



## BRAINWARE UNIVERSITY

**Term End Examination 2021 - 22**  
**Programme – Master of Business Administration**  
**Course Name – Quantitative Techniques**  
**Course Code - MBA208**  
**( Semester II )**

**Time allotted : 1 Hrs.15 Min.**

**Full Marks : 60**

[The figure in the margin indicates full marks.]

**Group-A**

(Multiple Choice Type Question)

1 x 60=60

*Choose the correct alternative from the following :*

- (1) Operations research is the application of methods to arrive at the optimal Solutions to the problems.
 

a) economical	b) scientific
c) a and b both	d) artistic
- (2) Which of the following is not the phase of OR methodology?
 

a) Formulating a problem	b) Constructing a model
c) Establishing controls	d) Controlling the environment
- (3) The objective function and constraints are functions of two types of variables, \_\_\_\_\_ variables and \_\_\_\_\_ variables.
 

a) Positive and negative	b) Controllable and uncontrollable
c) Strong and weak	d) None of these
- (4) Which technique is used in finding a solution for optimizing a given objective, such as profit maximization or cost reduction under certain constraints?
 

a) Queuing Theory	b) Waiting Line
c) Both A and B	d) Linear Programming
- (5) 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 these
- (6) What is the objective function in linear programming problems?
 

a) A constraint for available resource	b) An objective for research and development of a company
c) A linear function in an optimization problem	d) A set of non-negativity conditions
- (7) Which statement characterizes standard form of a linear programming problem?

- a) Constraints are given by inequalities of any type  
 b) Constraints are given by a set of linear equations
- c) Constraints are given only by inequalities of  $> =$  type  
 d) Constraints are given only by inequalities of  $< =$  type
- (8) Feasible solution satisfies \_\_\_\_\_  
 a) Only constraints  
 b) only non-negative restriction  
 c) [a] and [b] both  
 d) a],[b] and Optimum solution
- (9) In Degenerate solution value of objective function \_\_\_\_\_.  
 a) increases infinitely  
 b) basic variables are nonzero  
 c) decreases infinitely  
 d) One or more basic variables are zero
- (10) Minimize  $Z =$  \_\_\_\_\_  
 a)  $-\text{maximize}(Z)$   
 b)  $-\text{maximize}(-Z)$   
 c)  $\text{maximize}(-Z)$   
 d) None of these
- (11) If any value in XB column of final simplex table is negative, then the solution is \_\_\_\_\_.  
 a) feasible  
 b) infeasible  
 c) bounded  
 d) no solution
- (12) For any primal problem and its dual \_\_\_\_\_.  
 a) optimal value of objective function is same  
 b) dual will have an optimal solution iff primal does too  
 c) primal will have an optimal solution iff dual does too  
 d) both primal and dual cannot be infeasible
- (13) The difference between total float and head event slack is \_\_\_\_\_  
 a) free float  
 b) independent float  
 c) interference float  
 d) linear float
- (14) An optimal assignment requires that the maximum number of lines which can be drawn through squares with zero opportunity cost should be equal to the number of \_\_\_\_\_.  
 a) rows or columns  
 b) rows and columns  
 c) rows+columns- 1  
 d) rows-columns
- (15) To proceed with the Modified Distribution method algorithm for solving an transportation problem, the number of dummy allocations need to be added are \_\_\_\_\_.  
 a) n  
 b) n-1  
 c) 2n-1  
 d) n-2
- (16) Service mechanism in a queuing system is characterized by \_\_\_\_\_.  
 a) customers behavior  
 b) servers behavior  
 c) customers in the system  
 d) server in the system
- (17) The objective of network analysis is to \_\_\_\_\_.  
 a) minimize total project duration  
 b) minimize total project cost  
 c) minimize production delays, interruption and conflicts  
 d) maximize total project duration
- (18) In program evaluation review technique network each activity time assume a beta distribution because \_\_\_\_\_.  
 a) it is a unimodal distribution that provides information regarding the uncertainty of time estimates of activities  
 b) it has got finite non-negative error  
 c) it need not be symmetrical about model value  
 d) the project is progressing well



be \_\_\_\_\_.

- a) 0
- b) 1
- c) M
- d) -M

(33) The difference between total and free float is \_\_\_\_\_.

- a) total
- b) free
- c) independent
- d) interference

(34) The number of time estimates involved in Program Evaluation Review Technique problem is \_\_\_\_\_.

- a) 1
- b) 2
- c) 3
- d) 4

(35) The assignment problem is always a \_\_\_\_\_ matrix.

