

Roll No: \_\_\_\_\_ Duration : 1 Hour.

Q.1 Multiple Choice Question

Marks: 35

1) Infrastructure facilities consist of \_\_\_\_\_.

- a) Railways  
b) Inflation  
c) Income  
d) Real Income

Ans. \_\_\_\_\_

2) If  $H_0 : \mu \geq \mu_0$  is the null hypothesis, then the test is \_\_\_\_\_.

- a) two -tailed  
b) left - tailed  
c) right - tailed  
d) non-tailed

Ans. \_\_\_\_\_

3) In simplex method, we try to get \_\_\_\_\_ in the pivot element place and \_\_\_\_\_ in all other places in the pivot column.

- a) one, zeroes  
b) zero, ones  
c) one, ones  
d) zero, zeroes

Ans. \_\_\_\_\_

4) If the determinant of a square matrix is 1, then the matrix must be a \_\_\_\_\_ matrix.

- a) Identity  
b) column  
c) singular  
d) non-singular

Ans. \_\_\_\_\_

5) If  $a : b = 2 : 3$  and  $b : c = 2 : 3$  then  $a : b : c$  is \_\_\_\_\_.

- a) 2 : 4 : 3  
b) 4 : 6 : 9  
c) 2 : 6 : 9  
d) 4 : 3 : 9

Ans. \_\_\_\_\_

6) A combination of a group of securities is called \_\_\_\_\_.

- a) Bunch  
b) Portfolio  
c) Sum  
d) Share

Ans. \_\_\_\_\_

7) The difference between the merchandise exports and imports is called \_\_\_\_\_.

- a) trade deficit  
b) Budgetary profit  
c) Fiscal deficit  
d) Fiscal profit

Ans. \_\_\_\_\_

8) If  $H_0 : \mu \leq \mu_0$  is the null hypothesis, then the test is \_\_\_\_\_.

- a) two -tailed  
b) left - tailed  
c) right - tailed  
d) non -tailed

Ans. \_\_\_\_\_

9) The simplex method reaches the maximal solution when \_\_\_\_\_.

- a) no  $c_j - z_j$  is positive  
b) all  $c_j - z_j$  are positive  
c) all  $c_j - z_j$  are negative  
d) no  $c_j - z_j$  is negative

Ans. \_\_\_\_\_

10) It is possible to find the inverse of a square matrix only if it is a \_\_\_\_\_ matrix.

a) singular

b) non-singular

c) zero

d) identity

Ans. \_\_\_\_\_

11) After receiving a 20% discount on the selling price, Rupa paid Rs.1,088 for a dress. The original selling price was Rs. \_\_\_\_\_.

a) 1300

b) 1305.6

c) 1360

d) 1400

Ans. \_\_\_\_\_

12) If the securities within the portfolio have high degree of correlation, then the risk of the portfolio is \_\_\_\_\_.

a) High

b) Low

c) Zero

d) One

Ans. \_\_\_\_\_

13) It is found that the share and growth rate of the following sector is decreasing w.r.t. GDP of India.

a) Agriculture

b) Industry

c) Service sector

d) Business

Ans. \_\_\_\_\_

14) A hypothesis stating that there is no significant difference between the statistic calculated from the sample and the population parameter assumed, is called the \_\_\_\_\_ hypothesis.

a) alternate

b) null

c) neutral

d) non-significance

Ans. \_\_\_\_\_

15) The conditions imposed on the variables in an L.P.P. are called \_\_\_\_\_.

a) objective functions

b) constraints

c) vertices

d) convex regions

Ans. \_\_\_\_\_

16) If the rows and columns of a matrix A are interchanged with each other, then we get \_\_\_\_\_.

a) a row transformation of A

b) a row-column transformation of A

c) the adjoint matrix of A

d) the transpose of A

Ans. \_\_\_\_\_

17) If  $a : b$  is a ratio, then the ratio  $a^2 : b^2$  is called it's \_\_\_\_\_.

a) square ratio

b) compound ratio

c) double ratio

d) duplicate ratio

Ans. \_\_\_\_\_

18) Beta of a share is the \_\_\_\_\_.

a) difference between actual and expected return

b) inverse of alpha of the market

c) slope of the regression line

d) y-intercept of the regression line.

