

Q. M.

F.Y. BBI  
SEMSTER-2  
QUANTATIVE METHOD-II

[Time:  $2\frac{1}{2}$  Hours]

[Marks: 75]

**NOTE: i) All questions are compulsory.****ii) In Q.1, attempt both the sub-parts A and B.****iii) Figures to the right indicate marks.****iv) Use of non-programmable calculator is allowed.****Q 1) A. Fill in the blanks with correct alternative. (Attempt any Eight) [8]**

- a. The hypothesis rejecting the null hypothesis is called as \_\_\_\_\_ hypothesis.  
( null, alternate, positive)
- b. If  $H_0: \mu \geq \mu_0$  is the full hypothesis, then the test is \_\_\_\_\_.  
(two tailed, left tailed, non tailed)
- c. The linear function  $z$  which is to be minimized or maximized in a L.P.P. is called as \_\_\_\_\_.  
(subjective, objective, decisive, optimum)
- d. Linear programming forms the basic foundation for an important branch of mathematics and statistics, called as \_\_\_\_\_.  
(Linear Research, Operations Research, None)
- e. A square matrix whose all diagonal values are 1 and remaining are zero is called as \_\_\_\_\_ matrix.  
(singular, non-singular, identity, singleton)
- f. Determinant of non-singular matrix is \_\_\_\_\_ matrices.  
(negative, non-zero, zero, does not exist)
- g. If 15% of certain amount is Rs. 300, then amount is Rs. \_\_\_\_\_.  
( 2250, 2000, 1520, 4500)
- h. The inverse ratio of 5:2 is \_\_\_\_\_.  
( 25:4, 2:5, 125:8, none of these)
- i. \_\_\_\_\_ risk is undiversifiable and the investors cannot avoid it..  
( systematic, unsystematic, business, liquidity)
- j. The difference between the merchandise exports and imports is called as \_\_\_\_\_.  
( trade deficit, trade profit, trade revenue, trade balance)

**Q 1) B. State whether the following statements are True or False. ( Attempt any seven ) [7]**

- a) In left tailed test, if  $Z > 1.28$  using 10% LOS then null hypothesis is accepted.
- b) S.E. stands for standard estimate.
- c) An objective function is one of the component of LPP.
- d) The feasible region in LPP gives the solution of LPP.
- e) Inverse is possible only for singular matrix.
- f) Matrix addition is commutative.
- g) Sub-Duplicate ratio is one of the type of compound ratio.
- h) Percentage of  $\frac{1}{8}$  is 37.5%.
- i) The coefficient of correlation always lies between 0 and 1.
- j)  $NDP = GNP - Depreciation$ .

**Q.2. Solve following:**

- A. Is it likely that a sample of size 450 whose mean is 25, is a random sample from a large population with mean 21.6 and s.d. 7.4? Use 1% level of significance. [7]
- B. Solve the following LPP graphically: [8]  
Maximize:  $50x + 30y$ , subject to :  $5x + 3y \leq 45$ ,  $2x + 7y \leq 56$ ,  $x \geq 0$ ,  $y \geq 0$

**OR**

- C. Solve the following LPP by simplex method:  
Maximize:  $Z = 500x + 250y$ ,  
Subject to:  $x + y \leq 26$ ,  $7x + 3y \leq 84$ ,  $x, y \geq 0$  [8]
- D. A die is thrown 5000 times and a throw of 1 or 2 is observed 1240 times. If getting 1 or 2 is considered as success test whether the die is unbiased or not? Use 5% level of significance. [7]

**Q.3. Solve the following:**

- A. Solve the following LPP graphically:  
Minimise  $z = 6x + 4y$   
Subject to :  $x + y \geq 6$ ,  $5x + y \geq 15$ ,  $7x + 2y \geq 28$ ,  $x, y \geq 0$
- B. Find matrix X such that  $5X + 7A - 8B = 0$  where  
 $A = \begin{bmatrix} 4 & 1 & -2 \\ 3 & -2 & 5 \\ 7 & -1 & 1 \end{bmatrix}$  And  $B = \begin{bmatrix} -2 & 3 & -1 \\ 1 & 7 & -3 \\ 5 & 8 & 9 \end{bmatrix}$  [7]

**OR**

- C. Find inverse of matrix  $A = \begin{bmatrix} 6 & 5 & 2 \\ 2 & -2 & 1 \\ 3 & 2 & 1 \end{bmatrix}$  by using adjoint method. [8]
- D. A and B are partners in a business with capitals Rs.4,50,000 and Rs.3,60,000 respectively. They admit C in business, giving him  $1/13^{\text{th}}$  share of the total profit. How much capital should C invest? What is the proportion in which A,B and C will share the profit? [7]

**Q.4. Solve the following:**

- A. Solve the following equations simultaneously using matrix inversion method:  
 $2x + y - 3z = 5$ ,  $x - 2y + z = 8$ ,  $3x + y - z = 10$ . [8]
- B. By selling an article at Rs. 4200, a person lost 20% profit. At what price should he have sold it to gain 16%? [7]

**OR**

- C. From the following information calculate expected return of both the company and compare: [8]

State of economy	Probability of occurrence		Expected rate of return	
	A ltd.	B ltd.	A ltd.	B ltd.
Recession	0.3	0.5	6	7
Normal	0.3	0.3	12	12
Boom	0.4	0.2	20	24

- D. The ages of father and son are in the ratio 11:5. The ratio of their ages after 15 years will be 7:4. Find the ratio of their ages 5 years back.

Q.5.

- A. Explain in brief GDP and GNP. [8]  
B. Explain the different measures of money supply, giving their formulae. [7]

OR

C. Short notes: (any 3)

- Hypothesis
- Square matrix and its types
- Proportion and its types
- Adjoint Method
- Debt service ratio

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**Wish You All The Best**

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