M.COM DEGREE (CSS) EXAMINATION (2021 ADMISSION ONWARDS)

First Semester-Faculty of Commerce

Elective-Finance

CM010104-MANAGEMENT OPTIMISATION TECHNIQUES

MULTIPLE CHOICE QUESTIONS

1. …….. represents a real life system.
   a. Simulation
   b. Equations
   c. **Model**
2. Both the objective function and constraints are expressed in…… terms.
   a. **Linear**
   b. Non Linear
   c. None of the above
3. Which of the following is a method for improving an initial solution in a transportation problem?
   a. Northwest-corner
   b. Intuitive lowest-cost
   c. **Stepping-stone**
4. Decision theory is concerned with …….
   a. methods of arriving at an optimal decision a sequential manner
   b. analysis of information that is available
   c. all of these
5. The production manager will not recommend group replacement policy in case of ……
   a. When large number of identical items is to be replaced
   b. Low cost items are to be replaced, where record keeping is a problem
   c. Repairable items
6. We add …….variable for a $\leq$ constraint
   a. **Slack variable**
   b. Surplus variable
   c. Artificial Variable

7. In the network, one activity may connect any ……. Nodes.
   a. One
   b. **Two**
   c. Any number of
8. The value of the coefficient of optimism (a) is needed while using the criterion of …….
   a. Equally Likely
   b. Maximin
   c. **Realism**
9. We add ……. variable for a ≥ constraint.
   a. **Surplus variable**
   b. Artificial Variable
   c. Slack variable
10. In replacement analysis, the maintenance cost is a function of ……
   a. Time
   b. Resale value
   c. Initial investment
11. LPP requires the existence of……..
   a. Linear Constraints
   b. Alternative Course of action
   c. Both
12. The difference between the expected profit under conditions of risk and the expected profit with perfect information is called ……
   a. **the expected value of perfect information**
   b. expected marginal loss
   c. none of the above
13. A basic solution is said to an optimal solution if it satisfies …….
   a. Objective function
   b. **All constraints**
   c. Alternative Course of Action
14. Group replacement policy is most suitable for ……..
   a. Trucks
   b. Infant machines
   c. **Street light bulbs**

15. …… lies on the crossing of the key column and key row.

a. Feasible element

b. **Pivotal element**

c. None of the above

16. The expected value of perfect information (EVPI) is ……

a. **equal to expected regret of the optimal decision under risk**

b. the utility of additional information

c. maximum expected opportunity loss

17. Artificial variables enter as ……. variables

a. Pivotal

b. Key

c. **Basic**

18. The replacement policy that is imposed on an item irrespective of its failure is ……..

a. Group replacement

b. Individual replacement

c. Successive replacement

19. '≤' constraint changes to ……. type on Dual problem.

a. ≤

b. ≥

c. =

20. Which of the following criterion is not used for decision-making under uncertainty?

a. Maximin

b. Minimax

c. **Minimize Expected Loss**

21. ……. represent the worth or unit of a resource.

a. Dual variables

b. Basic Variables

c. Key Elements

22. …… are special type of LPP.

a. Transportation problems

b. Network Problems

c. Replacement Problems

23. ..... is concerned with the determination of the most economic replacement policy.

a. Probabilistic programming

b. Linear programming

c. Replacement theory

24. In …… $\sum$ ai =$\sum$ bj is a necessary condition for getting a feasible solution.

a. Transportation Problem

b. Assignment Problem

c. LPP

25. A strategy that is best regardless of what rival players do is called ……

a. First-mover advantage

b. Nash equilibrium strategy

c. Dominant strategy

26. In Vogel's approximation method, …… is calculated for allocation.

a. Penalty

b. Opportunity Cost

c. None of the Above

27. The coefficients of decision variables in the objective function become quantities on the right-hand side of the …….... problem.

a. Primal

b. **Dual**

c. Basic

28. If the number of allocations is less than m+n-1, then it is said to be a ……transportation problem.

a. Degenerate

b. Non degenerate

c. None

29. The full form of CPM is ……

a. Critical Path Method

b. Critical Plan Management

c. Control Path Method

30. In an assignment problem, the constraints are of …….type.

a. Equality

b. ≥

c. ≤

31. A machine is replaced with an average running cost …….

a. Is not equal to the current running cost

b. Till the current period is greater than that of next period

c. Of the current period is less than that of next period

32. In ……assignment problem, the number of rows is equal to the number of columns.

a. Unbalanced

b. Balanced

c. Degenerate

33. A solution can be extracted from a model either by ……

a. Conducting experiments on it

b. Mathematical analysis

c. Both 'a' and 'b'

34. What have been constructed from OR problems as methods for solving the models that are available in many cases?

a. Scientific Models

b. Algorithms

c. Mathematical Models

35. Which technique is used in finding a solution for optimizing a given objective, such as profit maximization or cost reduction under certain constraints?

