

Al-Saudia Virtual Academy
Pakistan Online Tuition – Online Tutor Pakistan

M.A (PREVIOUS) EMAMINATION 2000

“ECONOMICS” PAPER-V-C.2000

(MATHEMATICAL ECONOMICS).

Time allowed: Three Hours.

Max. Marks: 100

Instructions: 1) Attempt any FIVE questions.

2) All questions carry equal marks.

1-a) what is measured by the slope of a secant and the slope of a tangent? Discuss the role of difference quotient and the derivation in the determination of these slopes.

b) Give $Q = 700 - 2p + 0.02y$, where $p = 25$ and $y = 5000$. Find (i) the price elasticity of demand and (ii) the income elasticity of demand. (Note that $Q =$ quantity demanded, $p =$ price and $y =$ income).

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

$$11p_1 - p_2 - p_3 = 31$$

$$-p_1 + 6p_2 - 2p_3 = 26$$

$$-p_1 - 2p_2 + 7p_3 = 24$$

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

3-a) Define and give examples of the following matrices

(i) Identity.

(ii) Null.

(iii) Symmetric.

(iv) Row vector.

(v) Column vector.

b) For a cosmetics company

$$p = 0.002s^2 + 50$$

$$s = 4A^2 - 30$$

Where $p =$ profit, $s =$ sales and $A =$ Advertising expenditure.

Find QP / QA using chain rule.

4. Describe the following methods for identification of stationary points.

(i) Original function test.

(ii) First derivative test.

(iii) Second derivative test.

5. Suppose an economy is described by the following equations.

$$C = 48 + 0.8y \quad (C = \text{Consumption}, y = \text{Income})$$

$$I = 98.75 - 1i \quad (I = \text{Investment rate})$$

$$M_s = 250 \quad (M_s = \text{Money supply})$$

$$M_t = 0.3y \quad (M_t = \text{Transaction demand for money})$$

$$M_z = 52.1501 \quad (M_z = \text{Speculative demand for money})$$

(a) What is the equation that describes the IS Curve? LM Curve?

(b) What are the values for equilibrium level of income and interest rate?

(c) Calculate C, I, M_t , and M_z at equilibrium.

(d)

6- a) If $f(x,y,z) = x^2 y_3 + xyz + z^2$, find all second order partial derivatives.

b) State and explain the properties of limit.

7. Given the firm's demand function $Q - 90 + 2P = 0$

$$\text{And its average cost function } AC = Q^2 - 8Q + 57 + 2/Q^2$$

Find the level of output which:

a) Maximizes total revenue.

b) Minimizes marginal cost.

c) Maximizes profit.

1. Write short notes on the following:-

a) Break – Even Analysis.

b) Properties of Determinants.