

Seat No.	
-------------	--

Regu – D- 252

**M.B.A. (Part - I) (Semester –I) (New Course) Examination, 2011
MATHEMATICS AND STATISTICS FOR MANAGEMENT**

Sub. Code: 48322

Day and Date: Saturday, 31-12-2011

Total Marks : 70

Time: 10.30a.m. to 1.30 p.m.

- Instructions**
- i) Question No.1 and 5 are **compulsory**
 - ii) Attempt **any two** questions from the remaining questions no.2 to 4.
 - iii) Figures to the **right** indicate **full** marks.
 - iv) **Use of calculators is allowed**

1. A) i) Evaluate the following :

$$a) \lim_{x \rightarrow 1} \frac{X^2 + 4x - 5}{x - 1},$$

$$b) \lim_{x \rightarrow 0} \frac{(1 + X)^2 - 1}{x}$$

$$c) \lim_{x \rightarrow \infty} \frac{3x + 2}{\sqrt{x^2} + 3 + \sqrt{x^2 + 1}}$$

ii) Find the minimum and maximum value of $f(x) = X^3 - 3X^2 - 9x + 27$.

B) i) Solve the following equations by using Cramers rule

$$x+y+z=1, \quad x+2y+3z=16, \quad x+3y+4z=22.$$

ii) Find the polynomial of lowest degree from the following data and hence find $f(6)$

x : 3 7 9 10

y : 168 120 72 63

(10+10)

P.T.O.

Regu – D- 252

-2-

2. A) i) The total cost and total revenue function of a firm are

$$C = \frac{X^3}{6} - 6X^2 \text{ and } R = 20x - \frac{13x^2}{2} + 10. \text{ Find marginal cost.}$$

ii) At What annual rate of interest compounded annually will money double in 7 years ?

B) i) Find the inverse of the matrix

$$\begin{bmatrix} 1 & 2 & -1 \\ 3 & -1 & 2 \\ 5 & 3 & 4 \end{bmatrix}$$

ii) By using the properties of the determinant, show that

$$0 \quad ab^2 \quad ac^2$$

(7+8)

3. A) Define mean, median and mode. Find the standard deviation and its coefficient from the following data :

Marks : 0-10 10-20 20-30 30-40 40-50 50-60 60-70

No. of students : 4 14 19 25 22 11 5

B) State the properties of regression coefficients. The price and demand of a commodity during a period of 10 days is as follows :

Price : 14 10 11 16 15 18 13 12 9

Demand : 12 21 18 10 11 10 15 15 20

Find Karl Pearson's correlation coefficient between these two characteristics.

(7+ 8)

Regu – D- 252

4. A) Define mean deviation (M.D.) and standard deviation (S.D.). Find mean deviation about mean and standard deviation for the following data.

Price (Rs.) : 3, 8, 10, 6, 9, 14, 7, 11, 12, 16.

- B) What is time series ? What are the components of a time series.

From the following data, find a three – yearly moving averages

Year	:	1	2	3	4	5	6	7	8	9	10
Productions	:	21	15	16	29	51	58	36	16	23	28

(8+7)

5. Write short notes on any four from the following : 20

- i)Types of matrices
 - ii) Demand and supply function
 - iii) Properties of determinant
 - iv) Correlation analysis
 - v) Control charts
 - vi) Index numbers
-