No. of Printed Pages : 3

**MCR-010**

00953

# MASTER OF BUSINESS ADMINISTRATION (NETWORK INFRASTRUCTURE MANAGEMENT) (MBANIM)

## Term-End Examination

## December, 2012

## MCR-010 : QUANTITATIVE ANALYSIS FOR MANAGERIAL APPLICATIONS

*Time : 3 hours* *Maximum Marks : 100*

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

**1.** Describe in brief some of the important quantitative techniques used in modern business and industrial units, also discuss the limitations of quantitative techniques. **20**

**2.** (a) By using elementary row operations, find the inverse of the matrix. $A = \begin{bmatrix} 3 & -1 & -2 \\ 2 & 0 & -1 \\ 3 & -5 & 0 \end{bmatrix}$ **10**

(b) If $y = \tan x \tan 2x \tan 3x \tan 4x$, find $\frac{dy}{dx}$. **10**

3. (a) Explain histogram, frequency polygon and frequency curve. Represent the following data by histogram and frequency polygon. **10**

| Class | 0 - 5 | 5 - 10 | 10 - 15 | 15 - 20 | 20 - 25 | 25 - 30 |
|---|---|---|---|---|---|---|
| Frequency | 3 | 5 | 9 | 20 | 15 | 6 |

(b) How is arithmetic mean affected if every value of the variable is : **10**

(i) decreased by same constant a

(ii) multiplied by same constant k

(iii) increased by same constant b and

(iv) divided by same constant h

4. (a) Find the Bowley's coefficient of skewness, the two groups given below and point out which distribution is more skew ? **10**

| Marks | 55 - 58 | 58 - 61 | 61 - 64 | 64 - 67 | 67 - 70 |
|---|---|---|---|---|---|
| Group A | 12 | 17 | 23 | 18 | 11 |
| Group B | 20 | 22 | 25 | 13 | 7 |

(b) A can hit a target 4 times in 5 shots, B 3 times in 4 shots, C twice in 3 shots. They fire a volley. What is the probability that two shots at least hit ? **10**

5. (a) State and prove Baye's theorem. **10**

(b) Give some example of the occurrance of Poisson distribution in different fields. Under the conditions to be stated derive Poisson distribution as a limiting form of a binomial distribution. **10**

6. (a) Define Exponential distribution. Also find mean and variance for the exponential distribution $f(x) = \frac{1}{\beta} e^{-1/\beta x}, x \geq 0$ **10**

(b) Define Karl Pearson's coefficient of correlation and Spearman's rank coefficient of correlation. Also mention their properties. **10**

7. (a) Describe the components of a time series. Illustrate them with a suitable example. **10**

(b) Find the correlation coefficient and the equations of regression line for the following value of $x$ and $y$ : **10**

| $x$ | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| $y$ | 2 | 5 | 3 | 8 | 7 |

8. (a) Distinguish between : **10**

(i) Sample and Population

(ii) Parameter and Statistic

(iii) Standard error and sampling error

(b) Write Short notes on the following : **10**

(i) Additive property of Chi-square.

(ii) Conditions for applying Chi-square test.

(iii) Chi-square as a test of 'goodness of fit".