**QUANTITATIVE TECHNIQUES - P21COC206**

UNIT-1

1.The outcomes of random experiment are termed as\_\_\_\_\_\_\_\_

a. probability **b.events** c.numbers d.measurements

2.Tossing a coin the possible outcomes are \_\_\_\_\_\_\_\_\_\_\_

a. HH b.TT **c. H&T** d.HHT

3. A Bag contains 4 white and 6 red balls if balls are drawn at random, the probability for getting white ball is \_\_\_\_\_\_\_

a. 3/5 b. 6/10 c. 5/10 **d. 4/10**

4.How many approaches are there for measuring probability\_\_\_\_\_\_\_\_\_\_\_\_\_\_

a. 1.2 b. 3 **c. 5** d. 1

5.Success and failure are called as a \_\_\_\_\_\_\_\_\_\_

a. event b. Distribution **c. Trial** d. Outcome

6.Binominal distribution is also called as \_\_\_\_\_\_\_\_\_

**a.Bernoulli trial** b.independent trial c. Success d. Dependent

7.The probability function of the random variable is given by\_\_\_\_\_\_\_\_\_\_\_\_

a. P(x)=1 **b. P(x)=Px Q1-x=x=0** c. P(x)=q1-x d.P(x)=Px

8.The two types of frequency distributions are \_\_\_\_\_\_\_\_\_\_

a**. Observed and Theoretical** b. Poisson and Normal c. Binomial and Expected

d. None of the above

9.The distribution which are based on past experience are called\_\_\_\_\_\_\_\_\_\_\_

a**. Theoretical Frequency Distribution** b. Observed Frequency Distribution

c. Poisson Frequency Distribution d. None of the above

10.Which of the following are important probability distribution\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

a. Binomial Distribution b. Poisson distribution c. Normal Distribution

**d. All the above**

11.The distribution which has two dichotomous events is known as \_\_\_\_\_\_\_\_\_\_\_distribution

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

12.The normal distribution is a two parameter probability distribution. They are \_\_\_\_\_\_\_\_\_\_

a.np b. μσ **c. σ x** d.xy

13.Standard normal variable is \_\_\_\_\_\_\_\_\_\_\_

a.z=x/n b. z=x-μ c.z=0 **d. z=x-μ/σ**

14.Poission distribution is applied for \_\_\_\_\_\_\_\_\_\_\_\_\_

a.Continuous random variable **b. Discrete random variable** c. irregular random variable d. uncertain random variable

15.For a poission distribution if mean m=1 then p(1) is

**a.1/e** b.e c.e/2 d. indeterminate

16..In a normal probability distribution of a continuous random variable, the value of standard deviation is \_\_\_\_\_\_\_

1. Zero b. less than zero c**. greater than zero** d. none of the above

17.In normal distribution \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. **Mean=median=mode** c. mean<median<mode
2. Mean> median>mode d. mean ≠median ≠mode

18.The range of normal distribution is \_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. 0 to n b.-1to +1 c. 0 to∞ **d.-∞ to +∞**

19.Which of the following is true for the normal curve\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. symmetrical b. Bell shaped c. Unimodel **d. All of the above**

20.In a normal curve the ordinate is highest at\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**a. mean** c. Standard deviation

b. variance d.Q1

21.The shape of the normal curve depends upon the value of \_\_\_\_\_\_\_\_\_\_\_\_

1. **Standard deviation** c.Q1
2. Mean deviation d. Quartile deviation

22. The value of ‘e’ approximately equal to\_\_\_\_\_\_\_\_\_\_\_\_

**a.2.7183** b.2.1783 c. 2.8173d.2.1416

23.The coefficient of skewness of a normal distribution is\_\_\_\_\_\_\_\_\_\_\_

a. positive c. negative

**b. zero** d. three

24..In a Poisson distribution, if ‘n’ is the number of trials and ‘p’ is the probability of success, then the mean value is given by\_\_\_\_\_\_\_\_\_\_

**A.m=np** b.m=(np)2c..m=np (-1-p) d.m=p

25.If ‘m’ is the mean of a Poisson distribution ,then variance is given by------

a.m2 b.m1/2 **c.m** d.m/2

26. In a Poisson distribution, the mean and variance are equal. say whether the given statement is a.true b.false ans:a

27.In aPoisson probability distribution, if the value of ץ is integer then the distribution will be \_\_\_\_\_\_\_\_\_\_\_\_\_

**a.bimodel** b.unimodelc.positivemodel d.negative model

28.In a binominal probability distribution, the dependents of standard deviations must includes

a.probabilityofq b.probability of p c.trials **d.all of the above**

29.Consider a Poisson distribution for the tossing of a biased coin. The mean for this distribution is µ. The standard deviation for this distribution is given by

**1.√µ** 2.µ² 3.µ 4.1/µ

30. Consider a random variable to which a poission distribution is best fitted. It happens that P(x=1) =2/3 P (x=2) on this distribution polt. The varience of this distribution will be\_\_\_\_\_\_\_\_\_\_\_\_\_

**1.3** 2.2 3.1 4.2/3

31.. Poission distribution is applied for\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Continuous Random Varible **2.Discrete Random Variable** 3. Irregular Random Variable 4. Uncertain Random Varible

32. For a poission Distribution, if mean(m)=1, then p(1) is \_\_\_\_\_\_\_\_\_\_\_

**1. 1/e** 2.e 3.e/2 4.Indeterminat

33. Ten percent of screws produced in a certain factory turn out to be defective. Find the probability that in a sample, exactly two will be defective\_\_\_\_\_\_\_\_\_\_\_

1. 0.2 **2.0.25** 3.0.8 4.0.3

34.\_\_\_\_\_ yields the possible outcomes for any random event.

**1. probability distribution** 2.binomial 3.possion 4.normal

37.Two unbiased coins are tossed. What is the probability of getting at most one head\_\_\_\_\_\_\_

1.3/4 2.1/6 **3.1/3** 4.1/2

39. What is the probability of getting a number greater than 6 on dice\_\_\_\_\_

a.1 b.1/3 c.1/2 **d.0**

40. A fair coin is tossed thrice, what is the probability of getting all 3 same outcomes\_\_\_\_\_\_\_\_\_

a.1/4 b.3/4 c.1/6 d.1/2

ans:D

41.Which of the following cannot be the value of probability\_\_\_\_\_\_\_\_

1.1/2 2.0 3.-1 4.1

ans:C

42. \_\_\_\_ determines the probability of observing a specified number of successful outcomes in a specified number of trials.

1.Binominal distribution 2.Probability 3. Poisson 4.Normal

ans:.A

43.Binominal distribution is a \_\_\_\_probability distribution.

1.continuous distribution 2. discrete 3.irregular 4.not a probability distribution

ans:b

44. Formula for binominal distribution

1.P(X=x)= ncn  px qn-x b.P(X=x)= xcx  px qn-x c.P(X=x)= ncx  px qn-x

d. P(X=x)= ncx  pn qn-x

ans:c

45.In binominal distribution, the formula of calculating mean is

a.μ=p+q b.μ=np c.μ=pq d.μ=qn

ans:b

46.. the probability of failure in binomial distribution is denoted by

a.q=1+p b.p=q+1 c.p=q-1 d.=q=1-p

47.. in binomial distribution, the formula of calculating standard deviation is

a. √p b√pq c.√npq d.√np

ans:c

48.The cumulative probability distribution is also known as\_\_\_\_

1. continuous probability distribution 2.discrete probability

3.poison distribution 4.binomial probability distribution

49. A \_\_\_\_ is a probability distribution that is used to show how many times an event is occur over a specified period.

a. poisson distribution b. Binomial distribution

c. Normal distribution d. None of the above

Ans: A

50. The symbol “ λ” in a Poisson distribution represents \_\_\_\_\_

a. Variance b. Standard deviation

c. Mean d. None of these

Ans: C

51. Which symbol represents the average number of success which occurs in the specified region\_\_\_\_\_\_\_

a. e b. x c. λ d. p(X,λ)

Ans: C

52. Which among the following is also called as “Gaussian” distribution \_\_\_\_\_\_

a. Normal distribution b. Binomial distribution

c. Probability d. None of these

Ans: A

53.In normal distribution , the total area under the curve should be equal to \_\_\_\_\_

a. 0 b. 2 c. 1 d. -1

Ans: C

54. The normal distribution curve should be \_\_\_\_\_ at the centre

a. Equal b. Unequal

c. Symmetric d. None

Ans: C

55. X plays 12 games find the approximate probability that X wins\_\_\_\_\_\_\_

at least 8 games .