a. Waiting line theory

b. **Linear Programming**

c. Decision Theory

36. What enables us to determine the earliest and latest times for each of the events and activities and thereby helps in the identification of the critical path?

a. PERT

b. CPM

c. Both (a) and (b)

37. A feasible solution satisfies…….

a. Only constraints

b. Only non-negative restriction

c. Both (a) and (b)

38. A matrix which shows the gains and losses resulting from moves and counter moves is called …….

a. Cost matrix

b. **Pay off matrix**

c. Gain matrix

39. In graphical method of LPP, the optimal value for Z can be obtained from …….

a. Corner points of feasible region

b. Corner points of solution region

c. Both (a) and (b)

40. In game theory, the outcome or consequence of a strategy is referred to as the ……

a. Payoff

b. Penalty

c. End-game strategy

41. Operations Research Approach is ……

a. Scientific

b. **Multi -disciplinary**

c. Intuitive

42. In LPP, the condition to be satisfied is ……..

a. Constraints have to be linear

b. Objective function has to be linear

c. Both (a) and (b)

43. Operation Research approach is typically based on the use of ……..

a. Physical Model

b. **Mathematical Model**

c. Iconic Model

44. In assignment problem of maximization, the objective is to maximize ……

a. Profit

b. Optimization

c. Cost

45. An activity is critical if it's …….. **float** is zero.

a. Total

b. Free

c. Independent

46. If all aij values entering in the variable column of the simplex table are negative, then ……

a. solution is unbounded

b. solution is degenerate

c. there exists no solution

47. When all the players of the game follow their optimal strategies, then the expected pay off of the game is called ……

a. Gain of the game

b. **Value of the game**

c. Pay of the game

48. The similarity between assignment problem and transportation problem is ……

a. both are square matrices

b. both can be solved by graphical method

c. both have objective function and non-negativity constraints

49. ……specifies the objective or goal of solving the LPP.

a. Objective Function

b. Decision variables

c. Constraints

50. In a …… the amounts won by all winners together is equal to the sum of the amounts lost by all losers together.

a. On-zero sum game

b. Zero sum game

c. Rectangular game

51. Operations Research models in which values of all variables and all possible outcomes are known with certainty are called ……models.

a. Symbolic

b. Deterministic

c. Probabilistic

52. If the primal has an unbound objective function value, then the dual has ……

a. basic solution

b. basic feasible solution

c. no feasible solution

53. Solution of a Linear Programming Problem when permitted to be infinitely large is called ……

a. Unbounded

b. Bounded

c. Optimum Solution

54. Each participant of the game is called…….

a. Strategist

b. Winner

c. **Player**

55. The dual of the dual is …….

a. Dual-Primal

b. Dual

c. Primal

56. The cost of a surplus variable is …….

a. 0

b. 1

c. 2

57. An activity in a network diagram is said to be a …… if the delay in its start will further delay the project completion time.

a. Critical activity

b. Dummy activity

c. Null activity

58. A game is said to be fair if the value of the game is……

a. One

b. Two

c. Zero

59. Graphical method of linear programming is useful when the number of decision variable are …

a. 2

b. 3

c. 4

60. The full form of PERT is ……

a. Programme Evaluation and Rate Technology

b. Programme Evaluation and Robot Technology

c. Programme Evaluation and Review Technique

61. In LPP, unbounded solution means……

a. Infeasible

b. Infinite

c. Degenerate

62. One disadvantage of using North-West Corner Rule to find initial solution to the transportation problem is that ……

a. **It does not take into account cost of transportation.**

b. It leads to degenerate initial solution.

c. All of the above

63. The position in the pay off matrix where the Maximin coincides with the Minimax is known as …….

a. Saddle point

b. Pivot point

c. Key point

64. The dummy source or destination in a transportation problem is added to ……..

a. **Satisfy rim condition**

b. Prevent solution from becoming degenerate

c. Ensure that total cost does not exceed a limit

65. Activity in a network diagram is represented by……

a. Arrows

b. Squares

c. Circles

66. The initial solution of a transportation problem can be obtained by applying any known method. However, the only condition is that ……..

a. The solution be optimal.

b. **The rim conditions are satisfied.**

c. The solution not be degenerate

67. The difference between the maximum time available and the actual time needed to perform an activity is known as ……..

a. Total Float

b. **Free Float**

c. Interfering float

68. Which of the following methods is used to verify the optimality of the current solution of the transportation problem?

