Multiple Choice Questions
BCA
IV Sem

OPERATIONS RESEARCH

1. Operations Research (OR) , which is a very powerful tool for ----------
    a) Research
    b) Decision – Making
    c) Operations
    d) None of the above
2. Who coined the term Operations Research?
    a) J.F. McCloskey
    b) F.N. Trefethen
    c) P.F. Adams
    d) Both A and B
3. The term Operations Research was coined in the year ----------
    a) 1950
    b) 1940
    c) 1978
    d) 1960
4. This innovative science of Operations Research was discovered during ----------
    a) Civil War
    b) World War I
    c) World War II
    d) Industrial Revolution
5. Operations Research was known as an ability to win a war without really going in to a ----------
    a) Battle field
    b) Fighting
    c) War
    d) Both A and B
6. Who defined Operations Research as scientific method of providing executive departments with a quantitative basis for decisions regarding the operations under their control?
    a) Morse and Kimball (1946)
    b) P.M.S. Blackett (1948)
    c) E.L. Arnoff and M.J. Netzorg
    d) None of the above
7. Who defined Operations Research as scientific approach to problem solving for executive management ?
    a) E.L. Arnoff

b) P.M.S. Blackett
c) H.M. Wagner
d) None of the above

8. Who defined Operations Research as an aid for the executive in marketing his decisions by providing him with the quantitative information based on the scientific method of analysis ?
    a) C. Kitte
    b) H.M. Wagner
    c) E.L. Arnoff
    d) None of the above
9. Operations Research has the characteristics the it is done by a team of ----------
    a) Scientists
    b) Mathematicians
    c) Academics
    d) All of the above
10. There is a great scope for ---------- working as a team to solve problems of defence by using the Operations Research approach
    a) Economists
    b) Administrators
    c) Statisticians and Technicians
    d) All of the above
11. Operations Research emphasizes on the overall approach to the system. This charecteristics of Operations Research is often referred as
    a) System Orientation
    b) System Approach
    c) Interdisciplinary Team Approach
12. Operations Research cannot give perfect ---------- to problems
    a) Answers
    b) Solutions
    c) Both A and B
    d) Decisions
13. Operations Research simply helps in improving the ---------- of the solution but does not result in a perfect solution.
    a) Quality
    b) Clarity
    c) Look
    d) None of the above
14. Operations Research involves ---------- attack of complex problems to arrive at the optimum solution
    a) Scientific
    b) Systematic
    c) Both A and B
    d) Statistical

15. Operations Research uses models built by quantitative measurement of the variables concerning a given problem and also derives a solution from the model using ---------- of the diversified solution techniques
    a) Two or more
    b) One or more
    c) Three or more
    d) Only One
16. A solution may be extracted from a model either by
    a) Conducting experiments on it
    b) Mathematical analysis
    c) Both A and B
    d) Diversified Techniques
17. Operations Research uses models to help the management to determine its ---------- scientifically
    a) Policies
    b) Actions
    c) Both A and B
    d) None of the above
18. Operations Research is a ----------
    a) Science
    b) Art
    c) Mathematics
    d) Both A and B
19. What have been constructed for Operations Research problems and methods for solving the models that are available in many cases?
    a) Scientific Models
    b) Algorithms
    c) Mathematical Models
    d) None of the above
20. Which technique is used in finding a solution for optimizing a given objective, such as profit maximization or cost minimization under certain constraints?
    a) Quailing Theory
    b) Waiting Line
    c) Both A and B
    d) Linear Programming
21. What aims at optimizing inventory levels?
    a) Inventory Control
    b) Inventory Capacity
    c) Inventory Planning
    d) None of the above