a. 0.562 b. 0.412

c. 0.326 d. 0.438

Ans: D

56. If X is binomially distributed with 6 trials and a probability

of success equal to ¼ at each attempt , what is the probability of exactly 4 successes?

a. 0.033 b. 0.353 c. 0.33 d. 0.0444

Ans : A

57. When rolling a fair die 100 times , what is the probability

of rolling a 4 exactly 25 times ?

a. 0.25 b. 0.156 c. 0.031 d. 0.01

Ans: D

58. If the set of outcomes are discrete in nature, then the

distribution is called \_\_\_\_\_

a. Discrete probability distribution b. Continous probability distribution

c. probability density function d. None

Ans: A

59.. Discrete probability distribution is also called \_\_\_\_

a. Normal distribution b. Conditional distribution

c. Binomial distribution

d.Cumulative probability distribution

Ans: C

60. The probabilities of random events must lie between \_\_\_\_\_\_\_\_\_\_

a. 1 to 5 b. 0 to 1 c. -1 to 1 d. -1 to 0

Ans: B

61. The sum of all the probabilities of outcomes should be

equal to \_\_\_\_\_

a. 0 b. -1 c. 1 d. None

Ans: C

**Unit 2**

1.……………….is a technique used for determining optimum utilization of limited resources to meet out the given objectives.

(a)Transportation

(b)Linear programming

(c)Simplex method

(d)Alternatives ANS:B

2.The procedure for mathematical formulation of linear programming problems are……………

(a)Identify the decision variables of the problem

(b)Formulate the objective function to be optimized (maximize or minimize) as a linear function of the decision variables

(c)Formulate the other constraints of the problem such as resource limitation, time limitation, money restrictions etc, as linear functions of the decision variable

(d)All of above ANS:D

3.The maximum value of Z=3X+4Y Subjected to constrains x+y<4,x>0 and y>0 is……………..

(a)12 (b)14 (c)16 (d)None of these above ANS:C

4…………………….. techniques are used in many industrial and management problems.

(a)Linear programming (b)Simplex method

(c)Graphical method (d)None of these ANS:A

5.The minimum value of Z=3X+5Y Subjected to constrains x+3Y>3,x+y>2,x,y>0 is……………

(a)5 (b)7 (c)10 (d)11 ANS:B

6.The ………………….method used to obtain optimum solution of travelling salesman problem.

(a)Simplex (b)Hungarian (c)Dominance (d)Graphical ANS:B

7.In linear programming, the most popular non-graphical procedure is classified as……………

(a)Linear programming (b)Non-graphical procedure

(c)Graphical procedure (d)Simplex method ANS:D

8.A manufacturer has two products A and B both of which are produced in two stages by machines M1 and M2.The process times per unit for the product on the machines and their contribution per unit are given in the table.

|  |  |  |  |
| --- | --- | --- | --- |
|  | M1 | M2 | Contribution per unit |
| A | 4 | 5 | 10 |
| B | 5 | 2 | 5 |
| Allowable Hours | 100 | 80 |  |
|  |  |  |  |

The manufacturer is in a market upswing and can sell as much as he can produce of both the product. Formulate the problem.

|  |  |  |  |
| --- | --- | --- | --- |
| (a)Max Z=10x1+5x2  Subject to the constraints 4x1+5x2≤100  5x1+2x2≤80  X1,X2≥0 | (b) Max Z=10x1+5x2  Subject to the constraints  4x+5x<100  5x+2x<80  X1,X2>0 | (c)Max Z=5x1+10x2  Subject to the constraints  4x+5x>100  5x+2x>80  X1,X2<0 | (d) Max Z=5x+10x  Subject to the constraints  5x1+4x2≤100  2x1+5x2≤80  X1,X2>0 |

ANS:A

9.The manufacturer can make a maximum profit of …………………..

(a)600000 (b)135000 (c)150000 (d)200000 ANS:B

10.Region represented by x≥0,y≥0 is………………

(a)First quadrant (b)Second quadrant

(c)Third quadrant (d)Fourth quadrant ANS:A

11.The objective function of a linear programming problem is……………………

(a)A constraint (b)Function to be optimized

(c)A relation between the variables (d)None of these ANS:B

12.Max Z=3x1+5x2 subject to be constraint

X1+2x2≤2000

2x1+x2≤2000

X2≤600 and X1,X2≥0

(a)Rs.1000 (b)Rs.5000 (c)Rs.3500 (d)Rs.1500 ANS:D

13.The linear inequalities or equation or restriction on the variables of a linear programming problem are called…………………….

(a) A constraints (b)Decision variables

(c)objective function (d)None of these ANS:A

14.A set of value of decision variables that satisfies the linear constraints and non-negativity conditions of an L.P.P. is called its…………………………

(a)Unbounded solution

(b)optimum solution

(c)Feasible solution

(d)bounded solution ANS:C

15.Maximize Z=3x+5y. subject to constraints: x+4y≤24, 3x+y≤21, x+y≤9, x≥0, y≥0

(a)20 at (1,0) (b) 30 at (0,6)

(c)37 at (4,5) (d) 33 at (6,3) ANS:C

16.The point which does not lie in the half-plane 2x+3y-12<0 is……………

(a) (2,1) (b) (1,2) (c) (-2,3) (d) (2,3) ANS:D

17.The optimum value of the objective function is attained at the points:

(a) On x-axis (b) On y-axis

(c) Corner points of the feasible region (d) None of these ANS:C

18.Which of the following is a type of linear programming problem………………….

(a) Manufacturing problem (b) Diet problem

(c) Transportation problem (d)All of the above ANS:D

19.The steps involved in graphical method are ………………………

(a) Draw one decision variable in x axis and another decision variable y axis with appropriate scale.

(b) Consider each inequality as equation

(c) Plot each equation on the graph as each will geometrically represent a straight line. Every point on the line will satisfy the equation of the line.

(d) All of these above ANS:D

20.Max Z=40x1+30x2 Subject to be constraints

3x1+x2≤30000

X1≤80000

X2≤12000 and x1,x2≥0

(a)Rs.6,00,000 (b)Rs.5,00,000

(c)Rs.60,000 (d)Rs.1,00,000 ANS:A

21.When the value of decision variables in a linear programming problem increase indefinitely, the problem has no finite objective function value. Such problems are said to have…………………………..

(a)Feasible solution (b)Unbounded solution

(c)Bounded solution (d)Balanced solution ANS:B

22.When there is no overlapping of constraints equations, there is……………………… region formed by the constraints.

(a)Feasible (b)Linear

(c)Simplex (d)No feasible ANS:D

23.The formula for new key row number………………………………….

(a) Key number/old key row number

(b)Key row number-key column number/(key number)

(c)Old key number/key number

(d)Key row number-key column ANS:C

24.The column which has the most negative value is known as …………………….

(a)Pivot column (b)Key row column

(c)Pivot row (d)None of these ANS:A

25.A basic feasible solution is said to be ……………………… if it optimizes (maximize or minimize) the objective function.

(a)Feasible (b)Optimum

(c)Bounded (d)None of these ANS:B

26.A company make two kinds of leather belts A and B. Belt A is of superior quality and B is of lower quality. The respective profits are Rs.4 and Rs.3. Each belt of A requires twice the as much time as required by a belt of type B. If all the belts are made of type B, the company capacity is 1000 per day. The supply of leather is sufficient only for 800 belts.(Both A and B combined).Belt A requires fancy buckle and only 400 buckles are available per day. There are 700 buckle available for belt B. Formulate the problem.

(a)max z=4x1+3x2 subject to the constraint

2x1+x2 ≤1000

X1+X2 ≤800

X1 ≤400 and X2≤700

X1,X2≥0

(b)max Z=3x+4y subject to be constraint

2x1+2x2≤100

X1+X2≤500

X1 ≤200 and X2≤600

X1,X2≥0

(c)Max Z=3X+5Y subject to be constraint

2x+3x≤200

X1+X2≤300

X1+X2≤1000

(d)NONE OF THESE ANS:A

27.Max Z=4x1+3x2 Subject to be constraints

2x1+x2≤1000

X1+x2≤800

X1≤400 X2≤700 and

X1,X2≥0

(a)Rs.5000 (b)Rs.6500

(c)Rs.2000 (d)Rs.2600 ANS:D

28…………………… is the value of all point for which all constraints and non-negativity restrictions are satisfied.

(a)Bounded solution (b)Feasible solution

(c)Unbounded solution (d)None of these ANS:B

29.It is a…………….solution which also satisfied the non-negativity constraint ,that is ,all basic variables are non-negativity.

