MULTIPLE CHOICE QUESTIONS ON MANAGEMENT SCIENCE

1. The term "Operation Research" was coined by :
   a. Mc Closky and Trefthen
   b. Arthur Clark
   c. Churchman, Ackoff and Arnoff
   d. George B Dantzig
2. Management Science came into existence in a ..... context.
   a. Business
   b. Academic
   c. Military
   d. Religious
3. By the beginning of ....., the industries in USA realised the importance of Management Science in solving business and management problems.
   a. 1930s
   b. 1940s
   c. 1950s
   d. 1960s
4. In India, Operations Research came into existence in the year .....
   a. 1940
   b. 1947
   c. 1949
   d. 1950
5. In India, first Operations Research unit was set up at .....
   a. Regional Research Laboratory, Hyderabad
   b. Indian Statistical Institute, Kolkotha
   c. Indian Institute of Science and Technology, Bengaluru
   d. Indian Institute of Science and Technology, Mohali
6. In India, first Operations Research application was made by .....
   a. Pranab K Sen
   b. Prof. Mahalonobis
   c. Samarendra Nath Roy
   d. Raghu Raj Bahadur
7. Operations Research Society of India was formed in the year .....
   a. 1950
   b. 1955
   c. 1957
   d. 1960
8. Who defined Operations Research as "the art of giving bad answers to problems which otherwise have worse answers"?
   a. H M Wagner
   b. H A Taha
   c. T L Saaty

d. Arthur Clark

9. ..... defined Operations Research as "the art of winning wars without actually fighting."
   a. H M Wagner
   b. H A Taha
   c. T L Saaty
   d. Arthur Clark
10. Operations Research is a very powerful tool for .....
   a. Operations
   b. Research
   c. Decision making
   d. None of these
11. Who defined Operations Research as scientific approach to problem solving for executive management.
   a. E L Arnoff
   b. H M Wagner
   c. Churchman
   d. None of these
12. The term "Operations Research" was coined in the year .....
   a. 1930
   b. 1940
   c. 1950
   d. 1960
13. The innovative science of Operations Research was discovered during .....
   a. Civil war
   b. World war I
   c. World war II
   d. Industrial Revolution
14. Operations Research has the characteristic that it is done by a team of .....
   a. Scientists
   b. Mathematicians
   c. Academicians
   d. Politicians
15. Operations Research emphasises on the overall approach to the system. This characteristic of Operations Research is often referred to as .....
   a. System orientation
   b. System approach
   c. Inter-disciplinary
   d. Team approach
16. Operations Research cannot give perfect ..... to the problem.
   a. Answers
   b. Solutions
   c. Both a and b
   d. Decisions

17. ..... models involve the allocation of resources to activities in such a way that some measure of effectiveness is optimised.
    a. Sequencing
    b. Allocation
    c. Queuing theory
    d. Decision theory
18. In ..... models, everything is defined and the results are certain.
    a. Probabilistic
    b. Deterministic
    c. Both a and b
    d. None of these
19. ..... models involve more risks and uncertainties.
    a. Probabilistic
    b. Deterministic
    c. Both a and b
    d. None of these
20. ..... models are obtained by enlarging or reducing the size of the items.
    a. Iconic models
    b. Analogue models
    c. Symbolic models
    d. None of these
21. The word ..... may be defined as some actions that we apply to some problems or hypothesis.
    a. Research
    b. Operations
    c. Both a and b
    d. None of these
22. .....are representations of reality.
    a. Phases
    b. Models
    c. Both a and b
    d. None of these
23. .....are called mathematical models.
    a. Iconic models
    b. Symbolic models
    c. Analogue models
    d. None of these
24. Probabilistic models are also called .....
    a. Deterministic models
    b. Dynamic models
    c. Stochastic models
    d. None of these
25. ..... models assume that the values of the variables do not change with time during a particular period.
    a. Dynamic

b. Static
c. Both a and b
d. None of these

26. .....models consider time as one of the important variable.
a. Dynamic
b. Static
c. Botha and b
d. None of these

27. .....may be defined as a method of determining an optimal program of interdependent activities in view of available resources.
a. Goal programming
b. Linear programming
c. Decision making
d. None of these

