Total No. of Questions : 5]

SEAT No. : ____

P3377

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M.A. (Part - I) (Semester - I)

ECONOMICS

EC - 1006 : Mathematical Economics

(2013 Pattern) (Credit System)

Time : 3 Hours] ***[Max. Marks : 50***

Instructions to the candidates:

1) ***Attempt all questions.***
2) ***Figures to the right indicate full marks.***
3) ***Answers should be precise and to the point.***
4) ***Draw neat diagrams wherever necessary.***
5) ***Use of nonscientific calculator is allowed.***

Q1) Answer the following question (any one) : **[10]**

a) Solve the Equation $12x^3 - 30x^2 + 12x = 0$.

b) Given the Revenue Function $R = 30 + 15q - 17q^2$, calculate Marginal and Average Revenue.

Q2) Answer the following question (any one) : **[10]**

a) A firm has the Total Cost Function $C= 1/3Q^3 - 7\ Q^2 + 111Q + 50$ and demand function $Q = 100 - P$. Find the output that maximizes Profit . What is the maximum profit, TR,AR,MR,TC and marginal cost.

b) Solve the following Simultaneous Equations by using cramer's Rule,

$2x + 3x + 5z = -9$

$x + 10y + 7z = -13$

$-5x + y + 10z = 14$

P.T.O.

Q3) Answer the following question (any one) : **[10]**

a) If $Z = (x^3 + 3x)^2$ Find dz/dx. Using by the Chain Rule.

b) Find the Inverse of the Matrix

$$A = \begin{pmatrix} 1 & 2 & 3 \\ -5 & -7 & -4 \\ 2 & 1 & 3 \end{pmatrix}$$

Q4) Answer the following question (any one) : **[10]**

a) Given the following demand function for two separate markets and the total Cost function of monopoly firm.

$P_1 = 16 - 2x$, $P_2 = 29 - y^2$ and $C = 8x + 2y + 9$,

What will be the price,output and max. profit?

b) Solve $dy/dx = 1 + y/1 + x$

Q5) Answer the following question (any one) : **[10]**

a) What is Real Number? and Its Properties.

b) Find the demand and supply following equation

$D=20 - P/2$, $S = P - 10$