22. What can be defined as a useful idle resource which has economic value eg; raw materials, spare parts, finished items, etc?
    a) Inventory Control
    b) Inventory
    c) Inventory Planning
    d) None of the above
23. Which theory concerns making sound decisions under conditions of certainity, risk and uncertainty
    a) Game Theory
    b) Network Analysis
    c) Decision Theory
    d) None of the above
24. Key concept under which technique are network of events and activities , resource allocation, time and cost considerations, network paths and critical paths ?
    a) Game Theory
    b) Network Analysis
    c) Decision Theory
    d) None of the above
25. Which technique is used to imitate an operation prior to actual performance ?
    a) Simulation
    b) Integrated Production Models
    c) Inventory Control
    d) Game Theory
26. What is concerned with the prediction of replacement costs and determination of the most economic replacement policy ?
    a) Search Theory
    b) Theory of replacement
    c) Probabilistic Programming
    d) None of the above
27. What refers to Linear Programming that includes an evaluation of relative risks and uncertainties in various alternatives of choice for management decisions ?
    a) Probabilistic Programming
    b) Stochastic Programming
    c) Both A and B
    d) Linear Programming
28. What enables us to determine the earliest and the latest times for each of the events and activities and thereby helps in the identification of the critical path?
    a) Programme Evaluation
    b) Review Technique (PERT)
    c) Both A and B
    d) Deployment of resources

29. Linear Programming technique is used to allocate scarce resources in an optimum manner in problems of ---------- ?
    a) Schedule
    b) Product Mix
    c) Both A and B
    d) Servicing Cost
30. Operations Research techniques helps the directing authority in optimum allocation of various limited resources, such as ----------
    a) Men and Machine
    b) Money
    c) Material and Time
    d) All of the above
31. Operations Research study generally involves how many phases ?
    a) Three
    b) Four
    c) Five
    d) Two
32. ---------- models involves the allocation of resources to activities in such a manner that some measure of effectiveness is optimized.
    a) Sequencing
    b) Allocation Models
    c) Queuing Theory
    d) Decision Theory
33. Allocation problems can be solved by
    a) Linear Programming Technique
    b) Non – Linear Programming Technique
    c) Both A and B
    d) None of the above
34. In ---------- models, everything is defined and the results are certain,
    a) Deterministic Models
    b) Probabilistic Models
    c) Both A and B
    d) None of the above
35. In ---------- models there is risk and uncertainty
    a) Deterministic Models
    b) Probabilistic Models
    c) Both A and B
    d) None of the above

36. ---------- models are obtained by enlarging or reducing the size of the item
    a) Iconic Models
    b) Analogue Models
    c) Symbolic Models
    d) None of the above
37. Operations Research attempts to find the best and ---------- solution to a problem
    a) Optimum
    b) Perfect
    c) Degenerate
    d) None of the above
38. The word ---------- may be defined as some action that we apply to some problems or hypothesis.
    a) Research
    b) Operation
    c) Both A and B
    d) None of the above
39. The operations Research technique, specially used to determine the optimum strategy is
    a) Decision Theory
    b) Simulation
    c) Game Theory
    d) None of the above
40. The operations Research technique which helps in minimizing total waiting and service costs is
    a) Queuing Theory
    b) Decision Theory
    c) Both A and B
    d) None of the above
41. ---------- are the representation of reality
    a) Models
    b) Phases
    c) Both A and B
    d) None of the above
42. ---------- are called mathematical models
    a) Iconic Models
    b) Analogue Models
    c) Symbolic Models
    d) None of the above
43. It is not easy to make any modification or improvement in
    a) Iconic Models
    b) Analogue Models
    c) Symbolic Models

d) None of the above

44. In ---------- models one set of properties is used to represent another set of properties
    a) Iconic Models
    b) Analogue Models
    c) Symbolic Models
    d) None of the above
45. Allocation Models are ----------
    a) Iconic models
    b) Analogue Models
    c) Symbolic Models
    d) None of the above
46. Probabilistic models are also known as
    a) Deterministic Models
    b) Stochastic Models
    c) Dynamic Models
    d) Static Models
47. ---------- models assumes that the values of the variables do not change with time during a particular period
    a) Static Models
    b) Dynamic Models
    c) Both A and B
    d) None of the above
48. A ---------- models considers time as one of the important variable
    a) Static Models
    b) Dynamic Models
    c) Both A and B
    d) None of the above
49. Replacement Model is a ---------- model
    a) Static Models
    b) Dynamic Models
    c) Both A and B
    d) None of the above
50. ---------- may be defined as a method of determining an optimum programme inter dependent activities in view of available resources
    a) Goal Programming
    b) Linear Programming
    c) Decision Making
    d) None of the above

