

Code: BA1T5

I MBA-I Semester-Regular Examinations-MARCH 2013

Quantitative Techniques for Business Decisions

Time: 3 Hours

Max. Marks: 70

SECTION-A

1. Answer any FIVE of the following. 5 x 2=10 marks

- a. Cramer's Rule.
- b. What are measures of dispersion?
- c. Random variables.
- d. Poisson distribution.
- e. Type-II errors.
- f. Dual simplex method.
- g. State pure strategies and mixed strategies in game theory.
- h. What is odds method?

SECTION-B

Answer the following.

5 x 10 = 50 marks

2. a. If

$$A = \begin{pmatrix} 2 & 1 \\ 3 & 2 \end{pmatrix},$$

Find the matrix B, where

$$B = 2A^2 - 5A + I$$

(Or)

- b. The mean mark of 3,000 examines is 45 and S.D = 14. Find how many have secured marks (i) less than 30 (ii) between 60 and 80 and (iii) more than 70.
3. a. The average number of suicides per week in a town is 1.5. Find out the probability that there will be 5 or more suicides in a month. One month may be taken as 4 weeks.

(Or)

- b. Fit a Poisson distribution to the following data and find out if the fit is good:

Deaths:	0	1	2	3	4
Frequency:	123	59	14	3	1

4. a. Determine the sample size if Standard deviation =6, population mean= 25, sample mean = 23 and the desire degree of precision is 99%.

(Or)

- b. Two different types of drugs A and B were tried on

certain patients for increasing weight 8 persons were given drug A and 10 persons were given drug B. The increased weight in Kgs. given below

Drug - A	10	8	7	2	9	11	12	3		
Drug - B	12	10	12	13	8	4	15	11	10	2

Do the two drugs were differ significantly with regard to their effect in increasing weights?

(TV of t- for 16 df. is 2.12)

5. a. Explain the procedure of simplex method with a suitable example?

(Or)

- b. Solve the following LPP using graphical method?

$$\begin{aligned}
 &\text{Maximize} && Z=90X + 100Y \\
 &\text{Subject to} && 11X + 9Y \leq 99 \\
 &&& 7X + 12Y \leq 84 \\
 &&& 6X + 16Y \leq 96 \\
 &&& X, Y \geq 0
 \end{aligned}$$

6. a. What is the optimal strategy in the game described by the matrix?

(Or)

- b. Solve the following game. Find the optimum probability mix for the player A and B. Also find the value of the game. Assume the player A to be the maximizing player.

Player A	Player B			
	B1	B2	B3	B4
A1	2	2	3	-2
A2	4	3	2	6

SECTION-C

7. CASE STUDY

1 x 10 = 10 marks

A company has two plants to manufacture scooters. Plant I manufactures 80% of the scooters and plant II manufactures 20%. At plant I, 85 out of 100 scooters are rated standard quality or better. At plant II, Only 65% out of 100 scooters are rated standard quality or better.

- i) What is the probability that scooter selected at random came from plant I if it is known that the scooter is of standard quality?
- ii) What is the probability that scooter came from plant II if it is known that the scooter is of standard quality?