteem value
 - d. Cost value
- 4 A company has forecast sales and cost of goods sold for the coming year as Rs. 25 lakhs and Rs. 18 lakhs respectively. The inventory turnover has been taken as 9 times per year. In case the inventory turnover increases to 12 times and the short-term interest rate on working capital is taken as 10%, what will be the saving in cost?
 - a. Rs. 10,000
 - b. Rs. 20,000
 - c. Rs. 15,000
 - d. Rs. 5,000
- 5 Which of the following important pillars of Strategic Cost Management determines the company's comparative position in the industry in terms of performance?
 - a. Cost Driver Analysis
 - b. Value Chain Analysis
 - c. Strategic Positioning Analysis
 - d. Competitive Value Analysis
- 6 _____ is defined as the real and permanent reduction in the unit costs of goods manufactured or services rendered without impairing their suitability for the use intended.
 - a. Cost control
 - b. Cost reduction
 - c. Cost measurement
 - d. Cost strategy

- 7 There are three core areas to consider when developing the supply chain strategy and business case. These are:
- a. People, Process & Systems
 - b. Control, Process & Systems
 - c. People, Planning & Systems
 - d. Control, Money & Systems
- 8 TQM stands for:
- a. Technical Quantitative Management
 - b. Total Quality Management
 - c. Theory of Queuing Management
 - d. None of the Above
- 9 Four Ps of Total Quality Management:
- a. Principles, Project, Problem, & Process
 - b. People, Process, Problem & Preparation
 - c. Product identification, Product quality, Product utility & Product expectation
 - d. None of the Above
- 10 PRAISE stands for:
- a. Appreciating someone
 - b. Product, Recognition, Adoption, Invention, Solution & Evaporation
 - c. Problem Identification, Ranking, Analysis, Innovation, Solution & Evaluation
 - d. None of the Above
- 11 DMIADV is a methodology associated with:
- a. Pareto Analysis
 - b. PRAISE
 - c. Six Sigma
 - d. None of the Above
- 12 Pareto analysis recognizes:
- a. 80:20 Rule
 - b. 50:50 Rule
 - c. 20:80 Rule
 - d. None of the Above
- 13 Cost of Rework is a cost related to:
- a. Internal failure
 - b. Appraisal
 - c. Prevention
 - d. None of the Above
- 14 The cost incurred to ensure that failures do not happen:
- a. External failure cost
 - b. Internal failure cost
 - c. Prevention cost
 - d. None of the Above

- 21 The Tech Company has fixed costs of Rs.400,000 and variable costs are 75% of the selling price. To realize profits of Rs.100,000 from sales of 5,00,000 units, the selling price per unit:
- a. must be Rs.1.00
 - b. must be Rs.4.80
 - c. must be Rs.4.00
 - d. cannot be determined
- 22 A company makes components and sells internally to its subsidiary and also to external market. The external market price is Rs.24 per component, which gives a contribution of 40% of sales. For external sales, variable costs include Rs.1.50 per unit for distribution costs. This is, however not incurred in internal sales. There are no capacity constraints. To maximize company profit, the transfer price to subsidiary should be:
- a. Rs. 9.60
 - b. Rs. 12.90
 - c. Rs. 14.40
 - d. None of these
- 23 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 6000 units produced are transferred internally each year. The costs of each division: Variable Cost: Rs.100 per unit & Rs.120 per unit for Division P & Q respectively. Fixed cost each year: Rs.1,20,000 & Rs.90,000 for Division P & Q respectively. Head Office management decided that a transfer price should be set that provides a profit of Rs. 30,000 to Division P. What should be the transfer price per unit?
- a. Rs. 145
 - b. Rs. 125
 - c. Rs. 120
 - d. Rs. 135
- 24 A particular job required 800 kgs of material – P. 500 kgs. of the particular material is currently in stock. The original price of the material – P was Rs.300 but current resale value of the same has been determined as Rs.200. If the current replacement price of the material – P is Rs.0.80 per kg., the relevant cost of the material – P required for the job would be:
- a. Rs. 640
 - b. Rs. 440
 - c. Rs. 300
 - d. None of these
- 25 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

- a. Rs. 330
- b. Rs. 350
- c. Rs. 370
- d. Rs. 390

44 At KL Company, cost of personnel department has always been charged to production department based upon number of employees. Recently, opinion gathered from the department managers indicate that number of new hires might be better predictor of personnel cost, Total personnel department cost are Rs. 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 cost will be allocated to Department A?

- a. Rs. 15,000
- b. Rs. 64,000
- c. Rs. 72,000
- d. Rs. 40,000

45 Which of the following is not suitable for a JIT production system?

- a. Batch production
- b. Jobbing production
- c. Process production
- d. Service production

46 JIT relates to:

- a. Time Management
- b. Inventory and product handling
- c. Delivery systems
- d. None of the above

47 Glasso, a manufacturer of large windows, is experiencing a bottleneck in its plant. Setup time at one of its workstations has been identified as the culprit. A manager has proposed a plan to reduce setup time at a cost of Rs. 7,20,000. The change will result in 800 additional windows. The selling price per window is Rs. 18,000, direct labour costs are Rs. 3000 per window, and the cost of direct materials is Rs. 7,000 per window. Assume all units produced can be sold. The change will result in an increase in the throughput contribution of

- a. Rs. 64,00,000
- b. Rs. 88,00,000
- c. Rs. 56,80,000
- d. Rs. 1,44,00,000

48 Cost per unit under throughput accounting and marginal costing are mainly different because:

- a. Labour is not considered in throughput accounting
- b. Direct labour is considered fixed in throughput accounting

- c. Total cost is considered in throughput accounting
 - d. Variable cost is considered in marginal costing
- 49 Ankit Ltd., operates throughput accounting system. The details of product A per unit are as under: Selling Price: Rs. 75 Material Cost: Rs. 30 Conversion Cost: Rs. 20 Time to bottleneck resources: 10 minutes. What is the throughput contribution per bottleneck resource per hour?
- a. Rs. 270
 - b. Rs. 150
 - c. Rs. 120
 - d. Rs. 90
- 50 Producing more non-bottleneck output:
- a. Creates more inventory, but does not increase throughput contribution
 - b. Creates more inventory and increases throughput contribution
 - c. Creates less pressure for the bottleneck workstations
 - d. Allows for the maximization of overall contribution
- 51 Twin Ltd. uses JIT and back flush accounting. It does not use a raw material stock control account. During September 2023, 10000 units were produced and sold. The standard cost per unit is Rs. 150 which includes materials of Rs. 60. During September 2023, Rs. 9,90,000 of conversion costs were incurred. The debit balance in cost of goods sold account for September 2023 is:
- a. Rs. 14,00,000
 - b. Rs. 14,80,000
 - c. Rs. 15,90,000
 - d. Rs. 16,20,000
- 52 The companies that would benefit from back-flush costing include companies:
- a. Which have fast manufacturing lead time
 - b. Whose inventory vary from period to period
 - c. Companies that require audit trails
 - d. None of these
- 53 Bench marking is:
- a. A continuous process
 - b. The practice of setting targets using external information
 - c. Method to provide performance assessment
 - d. All of the above
- 54 Kanban Japanese System under JIT approach ensures that:
- a. Continuous supply of inventory or product
 - b. Minimum & maximum level of stock to be maintained
 - c. Inventory valuation
 - d. All of the above

- a. 38,500 (A)
- b. 38,500 (F)
- c. 41,000 (A)
- d. 41,000 (F)

61 Which of the following may be the cause of Material Price Variance?

- a. Change in quantity of purchase or uneconomical size of purchase order
- b. Failure to take advantage of off-season price or failure to purchase when price is cheaper
- c. Change in basic purchase price of material
- d. All of the above

62 Variance analysis involves breaking down and analysing the total variance to explain:

- a. How much of the variance is caused by using the resources that are different from the standards, i.e., the quantity variance
- b. How much of the variance is caused by using the cost of the resources being different from the standards, i.e., the rate variance
- c. All of the Above
- d. None of the above

63 Standard costing system consists of the following key elements:

- a. Setting standards for each of the operations
- b. Comparing the actual performance with the standard performance
- c. Analyzing and reporting variances arising from the difference between actual and standard performance
- d. All of the Above

64 Which of the following statements is correct?

- a. Standard costing facilitates the integration of accounts so that reconciliation between cost accounts and financial accounts may be eliminated
- b. Standard costs are planned costs determined on a scientific basis and they are based upon certain assumed conditions of efficiency and other factors
- c. Standard costing is defined as the preparation and use of standard cost, their comparison with actual cost and the measurement and analysis of variances to their cause and points of incidence
- d. All of the Above

65 Which of the following statements is true?

- a. If the actual cost is more than the standard, we call it adverse variance and if the difference is less than the standard, we call it favourable variance.