51. ---------- are expressed is n the form of inequities or equations
    a) Constraints
    b) Objective Functions
    c) Both A and B
    d) None of the above
52. The objective functions and constraints are linear relationship between ----------
    a) Variables
    b) Constraints
    c) Functions
    d) All of the above
53. Assignment problem helps to find a maximum weight identical in nature in a weighted ----------
    a) Tripartite graph
    b) Bipartite graph
    c) Partite graph
    d) None of the above
54. All the parameters in the linear programming model are assumed to be ----------
    a) Variables
    b) Constraints
    c) Functions
    d) None of the above
55. The solution need not be in ---------- numbers
    a) Prime Number
    b) Whole Number
    c) Complex Number
    d) None of the above
56. Graphic method can be applied to solve a LPP when there are only ---------- variable
    a) One
    b) More than One
    c) Two
    d) Three
57. If the feasible region of a LPP is empty, the solution is ----------
    a) Infeasible
    b) Unbounded
    c) Alternative
    d) None of the above
58. The variables whose coefficient vectors are unit vectors are called ----------
    a) Unit Variables

b) Basic Variables
c) Non basic Variables
d) None of the above

59. Any column or raw of a simplex table is called a ----------
    a) Vector
    b) Key column
    c) Key Raw
    d) None of the above
60. If there are 'm' original variables and 'n' introduced variables, then there will be ---------- columns in the simplex table
    a) M + n
    b) M – n
    c) 3 +m + n
    d) M + n – 1
61. A minimization problem can be converted into a maximization problem by changing the sign of coefficients in the ----------
    a) Constraints
    b) Objective Functions
    c) Both A and B
    d) None of the above
62. If in a LPP , the solution of a variable can be made infinity large without violating the constraints, the solution is ----------
    a) Infeasible
    b) Unbounded
    c) Alternative
    d) None of the above
63. In maximization cases , ---------- are assigned to the artificial variables as their coefficients in the objective function
    a) +m
    b) –m
    c) 0
    d) None of the above
64. In simplex method , we add ---------- variables in the case of '='
    a) Slack Variable
    b) Surplus Variable
    c) Artificial Variable
    d) None of the above
65. In simplex method, if there is tie between a decision variable and a slack (or surplus) variable, ---------- should be selected
    a) Slack variable

b) Surplus variable
c) Decision variable
d) None of the above

66. A BFS of a LPP is said to be ---------- if at least one of the basic variable is zero
    a) Degenerate
    b) Non-degenerate
    c) Infeasible
    d) Unbounded
67. In LPP, degeneracy occurs in ---------- stages
    a) One
    b) Two
    c) Three
    d) Four
68. Every LPP is associated with another LPP is called ----------
    a) Primal
    b) Dual
    c) Non-linear programming
    d) None of the above
69. As for maximization in assignment problem, the objective is to maximize the ----------
    a) Profit
    b) optimization
    c) cost
    d) None of the above
70. If there are more than one optimum solution for the decision variable the solution is ----------
    a) Infeasible
    b) Unbounded
    c) Alternative
    d) None of the above
71. Dual of the dual is ----------
    a) Primal
    b) Dual
    c) Alternative
    d) None of the above
72. Operations Research approach is
    a) Multi-disciplinary
    b) Scientific
    c) Initiative
    d) All of the above
73. For analyzing the problem , decision – makers should normally study

a) Its qualitative aspects
b) Its quantitative aspects
c) Both A and B
d) Neither A and B

74. Decision variables are
    a) Controllable
    b) Uncontrollable
    c) Parameters
    d) None of the above
75. The issue of decision models
    a) Is possible when the variable's value is
    b) Reduces the scope of judgment and intuition known with certainty in decision making
    c) Requires the knowledge of computer software use
    d) None of the above
76. ---------- is one of the fundamental combinatorial optimization problems.
    a) Assignment problem
    b) Transportation problem
    c) Optimization Problem
    d) None of the above
77. An optimization model
    a) Mathematically provides the best decision
    b) Provides decision within its limited context
    c) Helps in evaluating various alternatives constantly
    d) All of the above
78. The quantitative approach to decision analysis is a
    a) Logical approach
    b) Rational approach
    c) Scientific approach
    d) All of the above
79. Operations Research approach is typically based on the use of
    a) Physical model
    b) Mathematical model
    c) Iconic model
    d) Descriptive model
80. In a manufacturing process, who takes the decisions as to what quantities and which process or processes are to be used so that the cost is minimum and profit is maximum?
    a) Supervisor
    b) Manufacturer
    c) Producer
    d) Production manager
81. Linear programming has been successfully applied in ----------
    a) Agricultural

