Undergraduate Semester -III End Examinations, 2021

Subject: ECONOMICS

Course ID: 31613   Course Code: UG/ECO/303/C-7

Course Title: Mathematical Methods in Economics -II

Full Marks: 40   Time: 2 hours

The figures in the margin indicate full marks

Answer all the questions.

UNIT I

Q1) Answer any five questions: 2×5

All questions carry equal marks.

    a) Define a Linear Programming Problem.
    b) Explain the concept of a differential equation with the help of an example.
    c) How is the order of a difference equation determined?
    d) Define a Saddle Point in a pay-off matrix.
    e) What is Hurwicz criterion for decision?
    f) What do you mean by input output analysis?
    g) What are the assumptions of a game theory?
    h) When is a Cobweb Model divergent?

UNIT II

Q2) Answer any four questions: 5×4
    a) Solve the equation $5dy-(25y+125)dt = 0$ given the condition that $y(t=0)=2$.

    b) Write down the economic interpretation of duality in Linear Programming.

    c) What are the assumptions of a Leontief Static Open Model (2×2) case?

    d) Explain Prisoner's Dilemma with an example.

    e) Obtain the solution of the equation $y_{t+1} -2y_t = 4$, given that $y_t = 4$ when $t=0$.

    f) Determine the optimum strategies for the two players X and Y and find the value of the game from the following pay-off matrix.

Player Y

$$\text{Player X} \begin{bmatrix} 3 & -1 & 4 & 2 \\ -1 & -3 & -7 & 0 \\ 4 & -6 & 2 & -9 \end{bmatrix}$$

UNIT III

Q3) Answer any one question: 10×1

a) State Hawkins-Simon Condition for the viability of an economy. Explain the economic implications of these conditions. (4+6)

b) Describe Samuelson's Multiplier Accelerator Model as an application of second order linear difference equation.