28. ..... are expressed in the form of equations
a. Objectives
b. Constraints
c. Both a and b
d. None of these

29. If there are more than one optimal solutions for the decision variables, the solution is .....
a. Infeasible
b. Unbounded
c. Alternative
d. None of these

30. Dual of the dual s a .....
a. Dual
b. Primal
c. Alternative
d. None of these

31. The quantitative approach to decision analysis is a .....
a. Logical approach
b. Rational approach
c. Scientific approach
d. All of the above

32. A model is a .....
a. An essence of reality
b. An approximation
c. An idealisation
d. All of the above

33. The dummy source/destination in a transportation problem is added to .....
a. Satisfy rim constraints
b. Prevent solution from becoming degenerate
c. Ensure total cost does not exceed a limit
d. None of the above

34. The solution to a transportation problem with 'm' rows and 'n' columns is feasible if the number of positive allocations are:
    a. m + n
    b. m x n
    c. m +n – 1
    d. m +n + 1
35. The method used for solving an assignment problem is:
    a. Reduced matrix method
    b. MODI method
    c. Hungarian method
    d. None of these
36. An assignment problem can be solved by .....
    a. Simplex method
    b. Transportation method
    c. Both a and b
    d. None of these
37. For salesman who has to visit 'n' cities, which of the following are the ways of his tour plans:
    a. n !
    b. (n+1) !
    c. (n-1) !
    d. n
38. The assignment problem is:
    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 resource
    d. All the above
39. The Hungarian method for solving an assignment problem can also be used to solve:
    a. A transportation problem
    b. A travelling salesman problem
    c. A linear programming problem
    d. Both a and b
40. All the parameters in the linear programming model are assumed to be .....
    a. Variables
    b. Constraints
    c. Functions
    d. None of these
41. Graphic method can be applied to solve a liner programming problem when there are only ..... variables
    a. A one
    b. Two
    c. Three
    d. More than three
42. If the feasible region of a linear programming problem is empty, the solution is .....
    a. Unbounded
    b. Infeasible

c. Infeasible
d. Alternative

43. The variables whose coefficient vectors are unit vectors, are called .....
    a. Unit variables
    b. Basic variables
    c. Non-basic variables
    d. None of these
44. Any column or row of a simplex table is known as .....
    a. Key column
    b. Key row
    c. Vector
    d. None of these
45. ..... is considered as the pioneer of Linear Programming Technique.
    a. churchman
    b. D W Miller
    c. James Lundy
    d. George B Dantzig
46. A minimisation problem can be connected into maximisation problem by changing the signs of coefficients in the .....
    a. Constraints
    b. Objectives
    c. Both a and b
    d. None of these
47. In an LPP, if the solution of a variable can be made infinitely large without violating the constraints, then the solution is .....
    a. Infeasible
    b. Alternative
    c. Unbounded
    d. Unique
48. In maximisation cases, ... are assigned to the artificial variables as their coefficients in the objective function.
    a. + m
    b. – m
    c. 0
    d. None of these
49. In simplex method, we add ..... in the case of constraints with sign "="
    a. Surplus variable
    b. Artificial variable
    c. Slack variable
    d. None of these
50. In simplex method, ... should be selected when there is tie between slack/surplus variable and decision variable.
    a. Slack variable
    b. Decision variable
    c. Surplus variable

d. None of these

51. When at least one of the basic variables is zero, then the basic feasible solution to a Linear Programming Problem is said to be .....
    a. Infeasible
    b. Unbounded
    c. Degenerate
    d. Non-degenerate
52. In Linear Programming Problem, degeneracy occurs in ..... stages.
    a. One
    b. Two
    c. Three
    d. Four
53. Every Linear Programming Problem is related to another Linear Programming Problem, called .....
    a. Primal
    b. Dual
    c. Non-linear Programming
    d. None of these
54. In a maximisation assignment problem, the objective is to maximise .....
    a. Profit
    b. Cost
    c. Optimisation
    d. None of these
55. Operations Research does not give perfect solution to a problem, but it helps to improve the ..... of the solution.
    a. Quality
    b. Clarity
    c. Look
    d. None of these
56. Operations Research makes a ..... attack on complex problems to arrive at optimal solution.
    a. Scientific
    b. Systematic
    c. Both a and b
    d. None of these
57. Operations Research uses models to help the management in determining its ..... scientifically.
    a. Policies
    b. Actions
    c. Both a and b
    d. None of these
58. Operations Research is a .....
    a. Science
    b. Art
    c. Both a and b