b) Industrial applications
c) Both A and B
d) Manufacturing

82. The term linearity implies ---------- among the relevant variables:
    a) Straight line
    b) Proportional relationships
    c) Linear lines
    d) Both A and B
83. Process refers to the combination of ---------- inputs to produce a particular output.
    a) one or more
    b) two or more
    c) one
    d) None of the above
84. What has always been very important in the business and industrial world, particularly with regard to problems concerning productions of commodities?
    a) Linear Programming
    b) Production
    c) Decision – making
    d) None of the above
85. What are the main questions before a production manager?
    a) Which commodity/ commodities to produce
    b) In what quantities
    c) By which process or processes
    d) All of the above
86. Who pointed out that the businessman always studies his production function and his input prices and substitutes one input for another till his costs become the minimum possible?
    a) Alan Marshall
    b) Alfred Marsh
    c) Alfred Marshall
    d) None of the above
87. Who invented a method of formal calculations often termed as ?
    a) A.V. Kantorovich
    b) L.V. Kantorovich
    c) T.S. Kantorovich
    d) Alfred Marshall
88. Who developed Linear Programming for the purpose of scheduling the complicated procurement activities of the United States Air Force?
    a) George B. Dantzig
    b) James B. Dantzig
    c) George B. Dante
    d) George V. Dantzig

89. This method of formal calculations often termed as Linear Programming was developed later in which year?
    a) 1947
    b) 1988
    c) 1957
    d) 1944
90. What is being considered as one of the most versatile management tools?
    a) Electronic Computers
    b) Linear Programming
    c) Computer Programming
    d) None of the above
91. LP is a major innovation since ---------- in the field of business decision – making, particularly under conditions of certainty.
    a) Industrial Revolution
    b) World War I
    c) World War II
    d) French Revolution
92. The world 'Linear' means that the relationships are represented by ----------
    a) Diagonal lines
    b) Curved lines
    c) Straight lines
    d) Slanting lines
93. The world ' programming' means taking decisions ----------
    a) Systematically
    b) Rapidly
    c) Slowly
    d) Instantly
94. Who originally called it ' Programming of interdependent activities in a linear structure' but later shortened it to ' Linear Programming' ?
    a) Dantzig
    b) Kantorovich
    c) Marshall
    d) None of the above
95. LP can be applied in farm management problems is relates to the allocation of resources such as ---------- , in such a way that is maximizes net revenue
    a) Acreage
    b) Labour
    c) Water supply or working capital
    d) All of the above

96. LP model is based on the assumptions of ----------
    a) Proportionality
    b) Additivity
    c) Certainty
    d) All of the above
97. ---------- assumption means the prior knowledge of all the coefficients in the objective function, the coefficients of the constraints and the resource values.
    a) Proportionality
    b) Certainty
    c) Finite choices
    d) Continuity
98. Simple linear programming problem with ---------- variables can be easily solved by the graphical method.
    a) One decision
    b) Four decisions
    c) Three decisions
    d) Two decisions
99. Any solution to a LPP which satisfies the non- negativity restrictions of the LPP is called its --------
    a) Unbounded solution
    b) Optimal solution
    c) Feasible solution
    d) Both A and B
100. Any feasible solution which optimizes (minimizes or maximizes) the objective function of the LPP is called its ----------
    a) Optimal solution
    b) Non-basic variables
    c) Solution
    d) Basic feasible solution
101. A non – degenerate basic feasible solution is the basic feasible solution which has exactly *m positive* Xi (i=1,2,…,*m*), i.e., none of the basic variable is ----------
    a) Infinity
    b) One
    c) Zero
    d) X
102. What is also defined as the non-negative variables which are added in the LHS of the constraint to convert the inequality '<' into an equation?
    a) Slack variables
    b) Simplex algorithm
    c) Key element
    d) None of the above