Ans. \_\_\_\_\_

19) The real wages are calculated with the help of \_\_\_\_\_.

a) Index of agriculture

b) Consumer price index no.

c) Index of industrial production

d) Index of shares

Ans. \_\_\_\_\_

20) Null hypothesis is denoted by \_\_\_\_\_.

- a)  $H_1$
- c)  $H_0$

- b)  $H_2$
- d)  $U_0$

Ans. \_\_\_\_\_

21) The graphical method to solve an L.P.P. can be used if the number of variables are \_\_\_\_.

- a) 1
- c) 3

- b) 2
- d) zero

Ans. \_\_\_\_\_

22) For two matrices A and B of the same order, the statement  $A + B = B + A$  \_\_\_\_\_.

- a) may not be always true
- c) will be always false

- b) will be always true
- d) never true

Ans. \_\_\_\_\_

23) If a, b, c and d are four numbers in proportion, then which of the following is false?

- a)  $a/b = c/d$
- c)  $ac = bd$

- b)  $a/c = b/d$
- d)  $ad = bc$

Ans. \_\_\_\_\_

24) Alternative hypothesis is denoted by \_\_\_\_\_.

- a)  $H_1$
- c)  $H_0$

- b)  $H_2$
- d)  $U_0$

Ans. \_\_\_\_\_

25) The point of intersection of  $x_1 + x_2 = 6$  and  $5x_1 + x_2 = 10$  is \_\_\_\_\_.

- a) (3,3)
- c) (1,5)

- b) (4,2)
- d) (5,1)

Ans. \_\_\_\_\_

26) If A is a matrix of order  $3 \times 2$ , then its determinant \_\_\_\_\_.

- a) will be zero
- c) will not exist

- b) will be done
- d) will be positive

Ans. \_\_\_\_\_

27) If a, b, c are in continued proportion, then b is not \_\_\_\_\_.

- a) the harmonic mean of a, c
- c)  $\sqrt{ac}$

- b) the mean proportional
- d) the geometric mean of a, c

Ans. \_\_\_\_\_

28) The graph of the inequality  $3x + 5y \leq 17$  is \_\_\_\_\_.

- a) a straight line
- c) a half-plane

- b) a quarter-plane
- d) a curve

Ans. \_\_\_\_\_

29) For two matrices A and B of the same order,  $A - B$  is not equal to \_\_\_\_\_.

- a)  $A + (-B)$
- c)  $A - (-1)B$

- b)  $A + (-1)B$
- d)  $A - (1)B$

Ans. \_\_\_\_\_

30) For an L.P.P. for maximizing  $z = 11x_1 + 10x_2$ , the following are the vertices of the feasible region. Which of them is the solution? \_\_\_\_\_

- a) (0,0)
- c) (6,0)

- b) (0,4)
- d) (3,3)

Ans. \_\_\_\_\_

31) A matrix is said to be zero or null matrix if all the elements of the matrix are \_\_\_\_\_.

- a) ones
- c) two

- b) zeroes
- d) three

Ans. \_\_\_\_\_

32) If  $0.75 : x :: 5 : 8$  then  $x$  is equal \_\_\_\_\_.

- a) to 1.12
- c) to 1.25

- b) to 1.2
- d) to 1.30

Ans. \_\_\_\_\_

33) From the Central Limit Theorem, the sampling distribution of sample mean is approximately normal with mean  $\mu$  and standard deviation \_\_\_\_\_.

