

Note:- 1) All questions are compulsory subject to internal choice.

2) Figures to right indicate full marks.

Q1) A) Fill in the blanks choosing the correct alternative. (Any 8) (08)

1. If H_0 is true and we reject H_0 it is called
(a) Type I error (b) Type V error (c) Standard error (d) Sampling error
2. A matrix of order $1 \times n$ is called a _____ matrix.
(a) Row (b) Column (c) Unit (d) Squares
3. If the critical region is located in both the side of sampling distribution of test statistic, the test is _____
(a) One tailed (b) two tailed (c) right tailed (d) None of these
4. The inverse ratio of 2 : 3 is _____
(a) 3:2 (b) 1:6 (c) 6:1 (d) None of these
5. If determinant $A=0$ then A is _____
(a) zero matrices (b) Non-singular matrices (c) Singular matrices (d) Unit matrices
6. Infrastructure facilitates consist of _____
(a) Railways (b) Inflation (c) Income (d) Real income
7. If $a:b:c = 3:4:7$ then the ratio $(a+b+c):a$ is equal to
8. Return is the profit earned on _____ Invested in the business.
(a) Capital (b) Risk (c) Both (d) None of these
9. Return is calculated as total gain divided by _____
(a) Selling price (b) Purchase price (c) Discounted price (d) Return price
10. The difference between the merchandise exports and imports is called _____
(a) Trade deficit (b) Trade profit (c) Trade revenue (d) Trade balance

Q1) B) State whether the following statements are True or False. (07)

1. A sample of size 30 is a large sample.
2. If $H_1 = \mu < \mu_0$, then the test is a left- tailed test.
3. The cost of surplus variable in simplex method is zero.
4. An L.P.P may have no solution.
5. The determinant of a rectangular matrix can be found.
6. A zero matrix is always a square matrix.
7. The triplicate ratio of 1: 2 is 1: 8.
8. If $A\alpha B, B\alpha A$.
9. Standard Deviation is a measure of risk.
10. M_1, M_2, M_3 & M_4 are indicators of money supply.

Subject to $6x + y \geq 18$

$$x + 4y \geq 12$$

$$2x + y \geq 10$$

$$x, y \geq 0$$

b) A coin is tossed 400 times & was found to result in head 245 times can we conclude that the coin is fair? Use 5% level of significance. (08)

OR

c) Solve the following using simplex method. (10)

Maximize $z = 9x_1 + 13x_2$

$$2x_1 + 3x_2 \leq 18$$

$$2x_1 + x_2 \leq 10$$

$$x_1, x_2 \geq 0$$

d) A company produced two products A & B units 1 unit of A required 10 Units of machine I & 6 units of machine II. 1 unit of product B requires 4 unit of machine I & 8 units of machine II. Capacities of machine I & machine II is 40 units & 48 units respectively. Profit per unit of A & B is Rs10 & Rs20 respectively. Formulate LLP. (05)

Q3) a) Find the inverse of $A = \begin{vmatrix} 1 & 3 & 0 \\ 2 & -2 & 1 \\ -4 & 1 & -1 \end{vmatrix}$ (07)

b) Monthly incomes A & B are in the ratio 7: 4 and their expenditure are in the ratio 9: 5. Each of them saves Rs10,000. Find their incomes (08)

OR

c) Solve the following equation using the matrix inversion method. (08)

$$2x - y + z = 1$$

$$x + 2y + 3z = 8$$

$$3x + y - 4z = 1$$

d) A person sold an article at Rs572.40 & gained 6%. What would have been the selling price if she had sold it at a 4% loss? (07)

Q4) a) A portfolio P has share X & Y, with the following distribution. (15)

Return from X(%)	-1	5	11	15
Return from Y (%)	-2	6	10	16
Probability	0.1	0.3	0.4	0.2

The proportion of share X is 60% & the remaining is share Y. Find

1. Expected return from X.
2. Expected return from Y.
3. Total risk from X.
4. Total risk from Y.
5. Covariance of return from X & Y
6. Expected return from Portfolio P.
7. Total risk from .portfolio p.

OR

b) From the following information, calculate beta of security. (08)

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

c) For a share S, given that $B_s = 0.9$, $\sigma_s^2 = 80$, $\sigma^2_m = 90$ & $\alpha_s = 0.1$ (07)

Find the unsystematic risk for share S & cov (R_s, R_M). Also write down the regression equation of R_s on R_M .

Q5) a) Write Short notes. (Any Three) (15)

- i. Duality in Simplex method
- ii. Type I & Type II error
- iii. Singular matrix & Non-singular matrix
- iv. Nominal GDP & real GDP
- v. Ratio & Percentage

OR

p) Explain in short the different measure of money supply, giving their formulae. (03)

q) Matrix & its Type Or (07)
Type of Matrix'

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