

**MASTER OF BUSINESS  
ADMINISTRATION (FULL TIME  
PROGRAMME)**

**Term-End Examination**

**December, 2011**

**MCN-006 : QUANTITATIVE ANALYSIS FOR  
BUSINESS DECISIONS**

*Time : 3 hours*

*Maximum Marks : 100*

**Note :** Attempt any five questions. All questions carry equal marks.

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1. (a) What do you mean by quantitative decision making? Give the scope in business statistics briefly. 10
  - (b) Give an example of a function which is 10
    - (i) one-one but not onto
    - (ii) one-one and onto
    - (iii) neither one-one nor onto
    - (iv) onto but not one-one
  2. (a) Find the value of K for which 10

$$f(x) = \begin{cases} Kx+5, & \text{If } x \leq 2 \\ x-1, & \text{If } x > 2 \end{cases}$$

is continuous at  $x = 2$
  - (b) Find two numbers whose sum is 16 and the sum of whose cubes is minimum. 10

Given  $A = \begin{bmatrix} 1 & -1 & 1 \\ 1 & -2 & -2 \\ 2 & 1 & 3 \end{bmatrix}$  and  $B = \begin{bmatrix} -4 & 4 & 4 \\ -7 & 1 & 3 \\ 5 & -3 & -1 \end{bmatrix}$

3. (a) Find AB and use this result in solving the following system of equations : 10  
 $x - y + z = 4$ ,  $x - 2y - 2z = 9$ ,  $2x + y + 3z = 1$
- (b) Write short notes on : 10
- (i) Histogram
  - (ii) Frequency Polygon
  - (iii) Frequency curve
  - (iv) Ogive
4. (a) Describe the different measures of central tendency of a frequency distribution. Mention their merits and demerits. 10
- (b) The first four moments of a distribution about the value '4' of the variable are 10  
 $-1.5$ ,  $17$ ,  $-30$  and  $108$ .  
 State whether the distribution is leptokurtic or platykurtic.
5. (a) The following results were obtained from marks in Mathematics and Physics in an Examination : 10

	Mathematics	Physics
Mean	47.5	39.5
Standard Deviation	16.8	10.8

Correlation Coefficient ( $r$ ) = 0.95

Find both regression equations. Also estimate the value of  $y$  for  $x = 30$ .

- (b) A husband and wife appear in an interview for two vacancies in the same post. The

probability of husband's selection is  $\frac{1}{7}$  and

that of wife's selection is  $\frac{1}{5}$ . What is the probability that,

- (i) Both of them will be selected
- (ii) only one of them will be selected
- (iii) none of them will be selected

6. (a) State the conditions under which a binomial distribution tends to

- (i) Poisson distribution
- (ii) Normal distribution. Also write down the Probability functions of Binomial and Poisson distribution.

- (b) In a sample of 1000 cases, the mean of a certain test is 14 and S.D. is 2.5. Assuming the distribution to be normal, find

- (i) How many students score between 12 and 15 ?
- (ii) How many students score above 18 and below 8 ?

7. (a) Write short notes on the following : 10
- (i) Null hypothesis
  - (ii) Testing of hypothesis
  - (iii) Origin theory of sampling
  - (iv) Critical region and acceptance region
  - (v) Two types of errors.
- (b) A Coin was tossed 400 times and the head turned up 216 times. Test the hypothesis that the coin is unbiased. 10

8. (a) Records taken of the number of male and female births in 800 families having four children are as follows : 10

No of male births	0	1	2	3	4
No of female births	4	3	2	1	0
No of families	32	178	290	236	94

Test whether the data are consistent with the hypothesis that the Binomial law holds and chance of male birth is equal to that of

female birth namely  $p = q = \frac{1}{2}$

- (b) Two samples are drawn from two normal Population. From the data of Information test whether the two samples have the same variance at 5% level of significance. 10

Sample 1	60	65	71	74	76	82	85	87		
Sample 2	61	66	67	85	78	63	85	86	88	91