



K21U 0811

Reg. No. : .....

Name : .....

IV Semester B.A. Degree (CBCSS – Sup./Imp.) Examination, April 2021  
(2014 – '18 Admissions)

Complementary Course

4C04ECO : MATHEMATICAL ECONOMICS – II

Time : 3 Hours

Max. Marks : 40

PART – A

Answer **all** the questions. **Each** carries **1** mark.

1. If the primal involves minimization, the dual involves \_\_\_\_\_.
2. Any point satisfying the non-negativity restrictions lies in the \_\_\_\_\_ only.
3. A game involving  $n$  players is called \_\_\_\_\_.
4. In Hawkins Simon conditions, all the diagonal elements of the matrix should be \_\_\_\_\_.

PART – B

Answer **any 7** questions. **Each** carries **2** marks.

5. Define basic variables and non-basic variables.
6. Explain closed input-output model.
7. If  $A = \begin{bmatrix} 0.8 & 0.2 \\ 0.9 & 0.7 \end{bmatrix}$ , check whether Hawkins Simon conditions are satisfied for  $A$ .
8. Write the given LPP in the standard form.

$$\text{Maximize } Z = 2x_1 + 3x_2$$

$$\text{Subject to } x_1 + 3x_2 \leq 12$$

$$2x_1 + x_2 \geq 6$$

$$x_1 + 5x_2 = 10$$

$$x_1, x_2 \geq 0$$

9. Explain what you understand by linear objective function.

P.T.O.



10. Explain the technique deals with input-output analysis.
11. Obtain the column minimax for the matrix  $\begin{bmatrix} 7 & 8 & 4 \\ 4 & 7 & 2 \end{bmatrix}$ .
12. Define Saddle point.
13. Write down any two limitations of input-output analysis.
14. Define objective function and optimal solution.

## PART – C

Answer **any 4** questions. **Each** question carries **3** marks.

15. Obtain the initial basic feasible solution to the LPP.

$$\text{Max } Z = 2x_1 + 3x_2$$

$$\text{Subject to } x_1 + x_2 \leq 400$$

$$2x_1 + x_2 \leq 600;$$

$$x_1, x_2 \geq 0$$

16. State the limitations of graphical method of solving a LPP.
17. How you choose the incoming variable in simplex method procedure ?
18. Is the following two-person zero sum game stable ? Solve the problem.

**Player B**

<b>Player A</b>	8	6	2	8
	8	9	4	5
	7	5	3	5

19. Explain the terms (a) Payoff matrix (b) Pure Strategy (b) Mixed strategy.
20. Explain the main features and basic assumptions of input-output analysis.
21. Determination of value added-describe.



PART – D

Answer **any two, each** carries **5** marks.

- 22. a) Describe Hawkins-Simon conditions.
- b) The following inter-industry transaction table constructed for an economy for the year 2000.

Industry	1	2	Final Consumption	Total
1	500	1600	400	2500
2	1750	1600	4650	8000
Labour	250	4800	–	5050
<b>Total</b>	<b>2500</b>	<b>8000</b>	<b>5050</b>	<b>15550</b>

- i) Construct technology coefficient matrix.
- ii) Does a solution exist for this system ?

23. Solve the following 2x4 game graphically

**Player B**

**Player A**  $\begin{bmatrix} 1 & 0 & 4 & -1 \\ -1 & 1 & -2 & 5 \end{bmatrix}$

- 24. a) Describe the procedure-Simplex method of solving LPP.
- b) Express the following LPP in standard form.

$$\text{Max } Z = 3x_1 + 2x_2 + 5x_3 \leq 3$$

$$\text{Subject to } 2x_1 - 3x_2 \leq 3$$

$$x_1 + 2x_2 + 3x_3 \leq 5;$$

$$3x_1 + 2x_3 \leq 2$$

$$x_1, x_2 \geq 0$$