d. None of these

59. ..... deals with making sound decisions under conditions of certainty, risk and uncertainty.
    a. Game theory
    b. Network analysis
    c. Decision theory
    d. None of these
60. ..... deals with the concepts such as critical path, float, events, etc.
    a. Game theory
    b. Decision theory
    c. Queuing theory
    d. Network analysis
61. ..... is used to imitate an operation prior to actual performance.
    a. Inventory control
    b. Simulation
    c. Game theory
    d. Integrated Production Model
62. ..... is concerned with determination of the most economic replacement policy.
    a. Probabilistic programming
    b. Linear programming
    c. Search theory
    d. Replacement theory
63. The O R technique which helps in minimising total waiting and service cost is:
    a. Game theory
    b. Queuing theory
    c. Both a and b
    d. Decision theory
64. Linear Programming technique is a:
    a. Constrained optimisation technique
    b. Technique for economic allocation of resources
    c. Mathematical technique
    d. All of the above
65. A constraint in a Linear Programming Model restricts:
    a. Value of objective function
    b. Value of decision variable
    c. Use of available resources
    d. All of the above
66. Before formulating a formal L P model, it is better to:
    a. Verbally identify decision variables
    b. Express the objective function in words
    c. Express each constraint in words
    d. All of the above
67. Linear Programming Technique helps to find an optimal use of:
    a. Machine

b. Money
c. Manpower
d. All of the above

68. Which of the followings is an assumption of Linear Programming Technique?
a. Divisibility
b. Additivity
c. Proportionality
d. All of the above

69. Which of the following is true with regard to a Linear Programming Model?
a. No guarantee to get integer valued solution
b. The relationship among decision variables is liner
c. Both a and b
d. None of the these

70. The graphical method if LPP uses:
a. Linear equations
b. Constraint equations
c. Objective function
d. All of the above

71. Constraints in an LPP are treated as active, if they:
a. Do not consume all the available resources at optimality
b. Represent optimal solution
c. Both a and b
d. None of these

72. While solving a LPP graphically, the area bounded by constraints is called .....
a. Feasible region
b. Infeasible region
c. Unbounded region
d. None of these

73. While solving an LPP, infeasibility may be removed by:
a. Removing a variable
b. Removing a constraint
c. Adding a variable
d. Adding a constraint

74. .....variables are fictitious and cannot have any physical meaning.
a. Slack variables
b. Surplus variables
c. Artificial variables
d. Decision variables

75. An optimal solution is considered as the ..... among the feasible solutions.
a. Worst
b. Best
c. Ineffective
d. None of these

76. ..... method is used to solve an assignment problem.
a. American method

b. Hungarian method
c. German method
d. British method

77. The allocated cells in the transportation table are called .....
a. Occupied cells
b. Empty cells
c. Unoccupied cells
d. None of these

78. In transportation Problems, VAM stands for .....
a. Value Addition Method
b. Vogel's Approximation Method
c. Virgenean Approximation Method
d. None of these

79. Initial feasible solution to a transportation Problem can be found out by .....
a. VAM
b. MODI Method
c. Both a and b
d. None of these

80. ..... is applied to determine optimal solution.
a. NWCR
b. VAM
c. MODI Method
d. None of these

81. A Transportation Problem is said to be unbalanced when total supply is not equal to .....
a. Total cost
b. Total demand
c. Both a and b
d. None of these

82. For a minimisation Transportation Problem, the objective is to minimise:
a. Profit
b. Cost
c. Solution
d. None of these

83. ..... is an important Operations Research Technique to analyse the queuing behaviour.
a. Game theory
b. Waiting line theory
c. Decision theory
d. Simulation

84. An organisation chart is an example of .....
a. Iconic model
b. Mathematical model
c. Analogue model
d. None of these

