'समानो मन्त्रः समितिः समानी'

UNIVERSITY OF NORTH BENGAL

B.A./B.Sc. Honours 2nd Semester Examination, 2022

CC4-ECONOMICS

MATHEMATICAL ECONOMICS

Time Allotted: 2 Hours | Full Marks: 60

The figures in the margin indicate full marks.
All symbols are of usual significance.

GROUP-A

1. Answer any ***four*** questions from the following: 3×4 = 12

   (a) What do you mean by Game theory?

   (b) Explain the concept of differential equation.

   (c) Define pay-off.

   (d) Explain the concept of oscillation related with cobweb model.

   (e) Define knife edge problem related Harrod-Domar Growth model.

   (f) Explain the concept of saddle point in Game theory.

GROUP-B

Answer any *four* questions from the following 6×4 = 24

2. State the rules of dominance in connection with a Two-Person-Zero-Sum Game.

3. Outline the Domar's Growth model.

4. The following pay-off matrix in a two person game is given

$$\begin{array}{c} \\ A_1 \\ A_2 \\ A_3 \end{array} \begin{array}{c} \begin{array}{ccc} B_1 & B_2 & B_3 \end{array} \\ \begin{bmatrix} 1 & 3 & 6 \\ p & 5 & 10 \\ 6 & 2 & 3 \end{bmatrix} \end{array}$$

   For what values of p the game will have a saddle point at the entry (2, 2) i.e at a_{22}?

5. Describe Solow model mathematically.

6. Write the assumptions of Two Person Zero Sum game.

7. What do you mean by Fair Game and Strictly determinable game?

GROUP-C

Answer any *two* questions from the following 12×2 = 24

8. Describe the cobweb model mathematically and diagramatically. 12

9. Consider the pay-off 3+3+3+3

Player B

Player A	B_1	B_2	B_3	B_4
A_1	-6	-1	4	3
A_2	7	-2	5	7

(a) Check if the Game bears a "saddle point".

(b) Find A's expected pay-off equation corresponding to A's pure strategy.

(c) Find the relevant strategies of A and B

(d) Find the optimal strategy of A and B.

10. Explain Samuelson Multiplier Acceleration Interaction model. 12

11. Find the value of the game by using the mixed strategy. 12

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