103. Which method is an iterative procedure for solving LPP in a finite number of steps ?
    a) Simplex algorithm
    b) Slack variable
    c) M method
    d) Simplex method
104. In simplex algorithm , which method is used to deal with the situation where an infeasible starting basic solution is given?
    a) Slack variable
    b) Simplex method
    c) M- method
    d) None of the above
105. How many methods are there to solve LPP?
    a) Three
    b) Two
    c) Four
    d) None of the above
106. ---------- is another method to solve a given LPP involving some artificial variable ?
    a) Big M method
    b) Method of penalties
    c) Two-phase simplex method
    d) None of the above
107. Which variables are fictitious and cannot have any physical meaning ?
    a) Optimal variable
    b) Decision variable
    c) Artificial variable
    d) None of the above
108. An objective function which states the determinants of the quantity to be either maximized or minimized is called ----------
    a) Feasible function
    b) Optimal function
    c) Criterion function
    d) None of the above
109. An assumption that implies that finite numbers of choices are available to a decision – maker and the decision variables do not assume negative values is known as ----------
    a) Certainty
    b) Continuity
    c) Finite choices
    d) None of the above

110. A set of values X1, X2,…X*n* which satisfies the constraints of the LPP is called ----------
    a) Solution
    b) Variable
    c) Linearity
    d) None of the above
111. A basic solution which also satisfies the condition in which all basic variables are non -negative is called ----------
    a) Basic feasible solution
    b) Feasible solution
    c) Optimal solution
    d) None of the above
112. All the constraints are expressed as equations and the right hand side of each constraint and all variables are non-negative is called ----------
    a) Canonical variable
    b) Canonical form
    c) Canonical solution
    d) Both A and B
113. An objective function is maximized when it is a ---------- function
    a) Passive
    b) Profit
    c) Cost
    d) None of the above
114. LPP is exactly used in solving what kind of resource allocation problems?
    a) Production planning and scheduling
    b) Transportation
    c) Sales and advertising
    d) All of the above
115. Currently, LPP is used in solving a wide range of practical ----------
    a) Business problems
    b) Agricultural problems
    c) Manufacturing problems
    d) None of the above
116. ---------- refers to the combination of one or more inputs to produce a particular output.
    a) Solution
    b) variable
    c) Process
    d) None of the above
117. An optimum solution is considered the ---------- among feasible solutions.
    a) Worst
    b) Best

c) Ineffective
d) None of the above

118. Please state which statement is true.
(i) All linear programming problems may not have unique solutions
(ii) The artificial variable technique is not a device that does not get the starting basic feasible solution.
a) Both (i) and(ii)
b) (ii) only
c) (i) only
d) Both are incorrect

119. Please state which statement is incorrect.
(i) Linear programming was first formulated by an English economist L.V. Kantorovich
(ii) LP is generally used in solving maximization or minimization problems subject to certain assumptions.
a) (ii) only
b) (i) only
c) Both (i) and(ii)
d) Both are correct

120. ---------- which is a subclass of a linear programming problem (LPP)
a) Programming problem
b) Transportation problem
c) Computer problem
d) Both are incorrect

121. The solution of any transportation problem is obtained in how many stages?
a) Five
b) Four
c) Three
d) Two

122. An optimal solution is the ---------- stage of a solution obtained by improving the initial solution
a) Third
b) First
c) Second
d) Final