85. ..... model is a map which indicates roads, highways, towns and inter-relationships
    a. Iconic model
    b. Analogue model
    c. Mathematical model
    d. None of these
86. Operations Research techniques help to find ..... solution.
    a. Feasible solution
    b. Infeasible solution
    c. Optimal solution
    d. None of these
87. Operations Research Techniques involves ..... approach.
    a. Team approach
    b. Critical approach
    c. Individual approach
    d. None of these
88. A LPP model doesnot contain:
    a. Decision
    b. Constraints
    c. Feasible solution
    d. Spread Sheet
89. Straight lines shown in a linear programming graph indicates .....
    a. Objective function
    b. Constraints
    c. Points
    d. All of the above
90. Non-negativity constraints are written as .....
    a. Equality
    b. Non-equality
    c. Greater than or equal to
    d. Less than or equal to
91. PERT stand for:
    a. Performance Evaluation Review Technique
    b. Programme Evaluation Review Technique
    c. Programme Evaluation Research Technique
    d. None of these
92. An activity which must be completed before commencement of one or more other activities is called.....
    a. Successor activity
    b. Predecessor activity
    c. Dummy activity
    d. None of these
93. In network diagram, events are commonly represented by .....
    a. Arrows
    b. Nodes

c. Triangles
d. None of these

94. ..... is activity oriented network diagram.
a. CPM
b. PERT
c. Histogram
d. Ogive

95. ..... is an event oriented network diagram.
a. CPM
b. PERT
c. Histogram
d. Ogive

96. An activity which does not consume either resource or time is called .....
a. Predecessor activity
b. Successor activity
c. Dummy activity
d. Terminal activity

97. ..... is a series of activities related to a project.
a. Network
b. Transportation Model
c. Assignment model
d. None of these

98. An event which represents the beginning of more than one activity is a :
a. Merge event
b. Net event
c. Burst event
d. None of these

99. Activities lying on critical path are called .....
a. Critical activities
b. Non-critical activities
c. Dummy activities
d. None of these

100. Activities that cannot be started until one or more of the other activities are completed, are called.....
a. Dummy activities
b. Initial activities
c. Successor activities
d. Predecessor activities

101. ..... is the sequence of activities which determines the total project duration.
a. Critical path
b. Network
c. Non-critical activities
d. None of these

102. PERT emphasises on .....
a. Activity

b. Time
c. Cost
d. None of these

103. ..... is the duration by which an activity can be delayed without delaying the completion of the project.
a. Earliest Start Time
b. Earliest Finish Time
c. Latest Start Time
d. Latest Finish Time

104. The EST + activity duration = ...
a. Earliest Finish Time
b. Latest Start Time
c. Latest Finish Time
d. None of these

105. ..... is the latest time by which an activity can be finished without delaying the completion of the project.
a. LST
b. LFT
c. EFT
d. EST

106. ..... is a scheme or design of something intended to do.
a. Network
b. Float
c. Project
d. Program

107. In a network diagram, activity is denoted by .....
a. Node
b. Arrow
c. Triangle
d. None of these

108. ..... is the duration by which an activity can be delayed without delaying the project.
a. Slack
b. Total float
c. Both a and b
d. None of these

109. The maximise criteria is .....
a. Optimistic
b. Pessimistic
c. Neutral
d. None of these

110. Decision making under certainty refers to ..... situation.
a. Deterministic
b. Probabilistic
c. Competitive

d. None of these

111. .....is known as father of game theory.
   a. Von Neumann
   b. A K Erlang
   c. George b Dantzig
   d. Arnoff

112. Which of the following is an assumption of game theory?
   a. The players act rationally and intelligently
   b. Each payer has a finite set of possible courses of action
   c. The players attempt to maximise gains or minimises losses
   d. All of the above

113. Each participant of the game is called.....
   a. Strategist
   b. Winner
   c. Player
   d. Loser

114. The outcome of a game is known as.....
   a. Profit
   b. Loss
   c. Pay off
   d. None of these

115. A matrix which shows the gains and losses resulting from moves and counter moves is called.....
   a. Cost matrix
   b. Pay off matrix
   c. Both a and b
   d. None of these

116. 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. Loss of the game
   c. Value of the game
   d. None of these

117. The position in the pay off matrix where the maximin coincides with the minimax.
   a. Saddle point
   b. Break even point
   c. Pivot point
   d. None of the above

