



Regu-N – 333

Seat No.	
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M.B.A. (Part – I) (Semester – I) Examination, 2012
(New Course)
MATHEMATICS AND STATISTICS FOR MANAGEMENT (Paper – III)
Sub. Code : 48322

Day and Date : Saturday, 12-5-2012
 Time : 10.00 a.m. to 1.00 p.m.

Total Marks : 70

- Instructions :** 1) Question No. 1 and 5 are **compulsory** and attempt **any two** questions from question number 2 to 4.
 2) Figures to the **right** indicate **full** marks.
 3) **Use of calculator is allowed.**

1. A) i) Differentiate w.r.t.x

a) $y = \frac{3x^2 + 5x}{7x + 4}$

b) $y = (x^2 + 2x + 3)^{5/3}$

ii) If $f(x) = x^2 - 4x + 6$, then find x such that $f(x) = f(x+1)$.

B) State the relationship between correlation coefficient and regression coefficients and verify them by using following data.

X	2	3	4	7	6
Y	10	7	3	1	2

(10+10)

2. A) i) Evaluate

a) $\lim_{x \rightarrow 2} \left[\frac{x^2 - 4}{x^2 - x - 2} \right]$

b) $\lim_{x \rightarrow 1} \left[\frac{2}{1-x^2} + \frac{1}{x-1} \right]$

ii) Find the simple interest on Rs. 10,000 for 73 days at 10% p.a.

B) Define M.D. about mean. Calculate M.D. about mean for the following data.

Value (X)	7	8	9	10	11	12	13
Frequency (f)	4	6	9	12	9	6	4

(8+7)

P.T.O.



3. A) i) Find x , if $\begin{bmatrix} x & 3 & 3 \\ 3 & 3 & x \\ 2 & 3 & 3 \end{bmatrix} = 0$

ii) If total cost function is $C = 4 + 2x + x^2$. Find average cost and marginal cost at $x = 2$.

B) Define time series, state its components.

Find out the trend values for the following time series by assuming 3 yearly cycle.

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Value	20	24	22	25	28	30	33	30	36	37

(8+7)

4. A) Define scalar matrix. If $A = \begin{bmatrix} 1 & 2 & 2 \\ 2 & 1 & 2 \\ 2 & 2 & 1 \end{bmatrix}$ then show that $A^2 - 4A$ is a scalar matrix.

B) Define Arithmetic Mean (A.M.). Find A.M. and S.D. from the following distribution of percentage of dividend paid by 50 companies.

Dividend	0-6	6-12	12-18	18-24	24-30
No. of companies	8	10	15	12	5

Also find coefficient of S.D.

(8+7)

5. Attempt **any four**.

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a) At what point the function $f(x) = 2x^3 - 3x^2 - 12x + 12$ will be maximum? Find the maximum value.

b) What is measure of dispersion? Give any two name of absolute measure of dispersion.

c) If $A = \begin{bmatrix} 1 & 2 \\ 2 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} 2 \\ 1 \end{bmatrix}$, find a matrix X such that $AX = B$.



d) Interpret if

i) $r = +1$

ii) $r = -1$

iii) $r = 0$, where r is correlation coefficient.

e) Draw a range chart for the following data and give your conclusion.

Sample No.	1	2	3	4	5	6	7	8	9	10
Range	2.1	3.1	3.9	2.1	1.9	3.0	2.5	2.8	2.5	2.0

You are given for $n = 5$, $D_3 = 0$ and $D_4 = 2.11$

f) Define index number. State the problems in construction of index numbers.