123. MODI method is used to obtain ----------
a) Optimal solutions
b) Optimality test
c) Both A and B
d) Optimization

124. For solving an assignment problem, which method is used?
a) Hungarian
b) American
c) German

d) Both are incorrect

125. To make an unbalanced assignment problem balanced, what are added with all entries as zeroes?
    a) Dummy rows
    b) Dummy columns
    c) Both A and B
    d) Dummy entries
126. Any set of non-negative allocations (Xij>0) which satisfies the raw and column sum (rim requirement)is called a ----------
    a) Linear programming
    b) Basic feasible solution
    c) Feasible solution
    d) None of the above
127. A feasible solution is called a basic feasible solution if the number of non-negative allocations is equal to ----------
    a) *m*-*n*+1
    b) *m*-*n*-1
    c) *m*+*n*-1
    d) None of the above
128. Any feasible solution to a transportation problem containing *m* origins and *n* destinations is said to be ----------
    a) Independent
    b) Degenerate
    c) Non-degenerate
    d) Both A and B
129. A path formed by allowing horizontal and vertical lines and the entire corner cells of which are occupied is called a ----------
    a) Occupied path
    b) Open path
    c) Closed path
    d) None of the above
130. Transportation algorithm can be used for minimizing the transportation cost of ---------- from *O* origins and *D* destinations
    a) Goods
    b) Products
    c) Items
    d) None of the above
131. If demand is lesser than supply then dummy demand node is added to make it a ----------
    a) Simple problem

b) Balanced problem
c) Transportation problem
d) None of the above

132. Basic cells indicate positive values and non- basic cells have ---------- value for flow
a) Negative
b) Positive
c) One
d) zero

133. According to transportation problem number of basic cells will be exactly ----------
a) *m+n*-0
b) *n+m*-1
c) *m+n*-1
d) None of the above

134. Before starting to solve the problem, it should be balanced. If not then make it balanced by ---------- column incase demand is less than supply or by adding ---------- raw incase supply is less than the demand
a) O,D
b) m,n
c) Horizontal, Vertical
d) Unshipped supply, Shortage

135. In which phase is optimization done and how does that phase also checks for optimality conditions?
a) Phase II
b) Phase I
c) Phase II
d) None of the above

136. Optimality conditions are expressed as ---------- incase all non-basic cells?
a) Negligent costs
b) Advanced costs
c) Reduced costs
d) None of the above

137. A --------- has rows / column having non- basic cells for holding compensating (+)or (-) sign.
a) Cycle
b) Dead – end
c) Back track
d) None of the above

138. After determining every basic cell with in this cycle, adjustment is obtained as minimum value in basic cells . this is known as ----------
a) Adjustment amount
b) aa
c) Both A and B
d) Alternatives

139. Optimal solution is a feasible solution (not necessarily basic) which minimizes the ----------
    a) Time taken
    b) Partial cost
    c) Total cost
    d) None of the above

140. State which of the two statements is correct
    (i) the cells in the transportation table can be classified in to occupied cells and unoccupied cells
    (ii) optimal solution is a feasible solution (not necessarily basic) which maximizes the total cost
    a) both (i) and (ii) are correct
    b) Two only
    c) One only
    d) Both (i) and (ii) are incorrect

141. The allocated cells in the transportation table are called ----------
    a) Occupied cells
    b) Empty cells
    c) Both A and B
    d) Unoccupied cells

142. VAM stands for ----------
    a) Vogeal's Approximation Method
    b) Vogel's Approximate Method
    c) Vangel's Approximation Method
    d) Vogel's Approximation Method

143. Once the initial basic feasible solution has been computed , what is the next step in the problem
    a) VAM
    b) Modified distribution method
    c) Optimality test
    d) None of the above

144. One can find the initial basic feasible solution by using ---------- ?
    a) VAM
    b) MODI
    c) Optimality test
    d) None of the above

145. What do we apply in order to determine the optimum solution ?
    a) LPP
    b) VAM
    c) MODI Method
    d) None of the above

146. In a TP , if the number of non-negative independent allocation is ---------- than $m+n-1$.

a) Equivalent
b) Greater
c) Less
d) None of the above

147. A given TP is said to be unbalanced, if the total supply is not equal to the total ----------
a) Optimization
b) Demand
c) Cost
d) None of the above

148. If the total supply is less than the total demand, a dummy source (row) is included in the cost matrix with ----------
a) Dummy Demand
b) Dummy Supply
c) Zero Cost
d) Both A and B

149. To find the optimal solution, we apply ----------
a) LPP
b) VAM
c) MODI Method
d) Rim

150. For maximization in TP , the objective is to maximize the total ----------
a) Solution
b) Profit Matrix
c) Profit
d) None of the above

ANSWERS

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