- b. In case of sales and profit, if the standard is more than actual, it is adverse variance and if the standard is less than the actual, it is favourable variance
 - c. Both (1) and (2)
 - d. None of the above
- 66 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
- 67 Efficiency Ratio is:
- a. $\text{Available working days} \div \text{Budgeted working days} \times 100$
 - b. $\text{Budgeted hours} \div \text{Maximum hours in budgeted period} \times 100$
 - c. $\text{Standard hours} \div \text{Actual hours} \times 100$
 - d. None of the above
- 68 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
- 69 A constraint in an L.P. Model restricts:
- a. Value of the Objective Function
 - b. Values of the Decision Variables
 - c. Use of the available resources
 - d. All the above
- 70 A feasible solution of LPP –
- a. Must satisfy all the constraints simultaneously.
 - b. Need not satisfy all the constraints, only some of them.
 - c. Must be a corner point of the feasible region
 - d. All the above.

- 71 The Objective Function of a LPP is $Z = 3x_1 + 2x_2$. If $x_1 = 10$ and $x_2 = 5$ then the value of Z is –
- a. 35
 - b. 40
 - c. 45
 - d. 50
- 72 Multiple solution exist in a Linear Programming problem when –
- a. One of the constraints is redundant
 - b. Objective Function is parallel to one of the constraints
 - c. Two constraints are parallel
 - d. All of the above
- 73 The linear function of the variables which is to be optimized is called –
- a. Constraints
 - b. Objective Function
 - c. Decision variables
 - d. None of the above
- 74 If the value of the Objective Function can be increased or decreased indefinitely then the solution is called –
- a. Unbounded
 - b. Bounded
 - c. Infeasible
 - d. None of the above
- 75 The best use of Linear Programming is to find the optimal use of –
- a. Manpower
 - b. Material
 - c. Money
 - d. All of the above
- 76 Which of the following is assumption of Linear Programming Model?
- a. Divisibility
 - b. Proportionality
 - c. Additivity
 - d. All of the above
- 77 Which of the following considers difference between least cost and the cost just before least for each row and column while finding Basic Feasible Solution in Transportation?
- a. North West Corner Method
 - b. Least Cost Method
 - c. Vogel's Approximation Method
 - d. Both (b) and (c) above
- 78 When the total allocation of a Transportation Problem match with supply and demand values, the solution is –
- a. Non-degenerate
 - b. Feasible
 - c. Degenerate
 - d. None of the above

- 79 The solution to a Transportation Problem with 'm' sources and 'n' destinations is feasible if the number of cell allocations are –
- a. $m + n$
 - b. mn
 - c. $m - n - 1$
 - d. $m + n - 1$
- 80 To resolve Degeneracy in the solution of a Transportation Problem an infinitely small allocation is made to the solution already obtained. This allocation is known as –
- a. Dummy
 - b. Epsilon
 - c. ϵ – the Greek letter
 - d. All of the above except (a)
- 81 Which of the following is not correct with respect to Transportation as a tool of Quantitative Technique?
- a. Transportation technique is a special case of LP.
 - b. Transportation technique might give rise to solutions which are degenerate.
 - c. No Transportation problem can be given with supply \neq demand.
 - d. Using Transportation technique one can maximize an Objective Function.
- 82 Which of the following method is used to test optimality of a solution in Transportation?
- a. Modified Distribution
 - b. Simplex
 - c. VAM
 - d. LCM
- 83 In a solution of Transportation problem, empty cells are called –
- a. Unoccupied cells
 - b. Unallocated cells
 - c. Empty cells
 - d. All of the above
- 84 The Transportation Problem deals with the transportation of –
- a. Single product from a source to several destinations
 - b. Several products from a source to a destination.
 - c. Single product from several sources to a destination.
 - d. Single product from several sources to several destinations.
- 85 Which of the following methods is used to solve the Assignment problems?
- a. Stepping Stone Method
 - b. Hungarian Method
 - c. North West Corner Method
 - d. Vogel's Approximation Method

- 86 Assignment of work to men and machines is known as:
- a. Scheduling
 - b. Loading
 - c. Balancing of Line
 - d. None of these
- 87 In an Assignment matrix of size (5×5) , the total number of decision variables in the objective function is –
- a. 10
 - b. 5
 - c. 25
 - d. 15
- 88 An Assignment problem is solved to minimise the total time required to complete three jobs on three different machines such that each job is processed by exactly one machine and each machine processes exactly one job. The minimum total processing time is found to be 480 minutes. After a few days of operation, there has been a change in the design of the second job. Due to this, the processing time of the second job is increased by 15 minutes in either of the machines. The revised minimum total processing time will be –
- a. 495 minutes
 - b. 465 minutes
 - c. 480 minutes
 - d. None of these
- 89 Assignment problem can be considered as a particular case of -
- a. Transportation problem
 - b. Sequencing problem
 - c. Queuing problem
 - d. All of these
- 90 Dummy row or column is added in an assignment problem –
- a. To prevent a solution to become degenerate
 - b. To reduce the total cost of assignment
 - c. To increase the profit function
 - d. To balance total activities and total resources
- 91 While solving an assignment problem, an activity is assigned to a resource with zero opportunity cost because objective is to –
- a. Reduce total cost of assignment to zero
 - b. Reduce cost of that assignment to zero
 - c. Minimise total cost of assignment
 - d. Maximise total cost of assignment

- 92 In an assignment problem –
- First activity is assigned to first resource
 - Any number of activities can be assigned to each resource
 - It depends on how many resources are available
 - Only one activity be assigned to each resource
- 93 An assignment problem can be viewed as a special case of transportation problem in which the capacity from each source is ____ and the demand at each destination is ____.
- Unlimited, unlimited
 - One, unlimited
 - One, one
 - Unlimited, one
- 94 In marking assignments which of the following should be preferred?
- Only row having single zero
 - Only column having single zero
 - Column having more than one zero
 - Only row / column having single zero
- 95 The assignment matrix is always a ____
- Rectangular matrix
 - Identity matrix
 - Square matrix
 - None of these
- 96 Maximisation assignment problem is transformed into a minimisation problem by ____
- Adding each entry of a column to the maximum value of that column
 - Subtracting each entry in a column from maximum value in that column
 - Subtracting each entry of the table from the maximum value of the table
 - Adding each entry of the table to the maximum value in the table
- 97 In the Hungarian Method of solving Assignment problem, the row reduction is obtained by
- Dividing each row by the elements of the row above it
 - Subtracting the elements of the row from the elements of the row above it
 - Subtracting the smallest element from all other elements of the row
 - Subtracting all the elements of the row from the highest element in the matrix

- 98 The horizontal and vertical lines drawn to cover all zeros of the total opportunity matrix for an optimal solution must be –
- Equal to $m \times n$, where m = No. of rows & n = No. of columns
 - Equal to each other
 - Equal to $m + n$, where m = No. of rows & n = No. of columns
 - Equal to the Order of the matrix
- 99 The similarity between Assignment Problem and Transportation Problem is –
- Both are rectangular matrices
 - Both are square matrices
 - Both can be solved by graphical method
 - Both have objective function and non-negativity constraints
- 100 When we try to solve the Assignment problem by Transportation algorithm the following difficulty arises.
- There will be a tie while making allocations
 - The problem will get alternate solution
 - The problem degenerates and we have to use epsilon to solve degeneracy
 - The Assignment problem cannot be solved by Transportation algorithm
- 101 The following character dictates that the Assignment matrix is a square one:
- The allocations in Assignment problem are one to one
 - Because we find row opportunity cost matrix
 - Because we find column opportunity cost matrix
 - Because after making allocations, horizontal and vertical lines are to be drawn
- 102 An Assignment problem can be solved by –
- Simplex method
 - Transportation method
 - Both (1) and (2)
 - None of the above
- 103 If there are n jobs and n workers, there would be –
- $n!$ solutions
 - $(n - 1)!$ solutions
 - $(n!).n$ solutions
 - n solutions