- a)  $\sigma/\sqrt{n}$
- c)  $\sigma$

- b)  $\sigma/n$
- d)  $n \cdot \sigma$

Ans. \_\_\_\_\_

34) For an L.P.P. with the constraints  $2x_1 + x_2 \geq 30$ ,  $x_1 + 3x_2 \geq 30$ ,  $x_1 \geq 0$ ,  $x_2 \geq 0$ , the point satisfying all the constraints is \_\_\_\_\_.

- a) (0,0)
- c) (0,25)

- b) (25,0)
- d) (15,10)

Ans. \_\_\_\_\_

35) The transpose of a row matrix is \_\_\_\_\_.

- a) zero matrix
- c) column matrix

- b) diagonal matrix
- d) row matrix

Ans. \_\_\_\_\_

B2 Q522

Duration: 2 hour &amp; 45 Minutes.

Q.1 Multiple Choice Question (Separate Sheet Attached)

35

Q.2 Attempt any ONE of the following.

10

A. In a big city 325 men out of 600 men were found to be smokers. Does this information support the conclusion that the majority of men of this city are smokers? Use 5% level of significance.

B. Solve the L.P.P. graphically.

$$\text{Maximize } Z = 2x_1 + 3x_2$$

$$\text{Subject to } x_1 \leq 3$$

$$x_1 + x_2 \leq 4$$

$$x_1, x_2 \geq 0$$

C. Explain in brief GDP, GNP and related concepts that measures the income of a nation.

Q.3 Attempt any ONE of the following.

10

A. If  $A = \begin{bmatrix} 3 & -6 \\ 2 & 1 \end{bmatrix}$ ,  $B = \begin{bmatrix} -3 & 2 \\ -1 & 5 \end{bmatrix}$ , show that  $A \times B \neq B \times A$ .

B. Find the inverse of  $A = \begin{bmatrix} 1 & 3 & 0 \\ 2 & -2 & 1 \\ -4 & 1 & -1 \end{bmatrix}$

C. Find the inverse of  $A = \begin{bmatrix} 2 & 5 \\ 1 & 3 \end{bmatrix}$  by using the pivotal reduction method.

Q.4 Attempt any ONE of the following.

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A. Kunal, Kiran and Kabir are partners in a firm and their capitals are Rs.40,000, Rs. 25,000 and Rs.55,000 respectively. At the end of a year, a business earned a profit of Rs.29,616 which is to be distributed among the partners in the proportion of their capitals. What will be each partner's share of profit?

B. In 4 days, 6 workers make 8 chairs. In 7 days, how many chairs will 9 workers make?

C. A person sold two watches at Rs.240 each and this made 20% gain on one and 20% loss on the other. Find his percentage gain or loss on both watches taken together.

Q.5 Attempt any ONE of the following

10

A. Given below are the likely returns in case of shares of VCC Ltd. And LCC Ltd. In various economic condition. Both the shares are presently quoted at Rs. 100 per share.

Economic conditions	Probability	Return of VCC Ltd.	Return of LCC Ltd.
High growth	0.3	100	150
Low growth	0.4	110	130
Stagnation	0.2	120	90
Recession	0.1	140	60

- i) Which of the two companies is risky investment?
- ii) Mr. Suresh has two options for investing Rs. 1000.
  - a) Only in VCC Ltd.
  - b) Only in LCC Ltd.

Which of the above options is better? Why?

B. A portfolio P consists of two shares X and Y. The following table gives the probability distributions of the returns of the two shares. Find :

- i) Expected return from share X
- ii) Expected return from share Y
- iii) Total risk of share X
- iv) Total risk of share Y
- v) Covariance of return from share X and share Y

The proportion of share X and share Y in the portfolio is 70% and 30% respectively.

Economic conditions	Probability	Return on X(%)	Return on Y(%)
High growth	0.3	14	16
Low growth	0.4	12	12
Stagnation	0.2	11	10
Recession	0.1	10	8

C. From the following information, calculate beta of the security.

Year	Return on Security (%)	Return on Market Portfolio (%)
1	10	12
2	12	11
3	15	14
4	10	12
5	8	11