(a)Feasible (b)Non-feasible

(c)Basic (d)Dummy variable ANS:C

30.Grapical method is used to solve ………………..variable problems.

(a)Two (b)Four (c)Five (d)None of these ANS:A

31.A constraints of the type ≥ can be converted in to an equation by subtracting ……………variable from the left side of the constraints.

(a)feasible (b)surplus (c)flexible (d)optimal ANS:B

32.The feasible region of an LPP is always a……………..

(a)Slack set (b)Basic set (c)Optimum (d)Convex set ANS:D

33. The basis of the ……………… method consists of the two fundamental conditions.

(a)Bounded b)Simplex (c)Feasible (d)None of these ANS:B

34……………….is a non-negative variables which is added to the left hand side of the constraints equation to convert the inequality equation.

(a)Slack variable (b)Dummy variable

(c)Basic variable (d)Non-basic variable ANS:A

35.Max Z=6x1+8x2 subject tobe constraint

5x1+10x2≤60

X1+X2≤10 and

X1,X2≥0

(a)x1=9; x2=4 and Zmax=Rs.46

(b)x1=4; x2=8 and Zmax=Rs.50

(c)x1=1; x2=3 and Zmax=Rs.100

(d)x1=8; x2=2 and Zmax=Rs.64 ANS:D

36.Min Z=3x1-2x2 subject to be constraints

-2x1+3x2≤9

-x1+5x2≤20 and x1,x20

(a)bounded solution (b)feasible solution

(c)unbounded solution (d)none of these ANS:C

37.The stands for LPP……………….

(a)Linear programming process

(b)Linear programming problems

(c)Limited programming problem

(d)None of these ANS:B

38.The first mathematical technique in LPP called the…………………….

(a)Simplex method (b)Feasible method

(c)Bounded method (d)Non-bounded method ANS:A

39.Max Z=x1+5x2 subject to be constraint

2x1+5x2≤16

6x1≤30 and x1,x2≤0

(a)x1=2; x2=2.3; Max Z=14 (b)x1=4;x2=3; Max Z=6

(c)x1=10;x2=8; Max Z=7 (d)x1=0;x2=3.2; Max Z=16 ANS:D

40.What are the applications of linear programming techniques?

(a)Product mix problems in industries

(b)Production scheduling problem

(c)Allocation of available manpower

(d)All of these above ANS:D

41.If the value of the objectives function can be increased or decreased indefinitely ,such solutions are called…………………..

(a)Bounded solution (b)Feasible solution

(c)Unbounded solution (d)None of these ANS:C

42.In region in which all the constraints are satisfied is called……………….

(a)Feasible region (b)Non-feasible region

(c)Optimum region (d)Feasible solution ANS:A

43.Minimize Z=6000x1+4000x2 subject to be constraints

3x1+x2≥40 ; x1+5/2x2≥22

3x1+3x2≥40 and x1,x2≥0

(a)x1=20; x2=8 and Min Z=Rs.44,000

(b)x1=12; x2=4 and Min Z=Rs.88,000

(c)x1=15; x2=2 and Min Z=Rs.15,000

(d)x1=50; x2=10 and Min Z=Rs.20,000 ANS:B

45.In L.P.P the variable X1,X2,X3 can never take negative values. This is called the………….

(a)Non-negativity constraints (b)Decision variable

(c)Objective function (d)None of these ANS:A

46…………………… Is the technique application only when there is a single goal (objective function).

(a)Linear function (b)Decision variable

(c)Grance theory (d)All of above ANS:A

47.A Basic solution to the system is called ……………. If one or more of the basic variable vanish.

(a)Basic (b)Degenerate (c)Variable (d)Unbounded ANS:B

48.The ………….. table helps to predict the effect of changes In the resources and the profit margin.

(a)Transportation (b)Assignment (c)Simplex (d)None of these ANS:C

49.An …………… solution means that there exist an infinite number of solution to the given problem.

(a)Unbounded (b)Infeasible (c)Feasible (d)None of these ANS:A

50.When the constraint are not satisfied simultaneously the linear programming problem has …………….. solution.

(a)Basic solution (b)Feasible (c)No feasible (d)Unbounded ANS:C

51.On solving the following problem.

Max Z=X1 +X2 Subject to the constraints

X1 +X2 ≤1, -3X1+X2≥3, X1≥0, X2≥0. We get ……………… solution.

(a)Infeasible (b)Feasible (c)Basic (d)Degenerate ANS:A

52.By solving the given L.P.P

Max Z=6X1+X2 Subject to the constraints

2X1+X2≥3, X2-X1≥0 and X1,X2≥0. We get …………….. solution.

(a)Feasible (b)Infeasible (c)Bounded (d)Unbounded AND:D

53.Which of the following comes under the linear programming problem.

(a)Manufacturing problem (b)Diet problem

(c)Transportation problem (d)All of the above ANS:D

54.In L.P.P the variable that appear in the objective function are called………….

(a)Decision variable (b)Constraint

(c)Slack variable (d)Surplus variable ANS:A

55.Linear programming deal with the optimization of a function of variable known as…………

(a)Constraints (b)Decision variable

(c)Objective function (d)None of these ANS:C

56.The ……………….. may be imposed by different sources such as market demand, production processes and equipment, row material availability etc.

(a)Bounded (b)constraints (c)Unbounded (d)Decision variable ANS:B

57.The simplex method is an the …………….. procedure for solving linear programming problem.

(a)Iterative (b)Non iterative (c)Unconstraint (d)None of these ANS:A

58.The solution which optimizes the objective function is called………..

(a)Optimal solution (b)Feasible solution

(c)Unbounded solution (d)None of these ANS:A

59.A solution to a linear programming problem can be obtained……………….. if the number of decision variable in restricted to two.

(a)Evenly (b)Graphically (c)Theoritically (d)None of these ANS:B

60.The conditions expressing the relations between the variable are called……………….

(a)Constraints (b)Objection function

(c)Decision function (d)None of these ANS:A

**UNIT 3**

1. In a decision theory problem under complete uncertainity, which one of the following approaches will not possible\_\_\_\_\_\_\_\_\_\_\_

(a)Expected monetary value (b)Maximing (c)Minimax

(d)Hurwicz

ANSWER:A

2. Which of the following is (are)types of decision making environment\_\_\_\_\_\_\_\_\_

(a)Decision making under certainity (b)Decision making under uncertainty

(c)Decision making under risk (d)All of the above

ANSWER:D

3.All of the following are steps in the decision making process except\_\_\_\_\_\_\_\_\_

(a)Define the problem (b)Compute the posterior probabilities

(c)List pay offs (d)List alternatives

ANSWER:B

4.Any problem that can be represented in a decision table can also graphically illustrated in a\_\_\_\_\_\_\_

(a)Utility curve (b)Baye’s diagram (c)Decision tree (d)Hurwicz diagram ANSWER:C

5.The criteria of expected monetary value is used for making decision under \_\_\_\_\_\_\_\_\_\_

(a)Certainity (b)Uncertainity (c)Risk (d)All of the above ANSWER:D

6.The maximum criteria is a\_criteria\_\_\_\_\_\_\_\_\_\_\_

(a)Optimistic (b)Neutral (c)Pessimistic (d)None of the above

ANSWER:C

7.Which of the following might be viewed as on “optimistic” decision criterion\_\_\_\_\_\_\_\_\_\_

(a)Hurwicz criterion (b)Maximin (c)Maximax (d)Minimax

ANSWER:C

8.Opportunity loss refer to \_\_\_\_\_\_\_\_\_\_\_

(a)The expected value of a bad decision (b)The expected loss from a bad decision

(c)The difference between the actual pay off and the optimal pay off (d)None of the above

ANSWER:C

9.Which of the following criterion is not used for decision making under uncertainty\_\_\_\_\_\_\_

(a)Maximin (b)maximise (c)Minimax (d)Minimize expected loss ANSWER:A

10.Which of the following criterion is not applicable to decision making under risk\_\_\_\_\_\_\_\_

(a)Maximize expected return (b)Maximize return

(c)Minimize expect regret

(d)Knowledge of likely hood occurance of each state of nature ANSWER:B

11.The minimum expected opportunity loss (EOL) is \_\_\_.

(a)Equal to EVP (b)Minimum regret (c)Equal to EMB (d)Both A and B

ANSWER:D

12.Which approach would be used by a pessimistic decision making?

