Reg. No. : ....

Name : ....

IV Semester B.A. Degree (CBCSS – Reg./Sup./Imp.) Examination, May 2018
(2014 Admn. Onwards)
COMPLEMENTARY COURSE IN ECONOMICS
4C04ECO : Mathematical Economics – II

Time : 3 Hours

Max. Marks : 40

PART – A

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

1. Participant of the game is called _____

2. A vector with one element 1 and all other elements zero is _____

3. Input-output analysis assume _____ returns to scale.

4. Dual of the dual LPP is _____

(4×1=4)

PART – B

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

5. What is a transaction matrix ?

6. Define saddle point.

7. Explain the characteristics of dual LPP.

8. Distinguish between static and dynamic input-output model.

9. Distinguish between pure strategy and mixed strategy.

10. State any four assumptions of LPP.

11. What are the limitations of game theory ?

P.T.O.

12. Explain the terms objective function, feasible region, slack variable and surplus variable.

13. What is two person zero sum game ?

14. Explain the limitations of input-output analysis. (7×2=14)

PART – C

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

15. Explain the solution to a mixed strategy game through probability method.

16. What is input-output analysis ? What are its uses ?

17. Formulate the mathematical model to a general linear programming problem.

18. State the Hawkins-Simon conditions for viability of an input-output system.

19. Solve graphically the following LPP :

Minimize $Z = 60X_1 + 90X_2$

Subject to $15X_1 + 7.5X_2 \geq 450$

$20X_1 + 40X_2 \geq 1200$

$10X_1 + 45X_2 \geq 900$

$X_1 \geq 0, X_2 \geq 0$

20. Solve the following game by the principle of dominance.

$$\begin{pmatrix} 8 & 10 & 9 & 14 \\ 10 & 11 & 8 & 12 \\ 13 & 12 & 14 & 13 \end{pmatrix}$$

21. Explain the various steps involved in solving an LPP through simplex method.

(4×3=12)

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PART – D

Answer **any 2** questions. **Each** carries **5** marks.

22. Solve the following game problem graphically.

Player B

$$
\begin{array}{c}
 & \text{Player } B_1 \quad B_1 \quad B_1 \quad B_1 \quad B_1 \\
A_1 \begin{pmatrix} 2 & -4 & 6 & -3 & 5 \\ -3 & 4 & -4 & 1 & 0 \end{pmatrix} \\
A_2
\end{array}
$$

23. The input coefficient matrix and final demand of a three sector economy is given below. Calculate output levels of the three sectors.

$$
A = \begin{pmatrix} 0.3 & 0.4 & 0.2 \\ 0.2 & 0 & 0.5 \\ 0.1 & 0.3 & 0.1 \end{pmatrix} \quad B = \begin{pmatrix} 10 \\ 20 \\ 30 \end{pmatrix}
$$

24. Solve the following LPP by simplex method :

Maximise $Z = 3X_1 + 5X_2 + 4X_3$

Subject to $2X_1 + 3X_2 \leq 8$

$2X_2 + 5X_3 \leq 10$

$3X_1 + 2X_2 + 4X_3 \leq 15$

$X_1 \geq 0, X_2 \geq 0, X_3 \geq 0$

(2×5=10)

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