104 The Assignment problem:

- a. Requires that only one activity be assigned to each resource
- b. Is a special case of Transportation problem
- c. Can be used to maximise the resources
- d. All of the above

105 To proceed with the MODI algorithm for solving an assignment problem, the number of dummy allocations need to be added are –

- a. n
- b. $n - 1$
- c. $2n$
- d. $2n - 1$

106 The procedure used to solve Assignment problems wherein one reduces the original assignment costs to a table of opportunity costs is called _____

- a. Stepping Stone Method
- b. Matrix Reduction
- c. MODI Method
- d. Northwest Reduction

107 When a maximisation assignment problem is converted to minimisation problem, the resultant matrix is called:

- a. Cost matrix
- b. Profit matrix
- c. Regret matrix
- d. Dummy matrix

108 Two person zero sum game means that:

- a. The sum of losses of one player is equal to the sum of the gains of the other
- b. The sum of losses of one player may not be equal to the sum of the gains of the other
- c. No player gains or loses
- d. None of the above

109 Game theory models are classified by the:

- a. Number of players
- b. Sum of all payoffs
- c. Number of strategies
- d. All of these

110 A game is said to be unfair if:

- a. Upper and lower values of the game are not equal
- b. Upper and lower values of the game are equal and the sum is zero
- c. Both option (a) and option (b)
- d. None of the above

- 111 What happens when the maximin and minimax values of the game are equal?
- a. No solution exists
 - b. Solution is mixed
 - c. Saddle point exists
 - d. None of these
- 112 A mixed strategy game can be solved by:
- a. Arithmetic method
 - b. Graphical method
 - c. Dominance method
 - d. All of these
- 113 The size of the payoff matrix of a game can be reduced by using the principle of:
- a. Game inversion
 - b. Rotation reduction
 - c. Dominance
 - d. Game transpose
- 114 The payoff value for which each player in a game always selects the same strategy is called the:
- a. Saddle point
 - b. Equilibrium point
 - c. Both option (a) and option (b)
 - d. None of the above
- 115 Games which involve more than two players are called:
- a. Conflicting games
 - b. Negotiable games
 - c. N person game
 - d. All of these
- 116 Which of the following is first step for performing Simulation analysis?
- a. Choose input variables.
 - b. Create entities for the simulation process.
 - c. Prepare a problem statement.
 - d. Determine the output variables.
- 117 Which of the following are the advantages of using Modelling and Simulation?
- a. Easy to understand
 - b. Easy to test
 - c. Easy to upgrade
 - d. All of the above
- 118 Which one of the following is not an application area of Modelling and Simulation?
- a. Military applications
 - b. Designing semiconductors
 - c. Telecommunications
 - d. Food industry

- 119 Which of the following is the first step for developing the Simulation Model?
- a. Design the problem
 - b. Identify the problem
 - c. Collect and start processing the system data
 - d. Develop the model using Network diagram
- 120 Simulation is the process of using a model to study the performance of a system.
- a. Agreeable
 - b. Not agreeable
 - c. Partly agreeable
 - d. Cannot comment
- 121 Disadvantage of using Modelling and Simulation lies in the statement –
- a. Simulation requires manpower and it is a time consuming process
 - b. Simulation results are difficult to translate and only experts can understand it
 - c. Simulation is an expensive process
 - d. All of the above
- 122 Monte Carlo Simulation gets its name from which of the following?
- a. Data collection.
 - b. Model formulation
 - c. Random number assignment
 - d. Analysis
- 123 Select the valid reasons for using Simulation.
- a. Relationship between the variables is non-linear.
 - b. Optimized solutions are obtained.
 - c. Conduct experiment without disrupting the real system.
 - d. Both (a) and (c)
- 124 The drive up window of a fast food centre was being studied using simulation for a variety of operating characteristics. As part of the study data was collected on Customer Arrivals as given in the following table. Using expected value calculations determine the expected time between customer arrivals. Inter arrival time (Minutes)
- | | | | | | | | | | |
|-----|-----|-------------|------|------|------|------|------|------|------|
| 0.5 | 1.0 | 2.0 | 3.0 | 4.0 | | | | | |
| 5.0 | 6.0 | Probability | 0.10 | 0.25 | 0.20 | 0.30 | 0.05 | 0.05 | 0.05 |
- a. 2.35 minutes
 - b. 2.00 minutes
 - c. 2.70 minutes
 - d. 1.65 minutes
- 125 Critical Activities have:
- a. Maximum float
 - b. Minimum float
 - c. Zero float
 - d. Negative float

126 In PERT Chart, the Activity time distribution is -

- a. Normal
- b. Binomial
- c. Poisson
- d. Beta

127 A PERT Network has nine activities on its Critical Path. The Standard Deviation of each activity on the Critical Path is 3. The S. D of the Critical Path is -

- a. 3
- b. 9
- c. 81
- d. 27

128 For an activity the pessimistic, most likely and optimistic times are respectively 10, 6 and 2 days. The expected duration of the activity is -

- a. 6 days
- b. 3 days
- c. 2 days
- d. 9 days

129 The time by which the activity completion time can be delayed without affecting the start of the succeeding activities is known as -

- a. Total float
- b. Free float
- c. Independent float
- d. Head slack

130 Which of the following statement is not true?

- a. PERT is deterministic in nature.
- b. CPM is probabilistic in nature.
- c. PERT Network can not be crashed.
- d. All of the above.

131 Following data refers to a project Network. What will be the Critical Path?

Activity	1 - 2	2 - 3	3 - 4	1 - 4	2 - 5	3 - 5	4 - 5
Duration	2 Days	1 Day	3 Days	3 Days	3 Days	2 Days	4 Days

- a. 1 - 2 - 3 - 5
- b. 1 - 2 - 3 - 4 - 5
- c. 1 - 4 - 5
- d. 1 - 4 - 3 - 5

132 The amount of time by which an activity can be delayed without affecting the project completion is called -

- a. Free float
- b. Total float
- c. Interfering float
- d. None of the above

- 133 Optimistic time and pessimistic time of an activity are respectively 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
- 134 In a project planning Free float can affect which of the following?
- a. Succeeding activity
 - b. Only that activity
 - c. Preceding activity
 - d. All of the above
- 135 Solution of problems of Crashing has to be started by applying the technique on –
- a. Any activity of the Network
 - b. Non critical activities
 - c. Critical activities
 - d. None of the above
- 136 A PERT activity has an optimistic time of 3 days, pessimistic time of 15 days and an expected time of 7 days. What is the most likely time of the activity?
- a. 10 days
 - b. 6 days
 - c. 5 days
 - d. None of the above
- 137 The reduction in project time normally results in –
- a. Decrease in Direct Cost and increase in Indirect Cost
 - b. Increase in Direct Cost and decrease in Indirect Cost
 - c. Increase in both Direct and Indirect Costs
 - d. Decrease in both Direct and Indirect Costs
- 138 The Normal duration and Normal cost of an activity are 10 days and Rs. 350 respectively. The cost slope is Rs. 75 per day. If the Crash duration is 8 days then what is the Crash cost of the activity?
- a. Rs. 400/-
 - b. Rs. 500/-
 - c. Rs. 600/-
 - d. Rs. 650/-
- 139 Which of the following is incorrect?
- a. PERT is suitable for projects having probabilistic time estimates.
 - b. CPM is suitable for projects having deterministic activities.
 - c. Both PERT and CPM are event oriented.
 - d. PERT is event oriented while CPM is activity oriented.