(a)Maximin (b)Maximax (c)Minimax regret (d)EMV

ANSWER:A

13.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)Excepted marginal cost

(c)Marginal loss

(d)None of these

ANSWER:A

14.Decision theory is concerned with

(a)Method of arriving at an optimal decision

(b)Selecting optimal decision in a sequential manner

(c)Analysis of information that is available

(d)All of these

ANSWER:D

15. In decision making under \_\_\_ there are several possible outcomes for each alternative, and the decision maker knows the probability of occurance of each outcomes

(a)Risk (b)Utility (c)Certainity (d)Probability

ANSWER:A

16.Which of the following criterion is not used for decision making under uncertainity

(a)Maximin (b)Maximax (c)Minimax (d)Minimize expected loss

ANSWER:D

17.The third step in decision making process

(a)Linear prediction (b)Dependend prediction

(c)Making prediction (d)Independent prediction

ANSWER:C

18.What are the possible profit for the different alternatives under different state of nature are called.

(a)Pay off (b)Gross profit (c)Net profit (d)Pretax profit

ANSWER:A

19.\_\_\_is a criterion for the selection of the best among to works

(a)Laplace criterion (b)Maximin criterion

(c)Maximax criterion (d)Hurwicz criterion

ANSWER:B

20.\_\_\_\_ is the opportunity loss for taking a decision

(a)Pay off (b)Regret (c)Criterion (d)Benefit of minimax

ANSWER:B

21.In a decision which alternative corresponding to the \_\_\_is choosen on the best alternative.

(a)Higher EMV (b)Lowest EMV

(c)MinimumEMV (d)none of these

ANSWER:A

22.A decision node is denoted by a \_\_\_.

(a)Circle (b)Rectangle (c)Square (d)Triangle

ANSWER:C

23.A \_\_\_ node is denoted by a circle.

(a)State of nature (b)State of inability

(c)State of abnormality (d)State of void

ANSWER:A

24.The possible alternatives to be consider for taking a decision are called\_\_\_.

(a)Stake of nature (b)State of action

(c)State of interest (d)State of unutility

ANSWER:B

25.The decision tree is constructed from\_\_\_\_\_.

(a)Left to right (b)Right to left

(c)Upward to downward (d)Downward to upward

ANSWER:A

26.\_\_\_\_ is an optimistic rule which maximise the maximum that can be gained under different products (alternative).

(a)Maximin criterion (b)Laplace criterion

(c)Hurwicz criterion (d)Maximax criterion

ANSWER:D

27.\_\_\_\_ is weighted average of the best and the worst pay off of each alternative.

(a)Maximing criterion (b)Hurwicz criterion

(c)Maximax criterion (d)Laplace criterion

ANSWER:B

28.An alternative approach to maximising expected monitary value is too minimize\_\_\_.

(a)EOL (b)COL (c)EVPI (d)EPPI

ANSWER:A

29.Expected opportunity loss or expected value of regret are calculated in the same manner as the expected pay offs in the\_\_\_\_\_.

(a)EOL criterion (b)COL criterion (c)EMV criterion (d)EVPI criterion

ANSWER:C

30.The expension of EMV is\_\_\_.

(a)Expected monitory value (b)Exchange monitory value

(c)Evaluated monitory value (d)Expand monitory value

ANSWER:A

31.\_\_\_\_\_\_\_\_\_\_ is the amount by which maximum possible profit will be reduced under various possible action\_\_\_\_\_\_\_\_\_

a. EOL b.COL c.EVPI d. EMV

ans:a

32.Which of the following the steps for EOL criterion \_\_\_\_\_\_\_\_\_\_

a. Prepare conditional profit table b. calculate conditional opportunity loss c. calculate EOL d. All the above.

ans:d

33.Which of the following is the step for expected value criterion (EMV)\_\_\_\_\_\_\_\_\_\_

a.Select the alternative that yields the higher EMV b. Select the alternative that yields the lowest EOL c. Calculate EOL d. All the above.

ans:a

34.Under condition of \_\_\_\_\_\_\_\_\_\_ a number of decision criteria are available which could help the decision maker

a. risk b. uncertainty c. certainty d.all the above

ans:a

35.Under conditions of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_a few decision criteria are available which can help the decision makes

a. risk b.uncertainity c.certainity d.none of these

ans:b

36.\_\_\_\_\_\_\_\_\_\_\_is based on the principle of insufficient reason

a.Flurwicz criterion b. Pessimistic criterion c.optimistic criterion d.laplace criterion

ans:d

37.Under \_\_\_\_\_\_\_\_\_\_\_\_criterion the decision maker finds the maximum possible payoff for each alternative and then chooses the alternative with maximum payoff within the group

a. maximax b, maximin c,minimax d.none of these

38.Maximin criterion is also called as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ criterion

a.optimistic b.pessimistic c.criterion of realism d.none of these.

ans :b

39.Maximax criterion is also called as \_\_\_\_\_\_\_\_\_\_\_\_criterion

a.optimistic b.pessimistic c.criterion of realism d.criterion of rationality

ans:a

40.\_\_\_\_\_\_\_\_\_\_is also called the flurwicz criterion

a.criterion of realism b.criterion of rationality c.minimax regret criterion d.none of these

ans:a

42.criterion of realism is also called as \_\_\_\_\_\_\_\_\_\_\_\_\_

a.weighted average criterion b.pessimistic criterion c.optimistic criterion d.none of these.

Laplace criterion is also called as criterion of \_\_\_\_\_\_\_\_\_\_\_\_\_\_

a.realism b.rationality c. optimistic d.pessimistic

ans:b

43.Weighted Average criterion is a compromise between maximax and maximin decision criterion\_\_\_\_\_\_\_\_

a.laplace b.flurwicz d.weighted average d.all the above

ans:a

44.Complete and accurate information about the future demand, referred to as perfect information would remove all uncertainty from the problem\_\_\_\_\_\_\_\_\_\_

a.marginal analysis b.perfect information c.alternative decision d.none of these.

ans:b

45.\_\_\_\_\_\_\_\_\_\_\_is an approach alternative to EMV approach

a.EOL b.EVPI c.COL d.All the above

ans:

46.\_\_\_\_\_\_\_\_\_\_\_\_\_ represents the maximum amount on would pay to get additional information alternative

a.EVPI b.EMV c.EOL d.COL

47.Which of the following is the step of decision theory approach\_\_\_\_\_\_\_\_\_\_\_

a.List all the future events that can occur b. construct a payoff table. listing the alternative decision c. prepare conditional profit table for each decision event combination d. all the above

ans:a

48.\_\_\_\_\_\_\_\_\_provides a rational approach for dealing with uncertainty problems.

a.decision theory b. transportation problem c.assignment problem d. linear programming problem

ans:

49. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_is also called as state of nature

a. strategies b. alternative c. future events d. none of these

ans:c

50.\_\_\_\_\_\_\_\_\_\_can be computed by multiplying the probability of each state of nature with appropriate loss value and adding the resulting values.

a.EMV b.EVPI c.COL d.EOL

and:d

51.Expected value criterion is also called as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ criterion

a.Expected monetary value b. Expected value of perfect information c. expected opportunity loss d. conditional opportunity loss

ans:a

52.In expected monetary value criterion the last step is to select the alternative that yields the \_\_\_\_\_\_\_\_\_\_ EMV

a.lowest b. highest c. moderate d.none of these

ans:b

53.In EOL criterion the final step is to select the alternative that yields the \_\_\_\_\_\_\_\_\_\_\_\_\_EOL

a.highest b.lowest c.moderate d.none of these

ans:c

54.\_\_\_\_\_\_\_\_\_\_\_\_\_\_ can b e calculated by subtracting the payoff from maximum payoff of that event

a.COL b.EOL c.EVPI d.EMV

55.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_can be calculated by multiplying the COL’s with the associated probabilities and then adding the values

a.COL b.EOL c.EVPI d.EMV

ans:b

56.. Under \_\_\_\_\_\_\_\_\_\_\_\_ criterion the decision alternative will be based on either largest EMV value of smallest EMV value depending upon the type of problem(Whether it is of maximization or minimization type).

a. EMV b. EVPI c.COL d.all the above

57. In decision making under conditions of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, only one state of nature exists is

a.certainty b.uncertainity c.risk d. return

ans:a

58.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_is highly useful to a decision maker in multistage situations which involve a series of decision each dependent on the preceding one

a.linear programming problem b. decision tree c. transportation model d. assignment model

ans:b

59.Branches emanating from the event point represent all possible \_\_\_\_\_\_\_\_\_\_\_\_\_

a.situtation b.decisions c.alternatives d.none of these

ans:a

60.An example of quantitative factor is

a.employees behaviour at workforce b.employee satisfaction c.employee morale d.cost of material

ans:d

**UNIT - 4**

1.The transportation problem deals with the transportation of

(a)a single product from several sources to a destination

(b)a multi product from several sources to several destination

(c) a single product from several sources to several destination

(d)a single product from a sources to several destinations.

