Al-Saudia Virtual Academy
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"ECONOMICS"PAPER –V-C. 2001
(MATHEMATICAL ECONOMICS)

Time allowed: three hours   **Max. Marks: 100**

Instruction: 1) Attempt any FIVE questions.
                       2) All question carry equal marks.

1.   Given the demand and supply for the Cobweb model as follows, find the inter temporal price and determine whether the equilibrium is stable:

$Qdt = 19 – 6pt$,
$Qst = 6\,pt – 1 – 5$

2-a) Find the price elasticity of demand for the following demand functions:

(i) $P^3 + Qd^3 - PQd = 0$
(ii) $Qd = (7p – 4\,)5/P + 1$
P = Price, Qd = Quantity demanded.

   B) The revenue (R) received by the manufacturer when q units of a product are sold is given by $R\,(q) = 30\,e^{\,0.05q}$

What is the marginal revenue?

3.   The equilibrium condition for three related markets is given by:

$Q_1 + {}^2q_2 – 5 = 0$
$Q_1 - q3 + 15 = 0$
$Q_1 + {}^3q_2 + {}^2q_3 – 40 = 0$

Find the equilibrium quantity for each market using matrix inversion method.

4.   Explain the following Terms:-

(i) Critical points and Stationary points.
(ii) Relative Maxima and minima.
(iii)Continuous and discontinuous function.
(iv)Inflection point.
(v)Unit matrix.

5-a)   the total cost of producing q units of a certain product is described by the function.

$C = 100,000 + 1500q – 0.2q2$

Where C is the total cost stated in rupees. Determine how many units of q should produced
To minimize the average cost per unit.

5-b)   Suppose that the Utility function is $U = \sqrt{Xy}$, where x and y are to goods. For the indifference curve where u = 20, calculate the value of mrs when x =10.

6-a)   Suppose a company has fixed costs of Rs.28, 000 and variable costs of 2/5x + 222 per unit. Suppose further that the selling price of its product is 1250 – 3/5x.

b) Consider the following equation of IS – LM models

$C = 300 + 0.8\,yd,\quad 1 = 410 – 10i$
$T = 60 + 0.4y\ ,\quad G = 700$
$X = 250\ ,\quad M = 0.1y$
$Md = 50 + 0.25\,y - 10i$
$Ms = 540$

What is the equilibrium Level of income and interest rate?

7-a)   if the production function is given by

$Q = (IILK – 0.00022L^2 – 5k)/0.03L + 3K$

       (i)   Find the marginal product of labor when L = 300 and K = 500

b) Consider the following demand function for commodity x $Qdx = 279.75 - 3.89 Px + 1.6 Py + 0.17m$

Where income (M) = 10,000 Rs per month Px = 50 Rs, py = 44 Rs.

Find (i)   Income elasticity of demand for x.

      (ii)   Gross price elasticity of demand for x.