CLASS: M.A. ECONOMICS **15A / 277**

St. JOSEPH'S COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 620 002

SEMESTER EXAMINATIONS – APRIL 2015

TIME: 2 Hrs. 20 min. **MAXIMUM MARKS: 70**

SEM	SET	PAPER CODE	TITLE OF THE PAPER
II	2014	14PEC2106	MATHEMATICAL TOOLS FOR ECONOMICS

SECTION – B

Answer all the questions: **5 x 5= 25**

31. a. What are the different forms of deriving the equation of a straight line?

OR

b. Find the equation of the straight line with intercepts -2 and 4/3 on x and y axes.

32. a. The total cost c of output x is given by $c = \frac{2}{3}x + \frac{35}{2}$.

Find (i)cost when output is 4 units.

(ii) average cost of output of 10 units

(iii) marginal cost when output is 3 units.

OR

b. The total revenue (R) and total cost (C) functions of a firms are given by

$R = 30\,Q - Q^2$

$C = 20 + 4Q$

Where Q is the output. Find the equilibrium output of the firm.

33. a. What are the applications of partial derivatives in Economics?

OR

b. Given $z = x^2e^{2y}$, find all the partial derivatives of second order.

34. a. Evaluate $\int (x + \frac{1}{x})^2 dx$.

OR

b. Explain the following rules of integration.

(i) Power rule (ii) Exponential rule

(iii) Logarithmic rule (iv) Integral of sum and difference

35. a. $A = \begin{bmatrix} 2 & 3 & 4 \\ 5 & 6 & 7 \\ 4 & 7 & 6 \end{bmatrix}$ $B = \begin{bmatrix} 1 & 2 \\ 3 & 4 \\ 5 & 6 \end{bmatrix}$ find AB.

OR

b. Find the value of the determinant.

$$\begin{bmatrix} 3 & 4 & 7 \\ 2 & 1 & 3 \\ 7 & 2 & 1 \end{bmatrix}$$

SECTION – C

Answer any THREE questions: **3 x 15 = 45**

36. What are the types of functions?

37. Find for what values of x, the following expression is maximum and minimum respectively.

$2x^3 - 21x^2 + 36x - 20$

Find also the maximum and the minimum values.

38. Find the partial derivatives

(i) $Z = 4x^2 + 4xy + y^2$

(ii) $Z = x^3 e^{2y}$

(iii) $Z = \frac{x + y}{2x + 5y}$

(iv) $Z = \frac{5x^2}{5x - y + 4}$

(v) $Z = (x+4)\,(2x+5y)$

39. Define integration. What are the standard results in integration?

40. Find the inverse of the matrix

$$A = \begin{bmatrix} 1 & 0 & -1 \\ 3 & 4 & 5 \\ 0 & -6 & -7 \end{bmatrix}$$

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