ANS: C

2.The transportation problem is balanced if

(a)total demand and total supply are equal and the number of sources equals the number of destination

(b)total demand equals total supply irrespective of the number of sources and destination

(c)number of sources matches with the number of destination

(d)none of the routes is prohibited

ANS: B

3.which of the following is correct?

(a)it is not necessary for the aggregate demand to be equal to the aggregate supply in a transportation problem

(b)an unbalanced transportation problem must be converted into a balanced problem before solving it

(c)the cost elements in a dummy row/column shall always be taken equal to zero

(d)it is possible that in some cases both dummy source and dummy destination, may be required to convert an unbalanced transportation problem into a balanced one

ANS: D

4. which of the following is correct?

(a)the cost difference in the vogel’s approximation method indicate the penalties for not using the respective least cost routes

(b)if some routes are prohibited,VAM cannot be used to find an initial solution to a transportation problem

(c)the initial solution obtained by the NW Corner rule would invariably be optimum

(d)the least cost ,method does not provide the least cost solution to a transportation problem

ANS: A

5. which of the following is not correct?

(a)A closed loop would always involve an even number of cells, subject to a minimum of 4

(b)the ui  and vj values may be determined by initially inserting any finite number which may be positive, negative or zero ,to a row/column

(c)the transporataion problem is a distribution problem

(d)units sents from a dummy source to various markets represent the shortfall in supply in those markets

ANS: B

6. which of the following is not correct?

(a)a transportation problem solution is said to be degenerate if the number of occupied cells is smaller than the number of rows plus the number of columns minus one(1)

(b)a degenerate solution may or may not be optimum

(c)once non-optimum degenerate solution is obtained ,the next solution is bound to be degenerate

(d)to remove degeneracy,an infinitesimally small quantity is placed in each of the required number of independent cells.

ANS: C

7.which of the following is not correct?

(a)multiple optimum solutions are indicated if there are multiple zeros for ui and vj values.

(b)for an optimum solutions to an transportation problem,the ui and vj values represent the optimum values of the dual problem.

(c)if each cost element in a transportation problemis increased or decreased by a constant amount, will not effect the optimum solution to the problem.

(d)a maximization transportation problem is first converted into minimization one by subtracting each value of the given matrix feom the large value.

ANS: A

8.which of the following is not correct?

(a)in the transportation problem,if certain routes are prohibited then their cost elements are replaced by M(an extremely large values).

(b)the number of occupied cells involved in a closed path is always even.

(c)if all the cost elements cij are multiplied by a constant ,the total cost of transportation in the optimum solution shall be multiplied by the same constant

(d)if some ui+vj-cij is equal to zero in the optimum solution ,then the problem in multiple optimum solution

ANS: B

9. which of the following is not correct?

(a)the ui+vj-cij value of an unoccupied of cell indicates the net change in cost of re-allocating one unit through the route involved

(b)the maximum quality that can be re-allocated in a closed path is equal to the minimum quality in the cells bearing negative sign

(c)any of the m+n-1 number of occupied cells would allow determining whether a given solution is optimum or not

(d)in the time minimization problem the cost cij is replaced by the unit time tij

ANS: C

10.for a transhipment problem, choose the statement which is not correct?

(a)the problem allows for the shipment of goods from one source to another from one destination to another

(b)there is no real distinction between sources and destination

(c)an ‘m’ source ‘n’ destination transportation problem ,when written as a transhipment problem would have m+n and n destinations

(d) a transhipment problem is not likely to involve a lower cost than a transportation problem in a given solutions.

ANS: C

11.The assignment problem is a special case of transportation problem in which number of origins

(a)equal the number of destinations.

(b)is greater than the number of destinations.

(c) is less than the number of destinations.

(d)is less than or equal to the number of destinations.

ANS:A

12.which of the following is not correct?

(a)assignment problem deal with assignment of workers to jobs that they can perform with varying efficiency.

(b)an assignment problem may be balanced one when the number of jobs matches with the number of workers.

(c)an assignment is unbalanced when each of the given workers cannot do each of the given jobs.

(d)an assignment problem can be designed and solved as a transportation problem.

ANS:C

13.which of the following is correct?

(a)an assignment problem cannot be of maximization type.

(b)an assignment problem can be solved only if the number of rows and columns are equal.

(c)the transportation method can be used to solve an assignment problem.

(d)unbalanced assignment problem cannot be solved.

ANS: B

14.which of the following is not correct?

(a)an assignment problem is always solved on the assumption that the assignments are to be done on a one-to-one basis.

(b)any unbalanced assignment problem can be balanced by introducing a dummy row or a dummy column.

(c)all dummy rows/columns must have a cost elements equal to zero.

(d)balancing of an unbalanced assignment/problem might involve the introduction of dummy as well as dummy columns.

ANS: D

15.the minimum number of lines covering all zeros in a reduced cost matrix of order n can be

(a)at the most n (b)at the least (c)n-1 (d)n+1

ANS: A

16.which of the following is not correct?

(a)the cost element in the matrix of a typical assignment problem indicate the cost of performing the particular jobs by particular personnel.

(b)modifications are needed if the minimum number of lines covering all zeros is smaller than n.

(c)the solutions to an assignment problem by transportation method would always be degenerate.

(d)for every prohibited assignment,the given cost element is replaced by M,which is very large value.

ANS: C

17.which of the following is not correct?

(a)modifications are needed if the minimum number of lines covering all zeros is smaller than n.

(b)if a constant is subtracted from each element of the cost matrix of an assignment problemit would not affect the optimum assignment schedule.

(c)in case multiple zeros are obtained in all rows and columns,multiple optimum assignment schedule are indicated.

(d)multiple optimum assignment schedules may have different objective function values.

ANS: D

18.in marketing aasignment,which of the following should be preferred:

(a)only that row which have a single zero

(b)only that column which has a single zero.

(c)only a row/column having a sinle zero.

(d)only column having more than one zero.

ANS:C

19.in an assignment problem involving four workers and three jobs,total number of assignment possible are

(a)4 (b)3 (c)7 (d)12

ANS: B

20.which of the following is correct?

(a)an assignment problem involving 6 workers and 5 jobs have 720 assignment possible.

(b)a maximization assignment problem can be converted into an equivalent minimization problem by subtracting each element of the given matrix from a constant K.

(c)the dual variables for an assignment problem are given by the ui and values of the optimum solution to the transformed transportation problem.

(d) the variables of the dual problem of a given assignment problem are unrestricted in sign.

ANS: C

TRUE /FALSE PROBLEMS

1.A transportation problem is a special case of an LPP,and hence can be formulated and solve as such. TRUE

2.It is not necessary for the aggregate demand to be equal to the aggregate supply in a transportation problem. FALSE

3.The initial solution obtained by the VAM would invariably be optimum or very near to optimality TRUE

4.The initial solution of the north west corner rule is recommended because it ensures that there will be m+n-1 allocations. FALSE

5.Only those problems where total demand equals total supplycan be solved by transportation method. FALSE

6.In the penalty method,a cost difference indicates the penalty of not using the least cost rule. TRUE

7.If a constant is subtracted from each value of the matrix of a profit maximizing transportation problem,it is converted into a minimization problem. FALSE

8.Allocation to the dummy destination represent the surplus at the source point. TRUE

9.Allocation to dummy source represent the number of units to be produced by use of overtime/subcontract. TRUE

10.An’m’source and ‘n’ destination transportation prolem,when converted into a transhipment problem,would become an(m+n)source and an equal number of destination problem. TRUE

11.Assignment technique is essentially a minimization technique. TRUE

12.Multiple optimum solution imply that at least one worker get more than one job assigned. FALSE

13.The minimum number of lines required to covert al zeros cannot be more than n,the number of rows/columns, TRUE

14.The solution to an assignment problem can be obtained by complete enumeration and evaluation of all possible assignment. TRUE

15.Hungarian assignment method assumes that one job cannot be assigned to only one facility. FALSE

16.The relative cost of assigning a particular job to a particular facility is changed by the subtraction of a constant from either a row or a column of the cost matrix. FALSE