- 140 The activity that must be completed prior to the start of an activity is called –
- a. Dummy activity
 - b. Successor activity
 - c. Concurrent activity
 - d. Predecessor activity
- 141 The slack times of Tail and Head events of Activity P are 10 days and 4 days respectively. If the Free float of the Activity P is 12 days then the Total float would be –
- a. 8 days
 - b. 16 days
 - c. 22 days
 - d. none of the above
- 142 Which of the following represents reduction in project duration?
- a. Crashing
 - b. Negative slack
 - c. Variance
 - d. All of the above
- 143 Critical Path Method is good for –
- a. Small projects only
 - b. Large projects only
 - c. Both small and large projects equally
 - d. Neither small nor large projects
- 144 The optimum duration is the –
- a. Summation of normal durations of each activity of the project
 - b. Summation of normal durations of activities in the Critical Path
 - c. One which gives the minimum Total Cost for the completion of the project
 - d. Summation of crash durations of activities in the Critical Path
- 145 Which of the following is not a notable challenge while scheduling a project?
- a. Deadlines exist
 - b. Independent activities
 - c. Too many workers may be required
 - d. Costly delay
- 146 A critical path is –
- a. The shortest path
 - b. The longest path
 - c. The path that begins from the start node and ends at the last node
 - d. All of the above
- 147 Activities A, D and F merges at the event 6. If the earliest finish times of A, D and F are respectively 13, 17 and 8 then the earliest time of Event 6 is –
- a. 8
 - b. 13

- c. 17
- d. Cannot be determined from the given information

148 A Learning Curve describes:

- a. The increase in number of units produced per unit time as the total number of units produced increases
- b. The rate at which an organisation acquires new information.
- c. The amount of production time per unit as the total number of units produced increases.
- d. The increase in production time as the total number of units produced increases.

149 Limitations of the Learning Curve approach include –

- a. Learning Curves must be redeveloped whenever the product or the production process is modified.
- b. Learning Curves are applicable when considering a highly automated process.
- c. Learning Curves are only valid when considering simple production process.
- d. Learning Curves are only valid when the total number of units produced is relatively small.

150 Which of the following statements about Learning Curve is incorrect?

- a. A change in the process disrupts the Learning Curve.
- b. The rate of learning varies depending on the quality of management.
- c. The Learning Curve can be disrupted by the change in personnel.
- d. Learning Curves show that the time saved in completing each subsequent unit increases.

151 Which of the following is not an application of Learning Curve?

- a. Learning Curves allow a manager to predict the time required for new employee orientation on company policies and procedures.
- b. Learning Curves permit a manager to prepare a work schedule.
- c. Learning Curves allow a manager to forecast the labour requirements while preparing a departmental employee budget.
- d. Learning Curves can be employed in supply chain negotiations.

152 Bimal and Kamal are the two industrial workers engaged in doing a similar job. They have different learning rates of 80% and 90% respectively. Times taken to complete their first jobs are respectively 12 and 8 hours. If both continue with the same learning rate then after how many units Bimal will be faster than Kamal?

- a. 5th unit
b. 7th unit
c. 11th unit
d. 19th unit
- 153 How long will it take to produce the fifth unit with 85% learning rate, if the third unit took 13 hours?
- a. 10.3 hours
b. 10.0 hours
c. 11.4 hours
d. 11.5 hours
- 154 When 24 hours is 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
- 155 A diesel engine manufacturing company has an order of 4 large engines. A crew of 16 members took 4000 hours to assemble the first engine. If 80% Learning Curve is used then what will be the labour cost of the fourth engine, assuming average labour rate to be Rs. 180 per hour?
- a. Between Rs. 4 to 4.5 Lakhs
b. Between Rs. 3.5 to 4 Lakhs
c. Between Rs. 3 to 3.5 Lakhs
d. Between Rs. 4.5 to 5 Lakhs
- 156 Optimization is the method of finding:
- a. The maximum point
b. The minimum point
c. The critical point
d. All of the above
- 157 Choose the correct answer:
- a. Optimization problems should have only one objective function
b. Constraint functions are compulsory for any optimization problem.
c. Objective function must be a continuous function
d. None of the above
- 158 The process of finding relative maximum or minimum of a function is known as:
- a. Optimization
b. Maximization
c. Minimization
d. Any of these
- 159 For a Cost Function $TC = 3 + Q^2 + 7Q + 12$, MC is –
- a. $6Q$
b. $6Q + 7$
c. $3Q + 12$
d. None of the above

160 MR is:

- a. First order derivative of TC
- b. Second order derivative of TR
- c. First order derivative of TR
- d. Second order derivative of TC

161 In the expression $D = AC - B^2$ used for describing the sufficient conditions for unconstrained optimization involving two variables (x and t), the meaning of A and C are –

- a. 2nd order partial derivative of the objective function (f) with respect to x and y respectively.
- b. 2nd order partial derivative of $\partial f/\partial x$ with respect to y
- c. Both (a) and (b)
- d. none of the above

162 A price discriminating Monopolist Firm operates in –

- a. Such a Market where it is the sole supplier.
- b. More than one Market
- c. Markets where it sells same product but in different prices
- d. All of the above

163 For a dual plant Monopolist Firm with respective production costs C_1 & C_2 in the two plants, the necessary condition of equilibrium is:

- a. $MC_1 = MC_2 \neq MR$
- b. $MC = MR$
- c. $MC_1 = MC_2 = MR$
- d. $MC_1 = MR_1$ & $MC_2 = MR_2$

164 In Exponential Smoothing Method which one of the following is true?

- a. $0 \leq \alpha \leq 1$ and high value of α is used for stable demand.
- b. $0 \leq \alpha \leq 1$ and high value of α is used for unstable demand.
- c. $\alpha \geq 1$ and high value of α is used for stable demand.
- d. $\alpha \leq 0$ and high value of α is used for unstable demand.

165 Which of the following is not a Casual Forecasting Method?

- a. Trend adjusted Exponential Smoothing
- b. Econometric models
- c. Linear Regression
- d. Multiple Regression

173 Delphi Method is used for –

- a. Judgemental forecast
- b. Time Series forecast
- c. Associative model
- d. All of the above

174 In Exponential Smoothing Method –

- a. Business Intelligence Tool
- b. Visualisation Tool
- c. Both (a) and (b)
- d. None of the above

175 Which of the following statement is correct?

- a. Functioning of ETL Tool is same as that of ELT Tool.
- b. For Data Analytics the purpose of ETL Tool is same as that of ELT Tool.
- c. Both (a) and (b)
- d. None of the above

176 Which of the following statement is incorrect?

- a. Microsoft Excel is most popular among all the available spreadsheets.
- b. Zoho Analytics is a tool used for Financial Data analysis.
- c. Visualisation Tools are the Reporting Tools.
- d. None of the above.

177 Prescriptive Analytics is very important because –

- a. It tells about the action to be taken.
- b. It tells about what is likely to happen
- c. It tells about how something has happened.
- d. It tells about what has happened.

178 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. Visualisation 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.

179 Which of the following is related to Financial Data Analytics?

- a. Value driver analytics
- b. Financial ratio analytics
- c. Predictive sales analysis
- d. All the above

- 180 Analysis of a dataset has revealed the fact that profit of a business has reduced for the financial year 2021-22. What category of data analytics it comes under?
- a. Descriptive Analytics
 - b. Predictive Analytics
 - c. Diagnostic Analytics
 - d. Prescriptive Analytics
- 181 #Script Ends – is related to which type of programming language?
- a. R Programming
 - b. SAS
 - c. Python
 - d. SPSS
- 182 Which one of the following is a Key feature of SAS language?
- a. Capability of handling data analysis related to Operations Research and Project Management.
 - b. Capability of report formation with perfect graphs.
 - c. Capability to interact with multiple host systems
 - d. All the above
- 183 Which one of the following is not a spreadsheet?
- a. Google Sheets
 - b. MS Excel
 - c. E-views
 - d. Quip

Answers

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
d	c	a	d	c	b	a	b	b	c	c	a	a	c	c
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
d	d	a	b	b	c	b	b	b	d	b	b	c	a	c
31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
a	a	b	b	a	a	c	d	d	c	d	c	a	b	a
46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
b	b	b	a	a	c	a	d	a	d	d	c	b	c	d
61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
d	c	d	d	c	a	c	d	d	a	b	b	b	a	d
76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
d	c	b	d	d	c	a	d	d	b	b	c	a	a	d
91	92	93	94	95	96	97	98	99	100	101	102	103	104	105
c	d	c	d	c	c	c	d	d	c	a	c	a	d	b

106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
b	c	a	d	a	c	d	c	a	c	c	d	d	b	a
121	122	123	124	125	126	127	128	129	130	131	132	133	134	135
d	c	d	a	c	d	b	a	b	d	b	b	a	c	c
136	137	138	139	140	141	142	143	144	145	146	147	148	149	150
b	b	b	c	d	b	a	b	c	b	b	c	c	b	d
151	152	153	154	155	156	157	158	159	160	161	162	163	164	165
d	c	d	b	d	d	a	a	b	c	a	d	c	b	a
166	167	168	169	170	171	172	173	174	175	176	177	178	179	180
d	c	d	b	b	c	d	a	c	b	d	a	c	d	a
181	182	183												
c	a	c												

NOTES

NOTES

Blank area for notes.