118. A game is said to be fair if the value of the game is.....
   a. One
   b. Two
   c. Three
   d. Zero

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

a. Non-zero sum game
b. Zero sum game
c. Rectangular game
d. None of these

120. Which of the following method is used to solve mixed strategy problems:
a. Probability method
b. Graphic method
c. Linear Programming method
d. All of the above

121. A queue is formed when the demand for a service:
a. Exceeds the capacity to provide that service
b. Is less than the capacity to provide that service
c. a or b
d. None of these

122. Queuing theory is also termed as .....
a. Game theory
b. Replacement theory
c. Waiting line theory
d. None of these

123. In queuing theory, ... refers to those waiting in a queue or receiving service.
a. Service provider
b. Customer
c. Both a and b
d. None of these

124. In queuing theory, ... is a person by whom service is rendered.
a. Customer
b. Server
c. a or b
d. none of these

125. In waiting line theory, number of customers waiting in the queue is referred to as .....
a. Traffic intensity
b. Queuing system
c. Service pattern
d. Queue length

126. Number of customers in the queue per unit of time is called .....
a. Queuing system
b. Length of queue
c. Average length of queue
d. None of these

127. The ration between mean arrival rate and mean service rate is called .....
a. Idle period
b. Average length of queue
c. Traffic intensity
d. None of these

128. Commonly assumed probability distribution of arrival pattern is .....

a. Poisson distribution
b. Binomial distribution
c. Normal distribution
d. None of these

129. Commonly assumed probability distribution of service pattern are .....
a. Poisson distribution
b. Exponential distribution
c. Erlang distribution
d. b and c

130. a customer's behaviour of leaving the queue when he does not like to wait in the queue due to lack of time or space is called .....
a. Jockying
b. Reneging
c. Collusion
d. Balking

131. A customer's behaviour of leaving the queue due to impatience is called .....
a. Jockying
b. Reneging
c. Collusion
d. Balking

132. A customer's behaviour of jumping from one queue to another is called .....
a. Jockying
b. Reneging
c. Collusion
d. Balking

133. In queuing theory, ... stands for mean arrival rate of customers.
a. μ
b. λ
c. t
d. none of these

134. In queuing theory, ... stands for mean service rate.
a. μ
b. λ
c. t
d. none of these

135. ..... is a method of analysing the current movement of the some variable in an effort to predict the future movement of the same variable.
a. Goal programming
b. Queuing theory
c. Markov Analysis
d. Replacement theory

136. In queuing theory, FCFS stand for .....
a. First Cum First Served
b. First Customer Fist Served

c. Fast Channel First Served

137. Initial feasible solution to a transportation problem arrived through which of the following method is very near to the optimal solution:
   a. NWCM
   b. LCM
   c. VAM
   d. None of these

138. In Transportation Problem, NWCM stands for .....
   a. North West Cost Method
   b. Net Worth Corner Method
   c. North West Corner Method
   d. None of these

139. In Transportation Problem, LCM stands for .....
   a. Lowest Common Multiplier
   b. Least Cost Method
   c. Lowest Cell Method
   d. None of these

140. Matrix Minima Method to find initial feasible solution to a TP is also called .....
   a. NWCM
   b. LCM
   c. VAM
   d. None of these

141. MODI Method to test the optimality of a feasible solution to TP is also called.....
   a. Stepping Stone Method
   b. u. v. Method
   c. both a and b
   d. none of these

142. .....refers to the manner in which the customers behave while being in the queue.
   a. Service pattern
   b. Service pattern
   c. Queue discipline
   d. None of these

143. Excess of service facilities over and above the number of customers results:
   a. Idleness of service capacity
   b. Queues
   c. Both a and b
   d. None of these

144. .....was the first person who developed a viable queueing theory
   a. Von Neumann
   b. Morgenstern
   c. H M Wagner
   d. Simeon Dennis Poisson

145. Traffic intensity in Queuing Theory is also called.....
   a. Service factor

b. Arrival factor
c. Utilisation factor
d. None of these

146. Traffic intensity is computed by using the formula:
a. λ/μ
b. μ/λ
c. 1- λ/μ
d. 1- μ/λ

147. Game theory became popular when the book "Theory of Games and Economic Behaviour" was published in 1944 by .....
a. Von Neumann
b. Mc Closky
c. Von-Neumann and Mc Closky
d. Von-neumann and Morgenstern