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **17.** | The transportation problem is basically a   |  |  | | --- | --- | | (a) | Maximization model | | (b) | Minimization model | | (c) | Transshipment problem | | (d) | Iconic model  ANS:B | |
| **18.** | To convert the transportation problem into a maximisation model we have to   |  |  | | --- | --- | | (a) | Write the inverse of the matrix | | (b) | Multiply the rim requirements by –1 | | (c) | Subtract all the values from the maximum value of the matrix | | (d) | We cannot convert the transportation problem into a maximization problem, as it is basically, a minimization problem | |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ANS | :C  19.The column, which is introduced in the matrix to balance the rim requirements, is known as   |  |  | | --- | --- | | (a) | Key column | | (b) | Idle column | | (c) | Slack column | | (d) | Dummy Column | |

ANS:D

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **20.** | In a transportation problem where the demand or requirement is equal to the available resource  is known as   |  |  | | --- | --- | | (a) | Balanced transportation problem | | (b) | Regular transportation problem | | (c) | Resource allocation transportation problem | | (d) | Simple transportation model | | |
|  | Answer:A | |
| **21.** | When the total allocations in a transportation model of m×n size do not equal to m+n-1 the situation is known as   |  |  | | --- | --- | | (a) | Unbalanced situation | | (b) | Tie situation | | (c) | Degeneracy | | (d) | None of the above | | |
|  | Answer:C | |
| **22.** | The penalty of a row in a transportation problem is obtained by   |  |  | | --- | --- | | (a) | Deducting the smallest element in the row from all other elements of the row | | (b) | Adding the smallest element in the row to all other elements of the row | | (c) | Deducting the smallest element in the row from the next highest element of the row | | (d) | Deducting the smallest element in the row from the highest element in that row | | |
|  | Answer:C | |
| **23.** | In the Northwest corner method the allocations are made   |  |  | | --- | --- | | (a) | Starting from the left-hand side top corner | | (b) | Starting from the right-hand side top corner | | (c) | Starting from the lowest cost cell | | (d) | Starting from the lowest requirement and satisfying first | | |
|  | Answer:A   |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | **24.** | In transportation Problems, VAM stands for .........................   |  |  | | --- | --- | | (a) | Value Addition Method | | (b) | Vogel’s Approximation Method | | (c) | Virgenean Approximation Method | | (d) | None of these | | |  | Answer:A  25.MODI stands for   |  |  | | --- | --- | | (a) | Modern Distribution | | (b) | Mendel's Distribution Method | | (c) | Modified Distribution Method | | (d) | Model Index Method |   Answer:C   |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | **26.** | In the optimal solution, more than one empty cells have their opportunity cost as zero, it indicates   |  |  | | --- | --- | | (a) | The solution is not optimal | | (b) | The problem has alternate solution | | (c) | Something wrong in the solution | | (d) | The problem will cycle  Answer:B | | | | |
| **27..** | | To solve degeneracy in the transportation problem we have to   |  |  | | --- | --- | | (a) | Put allocation in one of the empty cells as zero o solve degeneracy in the transportation problem we have to | | (b) | Put a small element epsilon in any one of the empty cells | | (c) | Allocate the smallest element epsilon in such a cell, which will not form a closed-loop with other loaded cells | | (d) | Allocate the smallest element epsilon in such a cell, which will form a closed loop with other loaded cells | |
|  | | Answer:C |
| **28.** | | The Assignment Problem is solved by   |  |  | | --- | --- | | (a) | Complex method | | (b) | Graphical method | | (c) | Vector method | | (d) | Hungarian method | |

Answer:D

**29.**In the Hungarian method of solving an assignment problem, the row reduction is obtained by

|  |  |
| --- | --- |
| (a) | Dividing each row by the elements of the row above it |
| (b) | Subtracting the elements of the row from the elements of the row above it |
| (c) | Subtracting the smallest element from all other elements of the row |
| (d) | Subtracting all the elements of the row from the highest element in the matrix |

Answer:C

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **30.** | The horizontal and vertical lines drawn to cover all zeros of the total opportunity matrix for an optimal solution must be   |  |  | | --- | --- | | (a) | Equal to each other | | (b) | Equal to m×n (where m and n are numbers of rows and columns) | | (c) | m+n (where m and n are numbers of rows and columns) | | (d) | Equal to the number of rows or columns | |
|  | Answer:D |
| **31.** | The assignment matrix is always a   |  |  | | --- | --- | | (a) | Rectangular matrix | | (b) | Square matrix | | (c) | Identity matrix | | (d) | None of the above | |
|  | Answer:B |

**32.**In a traveling salesman problem, the elements of diagonal from left-top to right bottom are

|  |  |
| --- | --- |
| (a) | Zeros |
| (b) | All negative elements |
| (c) | All infinity |
| (d) | All ones |

Answer:C

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **33.** | The similarity between Assignment Problem and Transportation Problem is   |  |  | | --- | --- | | (a) | Both are rectangular matrices | | (b) | Both are square matrices | | (c) | Both can be solved by graphical method | | (d) | Both have objective function and non-negativity constraints | |
|  | Answer:D |
| **34.** | The following character dictates that the assignment matrix is a square matrix   |  |  | | --- | --- | | (a) | The allocations in assignment problem are one to one | | (b) | Because we find row opportunity cost matrix | | (c) | Because we find column opportunity matrix | | (d) | Because make allocations, one has to draw horizontal and Vertical lines | |
|  | Answer:A |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **35.** | When we try to solve the assignment problem by transportation algorithm the following difficulty arises   |  |  | | --- | --- | | (a) | There will be a tie while making allocations | | (b) | The problem will get alternate solutions | | (c) | The problem degenerates and we have to use epsilon to solve degeneracy | | (d) | We cannot solve the assignment problem by transportation algorithm | |
|  | Answer:C |

**36.**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 |
| (d) | All of the above |

Answer:C

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **37.** | In a transportation problem, we must make the number of \_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_ equal.   |  |  | | --- | --- | | (a) | destinations; sources | | (b) | units supplied; units demanded | | (c) | columns; rows | | (d) | positive cost coefficients; negative cost coefficients | |
|  | Answer:B |
| **38** | The assignment problem will have alternate solutions   |  |  | | --- | --- | | (a) | when total opportunity cost matrix has at least one zero in each row and column | | (b) | when total opportunity cost matrix has at least two zero in each row and column | | (c) | when there is a tie between zero opportunity cost cells | | (d) | if two diagonal elements are zeros | |
|  | Answer:C |

**39.**The initial solution to 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 is not degenerate |
| (d) | all of the above |

Answer:B

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **40.** | The dummy source or destination in a transportation problem u added to   |  |  | | --- | --- | | (a) | satisfy rim conditions | | (b) | prevent solution from becoming degenerate | | (c) | ensure that total cost does not exceed a limit | | (d) | none of the above | |
|  | Answer:A |
| **41.** | 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 | | (d) | None of the above | |
|  | Answer:B |

**42.**An alternative optimal solution to a minimization transportation problem exists whenever opportunity cost corresponding to unused route 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 |
| (d) | none of the above |

Answer:B

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **43.** | One disadvantage of using the North-West Corner Rule to find initial the solution to the transportation problem is that   |  |  | | --- | --- | | (a) | it is complicated to use | | (b) | it does not take into account the cost of trans-portation | | (c) | it leads to a degenerate initial solution | | (d) | all of the above | |
|  | Answer:B |
| **44.** | The solution to a transportation problem with m-rows (supplies) and n-columns (destination) is feasible if the number of positive allocations are   |  |  | | --- | --- | | (a) | m+n | | (b) | m×n | | (c) | m+n-1 | | (d) | m+n+1 | |
|  | Answer:C |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **45.** | The calculation of opportunity cost in the MODI method is analogous to a   |  |  | | --- | --- | | (a) | Cj - Zj value for non-basic variable columns in the simplex method | | (b) | value of a variable in XB column of the simplex method | | (c) | variable in the B-column in the simplex method | | (d) | none of the above | |
|  | Answer:A |

**46**.An unoccupied cell in the transportation method is analogous to a

|  |  |
| --- | --- |
| (a) | Cj -Zj value in the simplex table |
| (b) | variable in the B-column in the simplex table |
| (c) | variable not in the B-column in the simplex table |
| (d) | value in the XB column in the simplex table |

Answer:C

47.A transportation problem is a special case of an LPP,and hence can be formulated and solve as such.

a. True b.False c.Neither true nor false d. None of these

Answer: a

48.It is not necessary for the aggregate demand to be equal to the aggregate supply in a transportation problem.