The graphic features a large, light gray circle in the background. Overlaid on this is a smaller, white circle with a thin black border. The text "MQP Objectives" is centered within the white circle. Two thick, dark gray curved lines, resembling arcs of a circle, frame the white circle from the top-left and bottom-right. The overall design is clean and modern, using a grayscale palette.

MQP Objectives

MQP Objectives |

MTP Jun'23 Set 1

Choose the correct option:

- (i) The cost incurred to ensure that failures do not happen is known as _____. Provide a justification for your answer.
- (a) External failure cost
 - (b) Internal failure cost
 - (c) Prevention cost
 - (d) None of the above
- (ii) Which of the following is not the quality parameter for service organizations and why?
- (a) Consistency
 - (b) Friendliness
 - (c) Durability
 - (d) Promptness
- (iii) Which one of the following is not a standard definition of 'Quality' and why?
- (a) Conformance to Specifications
 - (b) Fitness for Use
 - (c) Psychological Criteria
 - (d) Physiological Criteria
- (iv) Prevention costs are all costs incurred in the process of preventing poor quality from occurring. Which one of the following is not included in Prevention cost? Provide a justification.
- (a) Cost of creating and maintaining quality circles
 - (b) Cost related to statistical process control activities
 - (c) Costs related to System Development for prevention
 - (d) WIP testing and inspecting
- (v) The best way to define the principles that guide Lean Accounting and form the foundation for all of accounting's work and interaction with the organization are _____. Provide a justification for your answer.
- (a) Customer value:

- (b) Continuous improvement:
 - (c) Respect for people:
 - (d) All of the above.
- (vi) A company is considering to accept a one-year contract which will require four skilled employees. The four skilled employees could be recruited on a one-year contract at a cost of ₹ 40,000 per employee. The employees would be supervised by an existing manager who earns ₹ 60,000 per annum. It is expected that supervision of the contract would take 10% of the manager's time.
- Instead of recruiting new employees, the company could retrain some existing staff who currently earns ₹30,000 per year. The training would cost ₹15,000 in total but if those employees were used they would need to be replaced at a total cost of ₹100,000. The relevant labour cost of the contract is _____.
- (a) ₹ 1,15,000
 - (b) ₹1,00,000
 - (c) ₹ 85,000
 - (d) ₹ 1,10,000
- (vii) A firm has some material which originally cost ₹ 45,000. It has a scrap value of ₹12,500 but if reworked at a cost of ₹ 7,500 it could be sold for ₹17,500. What would be the incremental effect of reworking and selling the material?
- (a) A Loss of ₹ 27,500
 - (b) B Loss of ₹2,500
 - (c) C Profit of ₹ 5,000
 - (d) D Profit of ₹10,000
- (viii) 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

Answer :

Sl. No.	Answer	Justification
(i)	c	Cost to ensure that failure does not happen is for ensuring that in future failure is prevented.

(ii)	c	Service organizations produce a product that is intangible. Usually, the complete product cannot be seen or touched. Rather, it is experienced. Examples include delivery of health care, experience of staying at a vacation resort, and learning at a university. Thus durability cannot be a parameter of quality of Service organization.
(iii)	d	<p>(i) Today, there is no single universal definition of quality. Some people view quality as “performance to standards.” Others view it as “meeting the customer’s needs” or “satisfying the customer.” Some of the more common definitions of quality are;</p> <p>a. Conformance to Specifications: b. Fitness for Use c. Value for Price Paid d. Support Services e. Psychological Criteria</p> <p>Thus Physiological Criteria is certainly not one of the standard definitions of Quality.</p>
(iv)	d	The first category of quality cost consists of costs necessary for achieving high quality, which are also called quality control costs. These are either prevention cost or appraisal cost. While prevention costs are all costs incurred in the process of preventing poor quality from occurring appraisal costs are incurred in the process of uncovering defects. They include the cost of quality inspections, product testing, and performing audits to make sure that quality standards are being met. Thus it is quite evident that WIP testing and inspecting is appraisal cost and not prevention cost.
(v)	d	<p>(i) Three principles guide Lean Accounting and form the foundation for all of accounting’s work and interaction with the organization:</p> <p>Customer value: Delivering the relevant and reliable information in a timely manner to all users of the information inside the organization.</p> <p>Continuous improvement: Improving accounting processes, cross-functional business processes and the information used inside the business for analysis and decision making.</p> <p>Respect for people: Adopting a learning attitude by seeking to understand root causes of business problems and issues in a cross-functional, collaborative manner.</p> <p>Thus the best way of defining the principles of Lean Accounting are all of the above.</p>

(vi)	a	<p>(i) The relevant cost in this example is the lower of the relevant cost for each option</p> <p>Recruitment</p> <p>Four employees @ ₹ 40,000 each = ₹160,000 (Super vision is sunk as it is already incurred)</p> <p>Retrain and replace</p> <table data-bbox="415 542 777 691"> <tr> <td>Training</td> <td style="text-align: right;">₹ 15,000</td> </tr> <tr> <td>Replacement</td> <td style="text-align: right;">₹1,00,000</td> </tr> <tr> <td></td> <td style="text-align: right;">₹ 1,15,000</td> </tr> </table> <p>So answer is ₹ 1,15,000</p>	Training	₹ 15,000	Replacement	₹1,00,000		₹ 1,15,000
Training	₹ 15,000							
Replacement	₹1,00,000							
	₹ 1,15,000							
(vii)	b	<p>B (incremental approach)</p> <p>Option 1 Sell for scrap ₹ 12,500</p> <p>Option 2</p> <table data-bbox="354 904 700 1021"> <tr> <td>Extra cost</td> <td style="text-align: right;">7,500</td> </tr> <tr> <td>Extra revenue</td> <td style="text-align: right;"><u>5,000</u></td> </tr> <tr> <td>Loss</td> <td style="text-align: right;"><u>2,500</u></td> </tr> </table>	Extra cost	7,500	Extra revenue	<u>5,000</u>	Loss	<u>2,500</u>
Extra cost	7,500							
Extra revenue	<u>5,000</u>							
Loss	<u>2,500</u>							
(viii)	c	<p>Target ROI at 15% of total investment of ₹ 15 lakhs</p> <p>= ₹ 15,00,000 × 0.15</p> <p>= ₹ 2,25,000</p> <p>Expected output = 500 units</p> <p>Target Profit per unit of output = ₹ 2,25,000 ÷ 500</p> <p>= ₹ 450 per unit</p> <p>Target cost per unit = Selling Price – Profit per unit</p> <p>= ₹ 1,500 – ₹ 450</p> <p>= ₹ 1,050 per unit</p>						

MTP Jun'23 (Set 2)

Choose the correct option:

- (i) Which one of the following is not true for a Blue Ocean Strategy?
- (a) Create uncontested market space
 - (b) Make the competition irrelevant
 - (c) Exploit existing demand
 - (d) Create and capture new demand
- Briefly state a reason supporting your selection.
- (ii) One of the following is not an advantages of cost control are mainly as:
- (a) Achieving the expected return on capital employed by maximizing or optimizing profit.
 - (b) Increasing the productivity of the available resources.
 - (c) Delivering the product or service to the customers at a reasonable price.
 - (d) It is a corrective function, thus corrects an existing situation.
- Briefly justify your answer.
- (iii) The rules governing the application of the Value Analysis (VA) approach are
- (a) No cost can be removed if it compromises the quality of the product or its reliability.
 - (b) Marketability is another issue that cannot be compromised.
 - (c) Any activity that reduces the maintainability of the product increases the cost of ownership to the customer and can lower the value attached to the product.
 - (d) None of the above
- Briefly state a reason in support of your selection.
- (iv) Which of the following is not a term normally used in value analysis and why?
- (a) Exchange value
 - (b) Use value
 - (c) Esteem value
 - (d) Cost value
- (v) Which of the three principles guide Lean Accounting and form the foundation for all of accountants' work and interaction with the organization and why?
- (a) Customer value, quality circle, respect for people
 - (b) Supplier value, quality circle, respect for people
 - (c) Customer value, continuous improvement, respect for people
 - (d) Supplier value, continuous improvement, suggestion box

(vi) The standard variable production overhead cost of product B is as follows.

