

ADMISSION NUMBER											

School of Liberal Education

Master of Arts in Economics
Mid Term Examination - Nov 2023

Duration : 90 Minutes
Max Marks : 50

Sem I - K1PN104T - Mathematical Economics

General Instructions

Answer to the specific question asked

Draw neat, labelled diagrams wherever necessary

Approved data hand books are allowed subject to verification by the Invigilator

- 1) Find the minimum point of the average cost function $AC = 25q^{-1} + 0.1q^2$ K2 (2)
- 2) Derive the MR function for the non-linear demand schedule $p = 80 - q^{0.5}$. K1 (3)
- 3) For the production function $Q = 20K^{0.5}L^{0.5}$ (i) derive a function for MPL, and (ii) show that MPL decreases as one moves along an isoquant by using more L. K2 (4)
- 4) If $TC = 0.5q^3 - 3q^2 + 25q + 20$ derive functions for: (a) MC, (b) AC, (c) the slope of AC. K2 (6)
- 5) A monopoly faces the following TR and TC schedules: $TR = 300q - 2q^2$ $TC = 12q^3 - 44q^2 + 60q + 30$ What output should it sell to maximize profit? K3 (6)
- 6) A firm faces the demand schedule $q = 40 - p^{0.5}$ (where $p^{0.5} \geq 0, q \leq 40$) and the cost schedule $TC = q^3 - 2.5q^2 + 50q + 16$. What price should it charge to maximize profit? K3 (9)
- 7) A firm faces the total revenue schedule $TR = 600q - 0.5q^2$ (a) What is the marginal revenue when q is 100? (b) When is the total revenue at its maximum? (c) What price should the firm charge to achieve this maximum TR? K4 (8)
- 8) In a basic Keynesian macroeconomic model it is assumed that $Y = C + I$ where $I = 820$ and $C = 60 + 0.8Y$. (a) What is the marginal propensity to consume? (b) What is the equilibrium level of Y ? (c) What is the value of the multiplier? (d) What increase in I is required to increase Y to 5,000? (e) If this increase takes place will savings ($Y - C$) still equal I ? K4 (12)

OR

Given $MC = dTC/dQ = 32 + 18Q - 12Q^2$, $FC = 43$, Find the (a) TC, (b) AC and (c) VC functions K4 (12)