a. Least cost method

b. Vogel's approximation method

c. **Modified distribution method**

69. When total supply is equal to total demand in a transportation problem, the problem is said to be …….

a. Balanced

b. Unbalanced

c. Degenerate

70. The smallest quantity is chosen at the corners of the closed path with negative sign to be assigned at unused cell because ……

a. It improves the total cost

b. It does not disturb rim conditions

c. **It ensure feasible solution**

71. In PERT, what type of distribution is used for time estimation?

a. Beta distribution

b. Poisson distribution

c. Exponential distribution

72. The large negative opportunity cost value in an unused cell in a transportation table is chosen to improve the current solution because ……

a. **It represents per unit cost reduction**

b. It represents per unit cost improvement

c. It ensure no rim requirement violation

73. During an iteration while moving from one solution to the next, degeneracy may occur when …….

a. The closed path indicates a diagonal move

b. Two or more occupied cells are on the closed path but neither of them represents a corner of the path.

c. **Two or more occupied cells on the closed path with minus sign are tied for lowest circled value**

74. If an opportunity cost value is used for an unused cell to test optimality, it should be ……

a. Equal to zero

b. **Most negative number**

c. Most positive number

75. The solution to a transportation problem with 'm' rows (supplies) & 'n' columns (destination) is feasible, if number of positive allocations are ……

a. m+n

b. **m+n-1**

c. m+n+1

76. The method of finding an initial solution based upon opportunity costs is called ……

a. The Northwest corner rule

b. **Vogel's approximation**

c. Hungarian method

77. …… or …… are used to "balance" an assignment or transportation problem.

a. Destinations; sources

b. Units supplied; units demanded

c. Dummy rows; dummy columns

78. The occurrence of degeneracy while solving a transportation problem means that ……

a. Total supply equals total demand

b. **The solution so obtained is not feasible**

c. The few allocations become negative

79. In a transportation problem, we must make the number of …… and …… equal.

a. destinations; sources

b. **units supplied; units demanded**

c. columns; rows

80. The main difference between PERT and CPM is that.....

a. Critical path is determined in PERT only

b. PERT deals with events and CPM with activities

c. Costs are considered on CPM only and not in PERT

81. The transportation method assumes that ……..

a. **There are no economies of scale if large quantities are shipped from one source to one destination.**

b. The number of occupied squares in any solution must be equal to the number of rows in the table plus the number of columns in the table plus 1.

c. There is only one optimal solution for each problem.

82. The purpose of a dummy source or dummy destination in a transportation problem is to ……

a. prevent the solution from becoming degenerate.

b. **obtain a balance between total supply and total demand**.

c. make certain that the total cost does not exceed some specified figure.

83. What is PERT analysis based on?

a. Optimistic time

b. Pessimistic time

c. Most likely time

84. What is a critical path?

a. It is a path that operates from the starting node to the end node.

b. **It is the longest path**

c. It is the shortest path

85. Which of the following is an assumption of game theory?

a. The players act rationally and intelligently

b. The players attempt to maximise gains or minimises losses

c. All of the options

86. CPM was developed in which country?

a. Japan

b. China

c. USA

87. Replacement of an item will become necessary when……

a. **an old item becomes too expensive to operate or maintain**

b. when your operator desires to work on a new machine

c. when your opponent changes his machine in his unit

88. Firm that considers the potential reactions of its competitors when it makes a decision……

a. is referred to as a price leader

b. is engaged in strategic behavior

c. is engaged in collusion

89. The objective of network analysis is to ……..

a. minimize total project duration

b. minimize total project cost

c. minimize production delays, interruption and conflicts

90. If there is no non-negative replacement ratio in a solution which is sought to be improved, then the solution is ……

a. bounded

b. unbounded

c. alternative solution

91. An activity which does not consume any resource or time is known as ……

a. Null activity

b. Dummy Activity

c. Predecessor activity

92. In a network diagram, an event is denoted by the symbol ……

a. Arrow

b. Curve

c. **Circle**

93. If one or more values of the basic variable are zero, the solution is said to be ……..

a. Degenerate

b. Non degenerate

c. Unbalanced

94. …….. gives a solution nearer to the optimum solution.

a. Vogel's Approximation method

b. Lowest Cost Entry Method

c. North West Corner Method

95. OR uses models to help the management to determine it's ……

a. Policies

b. Actions

c. Both (a) and (b)

96. In graphical method, the bounded region as known as …….region.

a. Basic Solution

b. **Feasible Solution**

c. Optimal Solution

97. Hungarian Method is used to solve …….

a. A transportation problem

b. A travelling salesman problem

c. A LP problem

98. In Program Evaluation Review Technique (PERT), the maximum time that is required to perform the activity under extremely bad conditions is known as …….

a. Optimistic Time

b. Pessimistic Time

c. Most likely time

99. An alternative optimal solution to a minimization transportation problem exists whenever opportunity cost corresponding to unused routes of transportation is……

a. Positive and greater than zero

b. **Positive with at least one equal to zero**

c. Negative with at least one equal to zero

100. The time by which the activity completion time can be delayed without affecting the start of succeeding activities is known as ……

a. Total

b. **Free Float**

c. Interfering float