4 hours at ₹ 1.70 per hour = ₹ 6.80 per unit

During period 3 the production of B amounted to 400 units. The labour force worked 1,690 hours, of which 30 hours were recorded as idle time. The variable overhead cost incurred was ₹ 2,950. The variable production overhead efficiency variance for period 3 is

- (a) ₹ 102 (F)
- (b) ₹ 102 (A)
- (c) ₹ 105 (A)
- (d) ₹ 153 (A)

(vii) M Co sells product L. An extract from its budget for the four-week period ended 28 October 2022 shows that it planned to sell 500 units at a unit price of ₹ 300, which would give a C/S ratio of 30%. Annual sales were 521 units at an average selling price of ₹ 287. The actual C/S ratio averaged 26%. The sales volume contribution variance (to the nearest ₹ 1) was

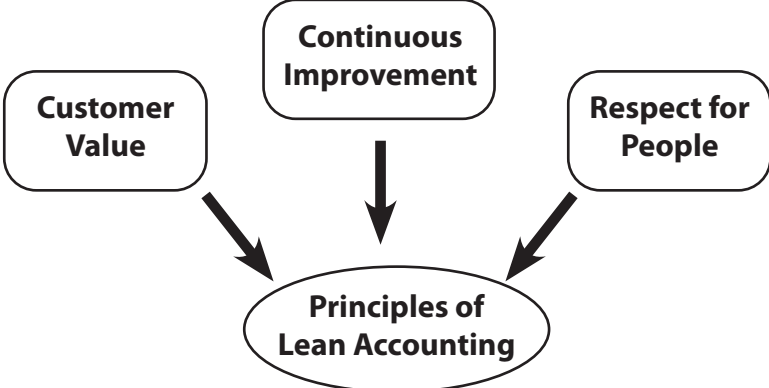
- (a) ₹ 1,890 (F)
- (b) ₹ 1,808 (F)
- (c) ₹ 1,638 (F)
- (d) ₹ 1,567 (F)

(viii) A technical writer is to set up her own business. She anticipates working a 40-hour week and taking four weeks' holiday per year. General expenses of the business are expected to be ₹ 10,000 per year, and she has set herself a target of ₹ 40,000 a year salary. Assuming that only 90% of her time worked will be chargeable to customers, her charge for each hour of writing (to the nearest cent) should be

- (a) ₹ 26.04
- (b) ₹ 30.94
- (c) ₹ 28.94
- (d) ₹ 29.84

Answer :

Sl. No.	Answer	Justification
(i)	(c)	Blue ocean strategists recognize that market boundaries exist only in managers' minds, and they do not let existing market structures limit their thinking. To them, extra demand is out there, largely untapped. Thus exploiting existing markets [C] cannot be an option.

(ii)	(d)	<p>The advantages of cost control are</p> <p>The advantages of cost control are mainly as follows:</p> <ul style="list-style-type: none"> Achieving the expected return on capital employed by maximizing or optimizing profit. Increasing the productivity of the available resources. Delivering the product or service to the customers at a reasonable price. Continued employment and job opportunity for the workers Economic use of limited resources of production Increased credit worthiness Prosperity and economic stability of the industry <p>Thus it is clear that cost control is not a corrective function. Point D is the answer</p>
(iii)	(d)	<p>The key focus of the Value Analysis (VA) approach is the management of 'functionality' to yield value for the customer. If a company seeks to reduce the costs of producing a product, then it must seek out costs that are unnecessary or items of the product that provide no functional value to the customer. In this case the first three (No cost can be removed if it compromises the quality of the product or its reliability, marketability is another issue that cannot be compromised and any activity that reduces the maintainability of the product increases the cost of ownership to the customer and can lower the value attached to the product) are issues of adding functionality to</p>
(iv)	(a)	<p>Value Analysis is a process of improving value for money in a product, service or company. It is a systematic approach to analyze, identify and reduce costs and/or improve performance. The focus of Value Analysis is to optimize value by eliminating or reducing unnecessary costs and improving effectiveness of resources. This is done by examining the functions that are performed, the processes and materials used, the costs associated and the overall performance of the system. Exchange value is the amount of money that can be exchanged for a given item or service and is not a part of Value Analysis.</p> <p>Thus A is the answer.</p>
(v)	(c)	 <pre> graph TD A[Customer Value] --> D((Principles of Lean Accounting)) B[Continuous Improvement] --> D C[Respect for People] --> D </pre>

(vi)	(b)	<p>Justification</p> <p>400 Units of Product B should take (× 4 hours) = 1600 hours</p> <p>But did take (active hours) = 1660 hours</p> <p>Efficiency variance in hours = 60 hours</p> <p>× standard rate per hour</p> <p style="text-align: right;"><u> × 1.70</u></p> <p style="text-align: right;"><u> 102 (A)</u></p>
(vii)	(a)	<p>Budgeted C/S ration = 30%</p> <p>Therefore, Budgeted Contribution = 30% × budgeted selling price</p> <p style="padding-left: 100px;">= 30% × ₹ 300 = ₹ 90</p> <p>Sales Volume should have been = 500 units</p> <p>But was = 521 units</p> <p>Sales volume variance in units = 21 units (F)</p> <p>× Standard contribution per unit = × ₹ 90</p> <p>Sales volume contribution variance = ₹ 1,890 (F)</p>
(viii)	(c)	<p>Weeks worked per year = 52 – 4 = 48</p> <p>Hours worked per year = 48 × 40 hours = 1920 hours</p> <p>Hours chargeable to clients = 1920 × 90% = 1728</p> <p>Total expenses = ₹ 10,000 + ₹ 40,000 = ₹ 50,000</p> <p>Hourly rate = $\frac{50,000}{1,728} = ₹ 28.94$</p>

MQP Dec'23 Set 1

Choose the correct option:

- (i) Which of the following is not a term normally used in value analysis?
- Resale value
 - Use value
 - Esteem value
 - Cost value
- (ii) DMIADV is a methodology associated with
- Pareto Analysis
 - PRAISE
 - Six Sigma
 - None of the above
- (iii) 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	5000	10000	15000

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

- ₹ 20
 - ₹ 15
 - ₹13.33
 - ₹ 10
- (iv) A company has a breakeven 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?
- Increase by 27.5%
 - Increase by 9.375%
 - Decrease by 9.375%
 - Increase by 37.5%
- (v) 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 6000 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
- (vi) A company has the capacity of producing 80000 units and presently sells 20000 units at ₹ 100 each. The demand is sensitive to selling price and it has been observed that with every reduction of ₹ 10 in selling price the demand is doubled. What should be the target cost if the demand is doubled at full capacity and profit margin on sale is taken at 25%?
- (a) ₹ 75
 - (b) ₹ 90
 - (c) ₹ 25
 - (d) ₹ 60
- (vii) A factory can make only one of the three products X, Y or Z in a given production period. The following information is given:

Per Unit ₹	X	Y	Z
Selling Price	1500	1800	2000
Variable Cost	700	950	1000

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
- (viii) Twin Ltd. uses JIT and back flush accounting. It does not use a raw material stock control account. During September 2021, 10000 units were produced and sold. The standard cost per unit is ₹ 150 which includes materials of ₹ 60. During September 2021, ₹ 9,90,000 of conversion costs were incurred. The debit balance in cost of goods sold account for September 2021 is:
- (a) ₹ 14,00,000
 - (b) ₹ 14,80,000

- (c) ₹ 15,90,000
(d) ₹ 16,20,000
- (ix) The following figures are extracted from the books of a company:
Budgeted O/H ₹ 10,000 (Fixed ₹ 6,000, Variable ₹ 4,000)
Budgeted Hours 2000
Actual O/H ₹ 10,400 (Fixed ₹ 6,100, Variable ₹ 4,300)
Actual Hours 2100
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)
- (x) Tableau is a –
- (a) Business Intelligence Tool
(b) Visualisation Tool
(c) Both (a) and (b)
(d) None of the above
- (xi) Which one of the following is a Key feature of SAS language?
- (a) Capability of handling data analysis related to Operations Research and Project Management.
(b) Capability of report formation with perfect graphs.
(c) Capability to interact with multiple host systems
(d) All the above
- (xii) A feasible solution of LPP –
- (a) Must satisfy all the constraints simultaneously.
(b) Need not satisfy all the constraints, only some of them.
(c) Must be a corner point of the feasible region
(d) All the above
- (xiii) A PERT activity has an optimistic time of 3 days, pessimistic time of 15 days and an expected time of 7 days. What is the most likely time of the activity?
- (a) 10 days
(b) 6 days

