CBCS – E – 600

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Seat No.	

M.B.A. (Part - I) (Semester - I) Examination, May - 2014

MATHEMATICS & STATISTICS

Mathematics and Statistics for Management (Paper - III) (New)

Sub. Code : 57106

Day and Date : Thursday, 15 - 05 - 2014 **Total Marks : 80**

Time : 2.30 p.m. to 5.30 p.m.

Instructions : 1) Question No. 1 and 5 are compulsory.

2) Attempt any two questions from Question No. 2 to 4.

3) Figures to the right indicate full marks.

4) Use graph papers wherever necessary.

Q1) a) Solve by Cramer's rule.

$x + 2y - 2z = -1, \quad 2x - y + z = 3, \quad x - y + 3z = 8$ **[10]**

b) Define Regression. If the equations of lines of regression are

$3X + 2Y - 26 = 0$ & $6X + Y - 31 = 0$. Find

i) Means of X and Y

ii) Correlation coefficient between X & Y. **[10]**

Q2) a) If A = {1, 2, 3, 4, 5, 6, 7, 8}, B = {1, 2, 3, ..., 28, 29, 30}. Define a function f from A to B defined by $f(x) = 3x - 2$. Find

i) Domain of f ii) Co-domain of f

iii) Range of f iv) $f(x + 2)$

v) $f(0)$ **[10]**

b) Define Mean and Mode. Compute Mean and median for the data given below.

Class :	16 - 30	31 - 45	46 - 60	61 - 75	76 - 90	91 - 105	106 - 120
f :	7	13	22	28	20	15	5

[10]

P.T.O

Q3) a) Define inverse of a matrix. Find A^{-1} by adjoint method. **[10]**

$$A=\begin{pmatrix} -1 & 1 & 1 \\ 1 & 0 & 1 \\ 1 & 1 & 2 \end{pmatrix}$$

b) Explain Seasonal Variations. Compute five yearly moving average from the following data.

Year :	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
Value :	332	317	357	392	402	405	410	427	405	438

[10]

Q4) a) Means and Ranges of 10 samples are given below. Draw $\bar{X}$ - Chart and state your conclusion. (Given $n = 5$, $A_2 = 0.58$, $D_3 = 0$, $D_4 = 2.11$).

Sample :	1	2	3	4	5	6	7	8	9	10
Means :	11.2	11.8	10.8	11.6	10	9.6	10.4	9.6	10.6	11
Ranges :	3	4	6	5	3	4	5	4	6	3

[10]

b) State the p.m.f. of Binomial distribution. If 10% of the items are defective, what is the probability that out of a random sample of 10 items produced

i) Exactly 2 are defective. ii) At least 3 are defective. **[10]**

Q5) Write notes on any four : **[20]**

a) Laws of probability.
b) Index Numbers.
c) Measures of dispersion.
d) Applications of matrices in business.
e) Types of correlation.
f) Construction of range chart.