148. Which of the following is a characteristic of a dual problem:
a. Dual of a dual is primal
b. If dual has a finite optimal solution, then the primal also has finite optimal solution
c. If dual has no feasible solution, then the primal also has no feasible solution
d. All of the above

149. Shadow price is also called .....
a. Dual price
b. Unit price
c. Total cost
d. None of these

150. .....is that element of the simplex table which lis both in the key row and key column.
a. Key element
b. Pivot element
c. Both a and b
d. None of these

151. Transportation model was first introduced by ..... in the year 1941.
a. T C Koopman
b. George B Dantzig
c. Von-neumann
d. F L Hitchcock

152. VAM is also called.....
a. Matrix Minima Method
b. Penalty Method
c. MODI Method
d. None of these

153. Which of the following methods is used to solve an assignment problem:
a. Enumeration Method
b. Hungarian Method
c. Simplex Method
d. All of the above

154. Hungarian method was developed by .....
    a. T C Koopman
    b. F L Hitchcock
    c. D Konig
    d. George B Dantzig

155. ..... is the popular method for solving an assignment problem.
    a. Hungarian Method
    b. Enumeration Method
    c. Simplex Method
    d. None of the above

156. The outlet where the services are being provided to the customers is called.....
    a. Waiting line
    b. Service facility
    c. Idle facility
    d. Traffic intensity

157. The variables which can be manipulated by the decision maker are called.....
    a. Controllable variables
    b. Uncontrollable variables
    c. Both a and b
    d. None of these

158. The variables which cannot be manipulated by the decision maker are called.....
    a. Controllable variables
    b. Uncontrollable variables
    c. Both a and b
    d. None of these

159. Controllable variables are also called.....
    a. Slack variables
    b. Surplus variables
    c. Artificial variable
    d. Decision variables

160. If a simplex table shows the values 2, -3, 0 against "θ", which should be taken as the replacement ratio.
    a. 2
    b. -3
    c. 0
    d. None of these

***

ANSWERS:

1 : a	21 : b	41 : b	61 : b	81 : b	101 : a	121 : a	141 : b
2 : c	22 : b	42 : b	62 : d	82 : b	102 : b	122 : c	142 : c
3 : c	23 : b	43 : b	63 : b	83 : b	103 : c	123 : b	143 : a
4 : c	24 : c	44 : c	64 : d	84 : c	104 : a	124 : b	144 : d
5 : a	25 : b	45 : d	65 : d	85 : b	105 : b	125 : d	145 : c
6 : b	26 : a	46 : b	66 : d	86 : c	106 : a	126 : c	146 : a
7 : c	27 : b	47 : c	67 : d	87 : c	107 : b	127 : c	147 : d
8 : c	28 : b	48 : a	68 : d	88 : d	108 : b	128 : a	148 : d
9 : d	29 : c	49 : b	69 : d	89 : b	109 : b	129 : d	149 : a
10 : c	30 : b	50 : b	70 : d	90 : c	110 : a	130 : d	150 : c
11 : b	31 : c	51 : c	71 : b	91 : b	111 : a	131 : b	151 : d
12 : b	32 : d	52 : b	72 : a	92 : b	112 : d	132 : a	152 : b
13 : c	33 : a	53 : b	73 : b	93 : b	113 : c	133 : b	153 : d
14 : a	34 : c	54 : a	74 : c	94 : a	114 : c	134 : a	154 : c
15 : d	35 : c	55 : a	75 : b	95 : b	115 : b	135 : c	155 : a
16 : c	36 : c	56 : c	76 : b	96 : c	116 : c	136 : a	156 : b
17 : b	37 : c	57 : c	77 : a	97 : a	117 : a	137 : c	157 : a
18 : b	38 : d	58 : c	78 : b	98 : c	118 : d	138 : c	158 : b
19 : a	39 : b	59 : c	79 : a	99 : a	119 : b	139 : b	159 : d
20 : a	40 : b	60 : d	80 : c	100 : c	120 : d	140 : c	160 : c