- (c) 5 days
 - (d) None of the above
- (xiv) MR is
- (a) First order derivative of TC
 - (b) Second order derivative of TR
 - (c) First order derivative of TR
 - (d) Second order derivative of TC
- (xv) The equations of the two lines of Regression are $4x + 3y + 7 = 0$ and $3x + 4y + 8 = 0$. The Coefficient of Correlation between x and y is –
- (a) 1.25
 - (b) 0.25
 - (c) – 0.75
 - (d) 0.92

Answer :

(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)	(x)	(xi)	(xii)	(xiii)	(xiv)	(xv)
a	c	d	b	d	d	a	c	c	c	d	a	b	c	c

MQP Jun'24 Set 1**Choose the correct option:**

- (i) Which of the following is not a secondary activity of Value Chain?
- (a) Procurement
 - (b) Human Resource Development
 - (c) Service
 - (d) Technology Development
- (ii) 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%
- (iii) The higher the actual hours worked _____ .
- (a) The lower the capacity usage ratio.
 - (b) The higher the capacity usage ratio.
 - (c) The lower the capacity utilization ratio.
 - (d) The higher the capacity utilization ratio.
- (iv) The Tech Company has fixed costs of ₹ 400,000 and variable costs are 75% of the selling price. To realize profits of ₹ 100,000 from sales of 5,00,000 units, the selling price per unit _____ .
- (a) must be ₹1.00
 - (b) must be ₹4.80
 - (c) must be ₹4.00
 - (d) cannot be determined
- (v) X Ltd. has 1000 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

- (vi) A Ltd. Plans to introduce a new product and issuing the target cost approach. Projected sales revenue is ₹ 90,00,000 (₹45 per unit) and target costs are ₹ 64,00,000. What is the desired profit per unit?
- (a) ₹ 13
 - (b) ₹ 17
 - (c) ₹ 32
 - (d) ₹ 10

- (vii) AP Products sells product A at a selling price of ₹40 per unit. AP's cost per unit based on the full capacity of 5,00,000 units is as follows:

Direct material	6
Direct Labour	3
Indirect Manufacturing Expense 60% of which is fixed	10
Total	19

A one-time only special order offering to buy 50,000 units was received from an overseas distributor. The only other costs that would be incurred on this order would be ₹ 4 per unit for shipping. AP has sufficient existing capacity to manufacture the additional units. In negotiating a price for the special order, AP should consider that the minimum selling price per unit should be _____.

- (a) ₹ 17
 - (b) ₹ 19
 - (c) ₹ 21
 - (d) ₹ 23
- (viii) Ankit Ltd., operates throughput accounting system. The details of product A per unit are as under:

Selling Price: ₹ 75 Material Cost: ₹ 30 Conversion Cost: ₹20

Time to bottleneck resources: 10 minutes

What is the throughput contribution per bottleneck resource per hour?

- (a) ₹ 270
 - (b) ₹ 150
 - (c) ₹ 120
 - (d) ₹ 90
- (ix) Efficiency Ratio is _____.
- (a) Available working days ÷ Budgeted working days × 100
 - (b) Budgeted hours ÷ Maximum hours in budgeted period × 100
 - (c) Standard hours ÷ Actual hours × 100

- (d) None of the above
- (x) Which of the following statement is incorrect?
- (a) Microsoft Excel is most popular among all the available spreadsheets.
 - (b) Zoho Analytics is a tool used for Financial Data analysis.
 - (c) Visualisation Tools are the Reporting Tools.
 - (d) None of the above.
- (xi) Prescriptive Analytics is very important because –
- (a) It tells about the action to be taken.
 - (b) It tells about what is likely to happen.
 - (c) It tells about how something has happened.
 - (d) It tells about what has happened.
- (xii) 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) ₹ 6.5
 - (d) ₹ 6.90
- (xiii) The Normal duration and Normal cost of an activity are respectively 10 days and ₹ 350. The cost slope is ₹ 75 per day. If the Crash duration is 8 days, then what is the Crash cost of the activity?
- (a) ₹ 400
 - (b) ₹ 500
 - (c) ₹ 600
 - (d) ₹ 650
- (xiv) Optimization is the method of finding _____.
- (a) The maximum point
 - (b) The minimum point
 - (c) The critical point
 - (d) ll of the above

- (xv) The actual demand for a period is 100 units. But forecast demand was 90 units. The forecast error is –
- (a) – 10
 - (b) 10
 - (c) 5
 - (d) None of the above

Answer:

(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)	(x)	(xi)	(xii)	(xiii)	(xiv)	(xv)
(c)	(c)	(d)	(c)	(b)	(a)	(a)	(a)	(b)	(d)	(a)	(d)	(b)	(d)	(b)

MQP Dec'24 Set 1**Choose the correct option:**

- (i) 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
- (ii) 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
- (iii) Activities required to design, develop, produce, market, distribute, and service a product is known as
- (a) Target activities
 - (b) Value-chain activities
 - (c) Whole life activities
 - (d) Overhead
- (iv) 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.
- (v) 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

- (vi) 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 are: -
- (a) 4,000 units
 - (b) 40,000 units
 - (c) 30,000 units
 - (d) 20,000 units

- (vii) Max Ltd. Fixes the inter divisional transfer prices for its product on the basis of cost plus a return on investment in the division. The budget for division X for 2023-2024 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 the product	₹10
Budgeted volume	4,00,000 units per year
Desired ROI	28%

Transfer price for division X is a) ₹12.70

- (a) ₹10.70
 - (b) ₹8.70
 - (c) ₹14.70
- (viii) 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
- (ix) Uniform costing is _____.
- (a) a separate method of costing
 - (b) a type of costing
 - (c) a technique of costing
 - (d) None of the above
- (x) If the time taken to produce the first unit of a product is 4000 hrs, what will be the total time taken to produce the 5th to 8th unit of the product, when a 90% learning curve applies?
- (a) 10,500 hours
 - (b) 12,968 hours

- (c) 9,560 hours
(d) 10,368 hours
- (xi) 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_1C_3
(c) R_2C_3
(d) None of these
- (xii) Simulation may be applied to:
- (a) Bricklaying
(b) Scheduling aircraft
(c) Paper manufacturing
(d) Toy manufacturing
- (xiii) 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
- (xiv) Tableau is a –
- (a) Business Intelligence Tool
(b) Visualisation Tool
(c) Both (a) and (b)
(d) None of the above
- (xv) Script Ends – is related to which type of programming language?
- (a) R Programming
(b) SAS
(c) Python
(d) SPSS

Answers:

i	ii	iii	iv	v	vi	vii	viii	ix	x	xi	xii	xiii	xiv	xv
b	c	b	b	b	b	a	a	c	d	a	b	d	c	c

NOTES



Termwise Objectives

Termwise Objectives |

Jun'23

Choose the correct option:

- (i) Which one of the following is not a support activity of value chain?
 - (a) Human Resource Management
 - (b) Technological Development
 - (c) Service
 - (d) Infrastructure
- (ii) Warranty period return of finished goods sold falls under the following quality cost:
 - (a) Prevention
 - (b) Appraisal
 - (c) Internal failure
 - (d) External failure
- (iii) Target Costing is the answer to
 - (a) Market Driven Prices
 - (b) Seller's Market
 - (c) No Profit Situation
 - (d) None of the above
- (iv) Producing more non bottleneck output
 - (a) creates more inventory and increases throughput contribution
 - (b) creates more inventory but does not increase throughput contribution
 - (c) creates less pressure for the bottleneck workstations
 - (d) allows for the maximisation of overall contribution
- (v) 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

- (vi) 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. The mark down average is 20%, what is the company's distribution margin ratio?
- (a) 16.67%
- (b) 18.50%
- (vii) At ROXIN LTD., cost of personnel department has always been charged to production department based upon no. of employees. Recently opinion gathered from the department manager indicate that the no. of new hires might be better predictor or personnel cost. Total personnel department costs are ₹ 3,00,000.