a. True b.False c.Neither true nor false d. None of these

answer:b

49..The initial solution obtained by the VAM would invariably be optimum or very near to optimality

a. True b.False c.Neither true nor false d. None of these

Answer: a

50.The initial solution of the north west corner rule is recommended because it ensures that there will be m+n-1 allocations.

a. True b.False c.Neither true nor false d. None of these

answer:b

51.Only those problems where total demand equals total supplycan be solved by transportation method.

a. True b.False c.Neither true nor false d. None of these

answer:b

52.In the penalty method,a cost difference indicates the penalty of not using the least cost rule.

a. True b.False c.Neither true nor false d. None of these

Answer: a

53.If a constant is subtracted from each value of the matrix of a profit maximizing transportation problem,it is converted into a minimization problem.

a. True b.False c.Neither true nor false d. None of these

answer:b

54..Allocation to the dummy destination represent the surplus at the source point.

a. True b.False c.Neither true nor false d. None of these

Answer: a

55.Allocation to dummy source represent the number of units to be produced by use of overtime/subcontract.

a. True b.False c.Neither true nor false d. None of these

Answer: a

56.An’m’source and ‘n’ destination transportation prolem,when converted into a transhipment problem,would become an(m+n)source and an equal number of destination problem.

a. True b.False c.Neither true nor false d. None of these

Answer: a

57.Assignment technique is essentially a minimization technique.

a. True b.False c.Neither true nor false d. None of these

Answer: a

58.Multiple optimum solution imply that at least one worker get more than one job assigned.

a. True b.False c.Neither true nor false d. None of these

answer:b

59.The minimum number of lines required to covert al zeros cannot be more than n,the number of rows/columns,

a. True b.False c.Neither true nor false d. None of these

Answer: a

60.The solution to an assignment problem can be obtained by complete enumeration and evaluation of all possible assignment.

a. True b.False c.Neither true nor false d. None of these

Answer: a

61.Hungarian assignment method assumes that one job cannot be assigned to only one facility.

a. True b.False c.Neither true nor false d. None of these

answer:b

62.The relative cost of assigning a particular job to a particular facility is changed by the subtraction of a constant from either a row or a column of the cost matrix.

a. True b.False c.Neither true nor false d. None of these

answer:b

Game theory objective type questions

**UNIT 5**

**1.A two person game is said to be zero-sum if**

(a)Gain of one players is exactly matched by a loss to the other so that their sum is equal to zero.

(b)Gain of one players does not match the loss to other.

(c)Both the players must have an equal number of strategies.

(d)Diagonal entries of the pay-off matrix are zero.

ANSWER : A

**2.Which of the following is not correct?**

(a)In a two person game, both the player are assumed to be in full knowledge of the strategies available to his opponent and the pay-offs resulting from each combination of strategies.

(b)The solution to a game implies determining optimum strategies for both the players and value of the game.

(c)The solution to a two-person game is based on the assumption that player A will always play his strategy first and the other player B, would play his strategy thereafter.

(d)Player A’s strategy is determined on the basis of maximum criterion, whereas player B’s on the basis of maximum criterion.

ANSWER: C

**3.Which of the following is correct?**

(a)A game is said to be fair when both the players know about the optimum strategy of each other and the losing layer plays off the amount to the gaining player.

(b)Mixed strategy for a player can involve no more then two moves.

(c)Mixed strategy are adopted by the players when they are doubtful about the optimum strategy for them.

(d)Strategies involved in mixed strategies of the players are played in random order in the ratio determined by the optimum mix.

ANSWER: D

**4.Which of the following is not correct?**

(a)The value of game can be positive, negative or zero.

(b)The value of game can be determined only if the game has a saddle point.

(c)saddle point in the pay-off matrix is the point of equilibrium.

(d)A game is strictly determinable and fair if saddle point value comes out to be zero.

ANSWER: B

**5.For a two person game with A and B, the minimizing and the maximizing players, the optimum strategies are:**

(a)Minimax for A and Maximin for B, (b)Maximix for A and Minimax for B,

(c)Minimin for A and Maximin for B, (d)Maximin for A and Minimax for B.

ANSWER: A

**6.Which of the following is not correct**?

(a)Every game is solvable irrespective of whether the players adopt pure or mixed strategy.

(b)It is possible that multiple minimax/maximin strategies might exit in a two-person game.

(c)In a two-person zero-sum game, if the optimum solution requires one player to use a pure strategy, the other player must also do the same.

(d)It the value of the game is a negative value, it implies that the game is favoring the opponent.

ANSWER: C

**7.The given pay-off matrix of a game is transposed. When of the following is not correct?**

(a)Value of the game changes.

(b)Saddle point of the game, if exist, changes.

(c)Player B has may strategies as A had, and A has as many strategies as B.

(d)Optimum strategies of both the players does not change.

ANSWER: D

**8.Which of the following is not correct?**

(a)The graphic approach to the solution of game can be applied when one of the players has two strategies available.

(b)The dominance principle suggests that strategies of one player are dominating the strategies of the other.

(c)It is possible that a convex linear combination of the two strategies dominates a third strategy of the same players.

(d)In a 2 x n or m x 2 game, each of the players can mix at most two strategies if the multiple optimum solution do not exist.

ANSWER: B

**9.Which of the following is not correct?**

(a)Every two-person zero-sum game cannot be represented by a pair of LPP’s with primal-dual relationship.

(b)The constant value, if added to each element of the pay-off matrix to formulate the given problem as an LPP, should be subtracted from the value of the game, determined from the solution to the LPP.

(c)If some elements are negative in a pay-off matrix of a two person, zero-sum game, a constant should be added to each of the element of the matrix such that all of them become positive.

(d)If a content is added to all the elements of a pay-off matrix, it would affect only the value of the game and not the optimum strategies of the players.

ANSWER: A

**10.Which of the following is not correct?**

(a)A two-person zero-sum game wherein the two players have equal number of strategies can be solved by ‘Arithmetic method’, if the sum of row oddments equal the sum of column oddments.

(b)Any two person game can be formulated and solved as an LPP.

(c)In a two person zero-sum game, Row/column player is said to dominate the other player if he has more strategies to play.

(d)Bidding problems can be classified into open bids and closed bids.

ANSWER: C

**11.The problem of replace ment is not concerned about the**

(a)Items that deteriorate graphically

(b)Items that fail suddenly.

(c)Determination of optimum replacement interval.

(d)Maintenance of an optimum to work out profitability.

ANSWER: D

**12.Which of the following is not correct?**

(a)For the items that deteriorate gradually, operating and maintenance costs steadily increase with passage of time, whereas depreciation per year decrease with time.

(b)Optimum replacement interval is the minimum time elapsing between the successive replacement.

(c)Optimum replacement interval is the time elapsing between successive that involves minimum average total cost.

(d)While total depreciation of depreciable items increase with passage of time, the successive years depreciation usually declines.

ANSWER: B

**13.Which of the following is correct?**

(a)When the time value of money is consider, cost need to be discounted.

(b)When there are two items to be replace, the one with longer replacement interval is decidedly better.

(C)The total cost of an items over a given period of n years would be equal to purchase price+ Maintenance cost of n years + value of the items after n years.

(d)An optimum replacement interval of five years indicates that the items in equation should be replaced at the beginning of every five years.

ANSWER: A

**14.Which of the following is not correct?**

(a)The replacement interval calculations are based on the implicit assumption that the replacement of the asset is repetitive in nature.

(b)Timing if incurrence of costs is important when the time value of money is considered.

(c)No replacements policy can be laid for items that fail suddenly, because the failure time of each unit is uncertain.

(d)Replacement problems considered in the text are based on the assumption that replacements, individual or group, can be done only at fixed intervals of time.

ANSWER: C

**15.When value of money change with time, the optimum replacement policy of the equipment after ‘n’ period is:**

(i)Do not replace the item if next periods’ operating cost is greater then the weighted average of previous cost.

(ii)Replace the items if the next periods’ operating cost is less than the weighted average of previous costs.

Choose the correct answer:

(a)Only (i) is correct, (b)Only (ii) is correct,

(c)Both (i) and (ii) are correct, (d)Both (i) and (ii) are not correct.

ANSWER: D

**16.Which of the following is not correct?**

(a)The present value factors serve as the weight when time value of money is considered.

(b)Expected cost of a replacement policy of individual replacements can be obtained as follows:

Expected cost per time period is equal to the numbers of units multiplied by replacement per unit.

(c)Staff replacement policies can be easily formulated because people retire at known times.

