

Code: BA1T5

**I MBA-I Semester-Regular/Supplementary Examinations
January 2017**

**QUANTITATIVE TECHNIQUES FOR BUSINESS
DECISIONS**

Duration: 3hours

Max. Marks: 70

SECTION-A

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

- a) Explain the merits of Mean, median and mode.
- b) Explain the main difference between mean deviation and standard deviation.
- c) A fair coin is being tossed. The coin has turned up tails every time on the last five tosses. What is the probability the coin will turn up tails on the next toss? Why?
- d) Describe the importance of Poisson distribution.
- e) Briefly discuss the difference between sampling method and census method.
- f) Differentiate null and alternative hypothesis.
- g) Max $7T + Rs.5C$
 $4T + 3C \leq 240, 2T + 1C \leq 100, T \geq 0, C \geq 0$. Find maximum profit.
- h) State and explain various methods for solving mixed strategy game.

SECTION – B

Answer the following:

5 x 10 = 50 M

2.a) Find the inverse of

$$A = \begin{bmatrix} 1 & 2 & 3 \\ 2 & 5 & 3 \\ 1 & 0 & 8 \end{bmatrix}$$

(OR)

b) A group of 100 items has mean 60 and variance 25. If the mean of the first 50 items is 61 and standard deviation is 4.5, find the mean and standard deviation of the other 50 items.

3.a) A man dealt 4 spade cards from an ordinary pack of 52 cards. If he is given 3 more cards, find the probability p that at least one of the additional cards is also a spade. (note: there are 9 spade cards are there in a pack of 52)

(OR)

b) The mean and variance of a binomial distribution are 3 and 2 respectively. Find the probability that the variate takes values
i) less than or equal to 2 ii) greater than or equal to 7.

4.a) A random sample of 700 units from a large consignment showed that 200 were damaged. Find a) 95% and b) 99% confident limits for the proportion of damaged units in the consignments.

(OR)

b) A random sample of 100 students gave a mean weight of 58 kg with S.D of 4 kg. Test the hypothesis that the mean weight in the population is 60 kg.

5.a) A manufacturer produces two types of models M1 and M2. Each model of the type M1 requires 4 hours of grinding and 2 hours of polishing; whereas each model of M2 requires 2 hours of grinding and 5 hours of polishing. The manufacturer has 2 grinders and 3 polishers. Each grinder works for 40 hours a week and each polisher works 60 hours a week. Profit on M1 model is Rs.3.00 and on model M2 is Rs.4.00. Whatever produced in a week is sold in the market. How should the manufacturer allocate his production capacity to the two types of models, so that he makes maximum profit in a week?

- i. Formulate the LPP.
- ii. Solve the LPP by using graphical method.

(OR)

b) Define transportation model. Among NWCM, LCEM and VAM, which one is more efficient? Justify your answer.

6.a) The questions in this problem refer to the following game.

		Player 2		
		L	M	R
Player 1	U	1,2	3,5	2,1
	M	0,4	2,1	3,0
	D	1,1	-4,3	0,2

- i. Determine if either player has any dominated strategies. If so, identify them.
- ii. Does either player have a dominant strategy? Why or why not?

(OR)

b) Define the Nash equilibrium concept. Justify with an example.

SECTION- C

7. Case study

1x10=10

A concrete company transports concrete from three plants 1, 2 and 3, to three construction sites, A, B and C. The plants are able to supply the following numbers of tons per week as well as the requirements of the sites, in number of tons per week. The cost of transporting 1 ton of concrete from each plant to each site is given below.

	A	B	C	Supply (availability)
plant1	4	3	8	300
plant2	7	5	9	300
plant 3	4	5	5	100
Demand (requirement)	200	200	300	

Solve this transportation problem by using NWCM method.