- a) circle
- b) square
- c) rectangle
- d) triangle

(36) The slack variables indicate \_\_\_\_\_.

- a) excess resource available
- b) shortage of resource
- c) nil resource
- d) idle resource

(37) If the net evaluation corresponding to any non-basic variable is zero, it is an indication of the existence of an \_\_\_\_\_.

- a) initial basic feasible solution
- b) optimum basic feasible solution
- c) optimum solution
- d) alternate optimum solution

(38) Mathematical model of linear programming problem is important because \_\_\_\_\_.

- a) it helps in converting the verbal description and numerical data into mathematical expression
- b) decision makers prefer to work with formal models
- c) it captures the relevant relationship among decision factors
- d) it enables the use of algebraic technique

(39) While solving a linear programming problem infeasibility may be removed by \_\_\_\_\_.

- a) adding another constraint
- b) adding another variable
- c) removing a constraint
- d) removing a variable

(40) The right hand side constant of a constraint in a primal problem appears in the corresponding dual as \_\_\_\_\_.

- a) a coefficient in the objective function
- b) a right hand side constant of a function
- c) an input output coefficient a left hand side constraint
- d) coefficient variable

(41) During 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.
- d) the closed path indicates a rectangle move.

(42) Maximization assignment problem is transformed into a minimization problem by \_\_\_\_\_.

- a) adding each entry in a column from the maximum value in that column
- b) subtracting each entry in a column from the maximum value in that column

- c) subtracting each entry in the table from the maximum value in that table
- d) adding each entry in the table from the maximum value in that table
- (43) Replace an item when \_\_\_\_\_.
- a) average cost upto date is equal to the current maintenance cost
- b) average cost upto date is greater than the current maintenance cost
- c) average cost upto date is less than the current maintenance cost.
- d) next year running cost in more than average cost of nth year
- (44) In a zero-sum game
- a) What one player wins, the other loses.
- b) The sum of each player's winnings if the game is played many times must be zero.
- c) The game is fair—each person has an equal chance of winning.
- d) Long-run profits must be zero.
- (45) Which one of the following is a part of every game theory model?
- a) Players
- b) Payoffs
- c) Probabilities
- d) Strategies
- (46) This innovative science of Operations Research was discovered during
- a) Civil War
- b) World War 2
- c) World War 1
- d) None of these
- (47) The northwest corner rule requires that we start allocating units to shipping routes in the:
- a) Middle cell
- b) Lower right corner of the table
- c) upper left hand corner of the table
- d) upper right corner of the table
- (48) In Vogel's Approximation Method, the opportunity cost associated with a row is determined by
- a) The difference between the smallest cost and the next smallest cost in the row
- b) The difference between the smallest unused cost and the next smallest unused cost in the row
- c) The difference between the smallest cost and next smallest unused cost in the row
- d) None of these
- (49) 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)  $m*n$
- c)  $m+n-1$
- d)  $mn-1$
- (50) Which of the following statements regarding critical paths is true?
- a) The shortest of all paths through the network is the critical path.
- b) Some activities on the critical path may have slack.
- c) Every network has exactly one critical path.
- d) On a specific project, there can be multiple critical paths, all with exactly the same duration.
- (51) Mathematical model of Linear Programming is important because
- a) It helps in converting the verbal description and numerical data into mathematical expression
- b) decision makers prefer to work with formal models
- c) it captures the relevant relationship among decision factors.
- d) it enables the use of algebraic techniques.
- (52) A constraint in an LP model restricts
- a) value of the objective function
- b) Value of the decision variable
- c) Use of the available resources
- d) All of these
- (53) 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 of these
- (54) The objective function for a L.P model is  $3x_1+2x_2$ , if  $x_1=20$  and  $x_2=30$ , what is the value of the objective function?
- a) 0      b) 50  
c) 60      d) 120
- (55) \_\_\_\_\_ is another method to solve a given LPP involving some artificial variable?
- a) Big M method      b) Method of penalties  
c) Two phase simplex      d) None of these
- (56) MODI method is used to obtain
- a) Optimal solutions      b) Optimality test  
c) Both A and B      d) Optimization
- (57) 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
- (58) The allocated cells in the transportation table are called
- a) Occupied cells      b) Empty cells  
c) Both A and B      d) Unoccupied cells
- (59) VAM stands for
- a) Vogel's Approximation Method      b) Vogel's Approximate Method  
c) Vangel's Approximation Method      d) Voegal's Approximation Method
- (60) One can find the initial basic feasible solution by using \_\_\_\_\_?
- a) VAM      b) MODI  
c) Optimality test      d) None of these