(d)Mortality problems are like replacement policies for items whose values deteriorate gradually.

ANSWER: C

**17.Which of the following is not correct?**

(a)under group replacement policies, all the items are replaced, irrespective of fact that items have failed or have not failed.

(b)Under the individual replacement policy, an items is replaced immediately after its failure.

(c)The optimum group replacement interval is determined at the point where the sum of group replacement per unit of time and the cost of individual replacement is the minimum.

(d)Under group replacement policy, group as well as individual replacement are done.

ANSWER: D

**18.Which of the following is not correct?**

(a)Mortality problems are special type of problems, where failure is treated as death and the replacement of an items on failure is treated as birth.

(b)Mortality tables are used to derive the probability distribution of the life span of an equipments items.

(c)Staff replacement policy arises due to resignation, retirement, or death of a staff member from time to time.

(d)Staff replacement policies are like replacement policies for items whose values deteriorate gradually.

ANSWER: D

19. A two-person zero-sum game means that the

(a)the sum of losses to one player is equal to the sum of gains to other

(b)the sum of losses to one player is not equal to the sum of gains to other

(c)no any player gains or losses

(d)none of these

Answer: (a)

20.  Game theory models are classified by the

(a)number of players

(b)sum of all payoffs

(c)number of strategies(d)all of these

Answer: (d)

21. A game is said to be fair if

(a)both upper and lower values of the game are the same and zero

(b)upper and lower values of the game are not equal

(c)upper value is more than the lower value of the game

(d)none of these

Answer: (a)

22. what happens when maximin and minimax values of the game are same?

(a)no solution exists  (b)solution is mixed

(c)saddle point exists  (d)none of these

Answer:(c)

23. A mixed strategy game can be solved by

(a)algebraic method  (b)matrix method

(c)graphical method  (d)all of these

Answer:(d)

24. The size of the payoff matrix of a game can be reduced by using the principle of

(a)game inversion (b)rotation reduction

(c)dominance  (d)game transpose

Answer:(c)

25. The payoff value for which each player in a game always selects the same strategy is called the

(a)saddle point  (b)equilibrium point

(c)both (a) and (b) (d)none of these

Answer:(a)

26.Games which involve more than two players are called

(a)conflicting games  (b)negotiable games

(c)N-person games (d)all of these

Answer:(c)

27.When the sum of gains of one player is equal to the sum of losses to another player in a game, this situation is known as

(a)biased game  (b)zero-sum game

(c)fair game (d)all of these

answer:(b)

28. when no saddle point is found in a payoff matrix of a game, the value of the game is then found by

(a)reducing the size of the game to apply the algebraic method

(b)solving any one 2x2 subgame

(c)finding the average of all the values of the payoff matrix

(d)none of these

Answer:(a)

29. A saddle point exists when

1. Maximin value = maximax value
2. Minimax value = minimum value
3. minimax value = maximin value
4. None of these

Answer: (c)

30. In a pure strategy game

1. Any strategy may be selected arbitrarily
2. A particular strategy is selected by each player
3. Both players select their optimal strategy
4. None of these

Answer: (c)

31. In a mixed strategy game

1. No saddle point exists
2. Each player selects the same strategy without considering other player’s choice
3. Each player always selects the same strategy
4. All of these

Answer: (a)

32. Linear programming method should be used to determine the value of the game when the size of the payoff matrix is

1. 2 x 2
2. 3 x 4
3. M x 2
4. 2 x n

Answer: (b)

33 . Game theory is the study of

1. Selecting optimal strategies
2. Resolving conflict between players
3. Giving equal outcome to participants
4. None of these

Answer: (a)

34. If the value of the game is zero, then the game is known as:

1. Fair strategy
2. Pure strategy
3. Pure game
4. Mixed strategy

Answer: (c)

35. The games with saddle points are

1. Probabilistic in nature,
2. Normative in nature
3. Stochastic in nature,
4. Deterministic in nature.

Answer: (d)

36. When the game is played on a predetermined course of action, which does not change throughout the game, then the game is said to be

1. Pure strategy game
2. Fair strategy game
3. Mixed strategy game
4. Unsteady game

Answer: (a)

37. If the losses of player A are the gins of the player B, then the game is known as

1. Fair game
2. Unfair game
3. Non- a zero-sum game
4. Zero-sum game

Answer: (d)

38. Games with algebric sum of gains and losses of all the player equal to zero are Called

(a) zero-sum game

(b)Fair game

(c) Un fair game

(d)None of these

Answer: (a)

39. General games involves

(a)single agent

(b) multi agent

(c) Neither single agent nor multi agent

(d) only single agent and multi agent

Answer: (d)

40. In some games, it is possible to reduce the size of the payoff matrix

By using the

1. Game inversion
2. Dominance property
3. Game transpose
4. None of these

Answer:(b)

41. If a player decides to play more than one strategy, then the players

Us said to follow a probability situation is known as

1. Mixed strategy
2. Pure strategy
3. Game strategy
4. Sequential strategy

Answer : (a)

42.In a games, If the maximum value is equal to the minimum value then The game us said to be

* 1. Saddle point
  2. Centre point
  3. Equal point
  4. Point of strategic

Answer: (a)

43.A game that involves multiple moves in a series of identical

Situations is called a:

1. Sequential game.
2. Repeated game.
3. Zero-sum game.
4. Nonzero-sum game

Answer: (a)

44. What type of game can be used to demonstrate the instability of a cartel agreement between two firms?

1. A prisoner’s dilemma game.
2. A battle of the Sexes game.
3. A zero sum game
4. None of the above

Answer:(a)

45.When Minimax and Maximin criteria matches, then

(a)A fair game exists. (b)Unfair game exists,

(c)Mixed strategy exists (d)Saddle point exists

Answer:(d)

46.When the game is not having a saddle point, then the following method is used to solve the game:

1. Linear Programming method,
2. Minimax and maximin criteria
3. Algebraic method
4. Graphical method

Answer:(b)

47.If there are more than two persons in a game then the game is known as:

1. Non-zero-sum game
2. Open game
3. Multiplayer game
4. Big game

Answer : (c)

48.For the given pay off matrix the game value is

B

I II

A I 2 3

II -5 5

1. 3
2. -5
3. 5
4. 2

Answer: (d)

49.In the given game the saddle point is:

B

I II III

A I 2 -4 6

II 0 -3 -2

III 3 -5 4

(a) -2

(b) 0

(c) -3

(d 2

Answer: (c)

50.A competitive situation is known as

1. Competition
2. Marketing
3. Game
4. None of these

Answer: (c)

51.One of the assumptions in the game theory is

1. All players act rationally and intelligently
2. The winner alone acts rationally
3. Loser acts intelligently
4. Both the players believe luck

Answer: (a)

52.A play is played when

1. The manager gives green signal
2. Each player chooses one of his courses of action simultaneously
3. The player who comes to the place first says that he will start the game

(D)When the latecomer says that he starts the game.

Answer: (b)

53.The list of courses of action with each player ...............

1. Is finite
2. Is infinite
3. Three only
4. None of these

Answer:(a)

54.A game involving ‘n’ persons is known as:

1. Multi member game
2. Multi player game
3. N – person game
4. Not a game

Answer: (c)

55.Theory of games and economic behaviour is published by:

1. John Von Neumann and Morgenstern
2. John Flood
3. Bellman and Neumann
4. Mr. Erlang

Answer: (a)

56.In the matrix of a game given below the negative entries are:

B

I II

A I 1 -1

II -1 1

1. Payments from A to B
2. Payments from B to A
3. Payment from players to organizers
4. Payment to players from organizers.

Answer: (a)

57.Game models are classified by the

1. Size of the payoff
2. sum of all payoffs
3. Nature of strategies employed.
4. all of the above

Answer: (b)

58. Each player should follow the same strategy regardless of the other player’s strategy in which of the following games?

1. Constant
2. Mixed
3. Pure strategy
4. Dominance Strategy

Answer:(c)

59. The saddle point in a payoff matrix is always the \_\_\_\_\_\_\_\_\_\_.

(A) largest number in the matrix

(b) Smallest number in its column and the smallest number in its row

(c) smallest number in the matrix

(d) Largest number in its column and the smallest number in its row

Answer:(d)

60. In a mixed strategy, each player should optimize the

(a)lower value of the game

(b)minimum loss

(c)maximum loss

(d)expected gain

Answer: (d)

61.In real world, the applications of game theory is very restrictive because of the nature of assumptions made.

(a)true (b) false c. Neither false nor true d.none of these

ANSWER: A