K21U 1012

Reg. No. : .....

Name : .....

IV Semester B.A. Degree CBCSS (OBE) Regular Examination, April 2021
(2019 Admission Only)
COMPLEMENTARY ELECTIVE COURSE IN ECONOMICS/ DEV. ECONOMICS
4C04 ECO/DEV.ECO : Mathematical Economics – II

Time : 3 Hours

Max. Marks : 40

PART – A

Answer **all** questions. **Each** carries **one** mark. **(1×6=6)**

1. State the one limitation of LPP.
2. What is open input output model ?
3. What is strategy in game theory ?
4. What is primal problem in LPP ?
5. What is input coefficient matrix ?
6. What is mixed strategy ?

PART – B

Answer **any six** questions. **Each** carries **two** marks. **(2×6=12)**

7. Explain extreme point theorem.
8. Explain surplus variable in LPP.
9. Explain the characteristics of LPP.
10. Explain any four applications of input output model.
11. Explain the formulations of LPP.
12. Explain saddle point of a pay off matrix.

P.T.O.

13. Explain Maximax principle in game theory.

14. Explain prisoners dilemma.

PART – C

Answer **any four** questions. **Each** carries **three** marks. **(3×4=12**

15. Explain duality in linear programming.

16. Explain Hawkins-Simon condition. Check the following Matrix satisfies Hawkins-Simon condition

$$|A| \quad \begin{matrix} 0.2 & -0.2 \\ -0.9 & 0.3 \end{matrix}$$

17. Use dominance property to solve the following games

		B_1	B_2	B_3
Player A	A_1	6	8	6
	A_2	4	12	2

18. The pay off matrix for a two person zero sum game is given below. Find the best strategy for each player and the value of the game.

		Player B				
		I	II	III	IV	V
Player A	I	– 2	0	0	5	3
	II	3	2	1	2	2
	III	– 4	– 3	0	– 2	6
	IV	5	3	– 4	2	– 6

19. Write down the input matrix, the Leontief matrix, and the specific input out matrix equation for the following case.
In a two industry economy, it is known that industry I uses 10 cents of its own product and 60 cents of commodity II to produce a dollar's worth of commodity I. Industry II uses none of its own products but uses 50 cents of commodity I in producing a dollar's worth of commodity II, and the open sector demands $ 1000 billion of commodity and $ 2,000 billion of commodity II.

20. Explain two person zero sum game with a example.

PART – D

Answer **any two** questions. **Each** carries **five** marks. **(5×2=**

21. Solve the following linear programming problem by graphic method.

Minimise, $Z = 10x_1 + 4x_2$

Subject to

$4x_1 + x_2 \geq 80$

$2x_1 + x_2 \geq 60$

$x_1 \geq 0,$

$x_2 \geq 0.$

22. Solve the following LPP by the Simplex method :

Maximise, $Z = 6x + 3y$

subject to the constraints :

$2x + 5y \leq 120$

$2x + y \leq 40$

$x \geq 0, y \geq 0.$

23. Given the technology matrix A and final demand vector F, find the gross output of the three sectors.

$$A = \begin{matrix} 0.3 & 0.2 & 0.3 \\ 0.1 & 0.3 & 0.4 \\ 0.2 & 0.3 & 0 \end{matrix}$$

$$F = \begin{matrix} 500 \\ 700 \\ 600 \end{matrix}$$

24. Determine the optimum strategies and the value of the game graphically for the pay-off of the following 2 × 5 game for X.

		Y				
X	6	3	−1	0	−3
	3	2	−4	2	−1