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) Quailing 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 inequalitiesof 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) –maximize(Z)

b) -maximize(-Z)

c) 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 toal 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

(19) If there is no non-negative replacement ratio in solving a Linear Programming Problem then the solution is _____.

a) feasible

b) bounded

c) unbounded

d) infinite

(20) The calling population is considered to be infinite when _____.

a) all customers arrive at once

b) capacity of the system is infinite

c) service rate is faster than arrival rate

d) arrivals are independent of each other

(21) In marking assignments, which of the following should be preferred?

a) Only row having single zero

b) Only column having single zero

c) Only row/column having single zero

d) Column having more than one zero

(22) A set of feasible solution to a Linear Programming Problem is _____

a) convex

b) polygon

c) triangle

d) bold

(23) In an Linear Programming Problem functions to be maximized or minimized are called _____.

a) constraints

b) objective function

c) basic solution

d) feasible solution

(24) If the primal problem has n constraints and m variables then the number of constraints in the dual problem is _____.

a) mn

b) m+n

c) m-n

d) m/n

(25) The non basic variables are called _____.

a) shadow cost

b) opportunity cost

c) slack variable

d) surplus variable

(26) Key element is also known as _____.

a) slack

b) surplus

c) artificial

d) pivot

(27) The solution to a transportation problem with m-sources and n-destinations is feasible if the numbers of allocations are _____.

a) m+n

b) mn

c) m-n

d) m+n-1

(28) The allocation cells in the transportation table will be called _____ cell

a) occupied

b) unoccupied

c) no

d) finite

(29) To resolve degeneracy at the initial solution, a very small quantity is allocated in _____ cell

a) occupied
b) unoccupied

c) no
d) finite

(30) The assignment algorithm was developed by _____ method.

a) HUNGARIAN
b) VOGELS

c) MODI
d) TRAVELING SALES MAN

(31) An assignment problem is a particular case of _____.

a) transportation Problem
b) assignment Problem

c) travelling salesman problem
d) replacement Problem

(32) The coefficient of slack\surplus variables in the objective function are always assumed to 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) Vogeal'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