Department	C	D	F
Number of Employees	40	300	160
Number of new hires	10	32	8

If the number of new hire is considered the cost driver, what amount of cost will be allocated to Department D?

- (a) ₹ 2,00,000
- (b) ₹ 1,92,000
- (c) ₹ 1,50,000
- (d) ₹ 1,30,000
- (viii) BOSAN LTD. using added 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 8000 hours

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

- (a) 12,000 hours
- (b) 11,000 hours
- (c) 10,000 hours
- (d) None of the above

Answer :

(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)
c	d	a	b	d	a	b	c

Choose the correct option:

- (i) Down time due to defect in quality in an example of
- (a) Internal failure cost
 - (b) Prevention cost
 - (c) Appraisal cost
 - (d) External failure cost
- (ii) Which one of the 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
- (iii) A production of ZON Ltd. has the capacity to produce either 4000 units of A, or 3500 units of B or 5000 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) ₹ 38,000
 - (c) ₹ 50,000
 - (d) ₹ 40,000
- (iv) 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 lakhs from sales of 3,00,000 units, the selling price per unit will be -
- (a) ₹ 6
 - (b) ₹ 5
 - (c) ₹ 4
 - (d) ₹ 2
- (v) AMON Ltd. plans to introduce a new product ZOS and is using Target cost approach. The selling price of product ZOS is set at ₹ 120 for each unit and sales revenue for the coming year is expected to be ₹ 9,60,000. The company requires a return of 15% on the coming year on its investment of ₹ 20 lakh. What is the Target Cost per unit for the coming year?
- (a) ₹ 90.00
 - (b) ₹ 85.00

- (c) ₹ 82.50
- (d) 80.50
- (vi) 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
- (vii) RRS, a manufacturer of large windows, is experiencing a bottleneck in its plant. Setup time at one of its workstations has been identified as the culprit. A manager has proposed a plan to reduce setup time at a cost of ₹ 7,20,000. The change will result in 800 additional windows. The selling price per window is ₹ 18,000, direct labour costs are ₹ 3,000 per window and the costs of direct materials is ₹ 7,000 per window. Assume all units produced can be sold. The change will result in an increase in the throughput contribution of _____
 - (a) ₹ 64,00,000
 - (b) ₹ 88,00,000
 - (c) ₹ 56,80,000
 - (d) ₹ 1,44,00,000
- (viii) An employee of ROB Ltd. took 200 minutes to complete the first set up on a new machine. Using a 90% incremental unit time learning model indicates that the second set up on the new machine is expected to take -
 - (a) 160 minutes
 - (b) 120 minutes
 - (c) 100 minutes
 - (d) 80 minutes
- (ix) 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
- (x) 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 3440 hours.

Actual Output :

X 200 units and Y 100 units.

Actual time : 3200 hours

Actual overhead : ₹ 875. Compute Overhead Volume Variance.

- (a) ₹ 35 (A)
 (b) ₹ 35 (A)
 (c) ₹ 25 (A)
 (d) ₹ 15 (A)
- (xi) The value of the game of

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

is _____. Fill in the above.

- (a) 4
 (b) 6
 (c) 8
 (d) None of the above
- (xii) 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
- (xiii) 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) Visualisation 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

(xiv) Which of the following is/ are the Financial analytics tools?

- (a) Hyper Anna
- (b) Jedox
- (c) Net Suite
- (d) All of the above

(xv) Which one 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

Answer :

(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)	(x)	(xi)	(xii)	(xiii)	(xiv)	(xv)
a	c	d	b	c	a	b	a	a	a	a	a	c	d	c

Choose the correct option:

- (i) Which one of the following is true for Blue Ocean Strategy?
- Beat the competition
 - Exploit existing demand
 - Make the competition irrelevant
 - Make the value-cost trade off
- (ii) Which of the following Quality Cost is incurred in the process of uncovering defects?
- Appraisal Costs
 - Prevention Costs
 - Internal Failure Costs
 - External Failure Costs
- (iii) BONAS Ltd. adopting a Standard Costing System provides the following information pertaining to Direct Materials for the month of April, 2024.

Standard price per unit	₹ 7.20
Actual quantity purchased in units	3200
Standard quantity allowed for actual production in units	2900
Material Price Variance on purchase (FAY)	₹960

What will be the actual purchase price per unit?

- ₹ 8-50
 - ₹ 7-80
 - ₹ 6-90
 - ₹ 6-50
- (iv) The Break Even Sales of GXT Ltd., a manufacturing company, is ₹ 3,75,000, while its fixed cost is ₹ 1,12,500. If the Margin of Safety is 40%, what will be its Profit?
- ₹ 80,000
 - ₹ 75,000
 - ₹ 64,000
 - Insufficient information

(v) The Pay-off Matrix of a game is given below:

		Player B		
		3	-1	4
Player A	(-1	8	2
)	16	8	6

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

- (a) 6
 - (b) 8
 - (c) 16
 - (d) None of the above
- (vi) BENT Ltd., a manufacturer of components for VCD, has a capacity to produce 4 Lakh units. The market demand is sensitive to the sale price and the company could sell 1 Lakh units at a price of ₹ 5,000 each. The demand thereafter would double for each ₹ 500 per unit fall in the selling price. If the company expects a minimum margin of 25%, what would be the Target Cost per unit for the company to sell at full capacity utilization?
- (a) ₹ 4,000
 - (b) ₹ 3,200
 - (c) ₹ 3,000
 - (d) ₹ 2,900
- (vii) 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
- (viii) 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
- (ix) 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
- (x) 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
- (xi) 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 Re. 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
- (xii) Total Revenue of ZOM Ltd., from the Sales of the quantity (units) is given by the equation $R = \frac{1}{3}X^3 - X^2 + 10X + 5$ If the Marginal revenue is 25, what will be number of quantity (in units)?
- (a) 6
 - (b) 4
 - (c) 5
 - (d) None of the above

- (xiii) When a maximisation assignment problem is converted to minimisation problem, the resultant matrix is called:
- (a) Profit Matrix.
 - (b) Regret Matrix.
 - (c) Cost Matrix.
 - (d) Dummy Matrix.
- (xiv) The important step(s) 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
- (xv) 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

Answer:

(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)	(x)	(xi)	(xii)	(xiii)	(xiv)	(xv)
(c)	(a)	(c)	(b)	(a)	(c)	(a)	(a)	(d)	(a)	(b)	(c)	(b)	(d)	(c)

NOTES

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A decorative graphic consisting of a large, light gray circle in the background. Overlapping this are two smaller, thin black circles. A thick, dark gray arc curves across the top left, and another thick, dark gray arc curves across the bottom right. The text 'Postal Test Papers' is centered within the thin black circles.

Postal Test Papers

Postal Test Paper |

Multiple Choice Questions

- (i) Which of the following is not a term normally used in value analysis?
- (a) Resale value
 - (b) Use value
 - (c) Esteem value
 - (d) Cost value
- (ii) PRAISE stands for :
- (a) Appreciating someone
 - (b) Product, Recognition, Adoption, Invention, Solution & Evaporation
 - (c) Problem Identification, Ranking, Analysis, Innovation, Solution & Evaluation
 - (d) None of the above
- (iii) Which of the following is not the quality parameter for service organizations?
- (a) Consistency
 - (b) Friendliness
 - (c) Durability
 - (d) Promptness
- (iv) 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%
- (v) T Ltd. produces and sells a product. The company expects the following revenues and costs in 2022: 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
- (vi) 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
- (vii) Target costing is the answer to :
- (a) Market driven prices
 - (b) Sellers' market
 - (c) No Profit situation
 - (d) None of the above
- (viii) Glasso, a manufacturer of large windows, is experiencing a bottleneck in its plant. Setup time at one of its workstations has been identified as the culprit. A manager has proposed a plan to reduce setup time at a cost of ₹ 7,20,000. The change will result in 800 additional windows. The selling price per window is ₹ 18,000, direct labour costs are ₹ 3000 per window, and the cost of direct materials is ₹ 7,000 per window. Assume all units produced can be sold. The change will result in an increase in the throughput contribution of _____.
- (a) ₹ 64,00,000
 - (b) ₹ 88,00,000
 - (c) ₹ 56,80,000
 - (d) ₹ 1,44,00,000

Answer :

(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)
a	c	c	c	a	b	a	b

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