Regu-H–320

Total No. of Pages :3

Seat No.	

M.B.A. (Part-I) (Semester-I) Examination, 2013
MATHEMATICS AND STATISTICS FOR MANAGEMENT
(Paper - III)
Sub. Code : 48322

Day and Date : Friday 31-05-2013 **Total Marks : 70**

Time :10.00 a.m. to 1.00 p.m.

Instructions :
1) **Question numbers 1 and 5 are compulsory.**
2) **Attempt any two questions from the remaining question numbers 2 to 4.**
3) **Figures to the right indicate full marks.**
4) **Use of non programmable calculator is allowed.**

Q1) a) i) Evaluate

1) $\lim_{x \to 1}\left[\frac{2}{1-x^2}+\frac{1}{x-1}\right]$ 2) $\lim_{x \to 0}\left[\frac{x}{\sqrt{x+a}-\sqrt{a}}\right]$

ii) Find the minimum average cost, if the cost function is given by

$C = 36x - 10x^2 + 2x^3$

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

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

[10+10]

Q2) a) i) Find $\frac{dy}{dx}$ for the following

1) $y=\frac{x^2+1}{x^2-1}$ 2) $y=(x^2+2x+3)^{5/2}$

ii) Define Time Series and state its components. Compute three yearly moving averages from the following data.

P.T.O.

Year	2004	2005	2006	2007	2008	2009	2010
Sale	14	15	10	8	9	11	12

b) Define inverse of a matrix. Show that the inverse of matrix

$A=\begin{bmatrix}2 & 1 & 3\\ 3 & 1 & 2\\ 1 & 2 & 3\end{bmatrix}$ exists and find its inverse.

[8+7]

Q3) a) i) Find the polynomial function of the lowest degree, if $f(0)=8, f(1)=11, f(4)=68, f(5)=123$.

ii) Find the compound interest on the sum of Rs. 7865 for 4 years at $3\frac{1}{2}\%$ p.a.

b) Define square matrix. If $A=\begin{bmatrix}5 & 4\\ 4 & 3\end{bmatrix}$, $B=\begin{bmatrix}-3 & 4\\ 4 & -5\end{bmatrix}$ then show that AB=BA and AB is a non-singular matrix.

[8+7]

Q4) a) Define Coefficient of Variation [C.V.]. Following data gives number of catches taken by Tendulkar and Dhoni. Find out who is consistent in taking the catches?

Catches taken by Tendulkar	4	5	4	3	5
Catches taken by Dhoni	1	0	4	2	1

b) State the equations of two regression lines.

From 10 observations on price(X) and supply(Y) of a commodity the following data were obtained.

$$\sum X=130,\ \sum Y=220,\ \sum X^2=2288,\ \sum XY=3467$$

Compute the equation of the line of regression of Y on X and estimate the supply when price is 16.

[8+7]

Q5) Attempt any Four: **[20]**

a) Define Index number. Calculate price index number by using

i) Simple aggregate method ii) Simple average of relative method

Commodity	A	B	C	D
Base year price	2	4	10	50
Current year price	3	5	12	60

b) Define Correlation. Interpret, if (i) $r=+1$, (ii) $r=-1$, (iii) $r=0$, where r is correlation coefficient between two variables.

c) Explain the construction of control chart. State the uses of S.Q.C.

d) Solve the following equations by Cramer's rule.

$4x-3y=17,\ 5x+y=7$

e) If $A=\begin{bmatrix}2 & 1\\ 1 & 3\end{bmatrix}$, find a matrix X such that AX=I, where I is unit matrix.

f) Define S.D. Calculate mean and S.D. for the data given below.

Class	0-10	10-20	20-30	30-40	40-50
Frequency	7	12	24	10	7

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