



23104823

QP CODE: 23104823

Reg No :

Name :

**B.A DEGREE (CBCS) REGULAR/IMPROVEMENT/REAPPEARANCE
EXAMINATIONS, FEBRUARY 2023**

First Semester

B.A Corporate Economics Model III

Core Course - EC1CRT28 - MATHEMATICS FOR ECONOMISTS - I

2017 Admission Onwards

91B9011F

Time: 3 Hours

Max. Marks : 80

Part A

Answer any ten questions.

Each question carries 2 marks.

1. Define vectors.
2. What do you mean by transpose of a matrix?
3. If $A = \begin{bmatrix} 1 & 2 & -3 \\ 2 & -1 & 2 \\ 3 & 2 & 4 \end{bmatrix}$, find the determinant.
4. What is Cramers rule?
5. Find the rank of the matrix $\begin{bmatrix} 1 & 2 & 3 \\ 3 & 6 & 9 \\ 2 & 4 & 6 \end{bmatrix}$
6. Define cofactor matrix.
7. What is input output matrix?
8. Examine the meaning and significance of input output analysis.
9. Describe decision variables, objective function and constraints of a linear programming problem.
10. What is dual problem in linear programming problem?
11. Solve $7(x-2)+8(x-3)-22=x+10$





12. Solve $4x^2 - 9 = 0$

(10×2=20)

Part B

Answer any **six** questions.

Each question carries **5** marks.

13. Define symmetric and skew symmetric example.

14. Find the adjoint of the matrix $\begin{bmatrix} 0 & 1 & 2 \\ 1 & 2 & 3 \\ 3 & 1 & 1 \end{bmatrix}$

15. How do input output matrix developed by W Leontief?

16. Analyse the scope of input output analysis.

17. What is the application of input output analysis in economics?

18. An animal feed company must produce at least 200 kgs of a mixture consisting of ingredients X_1 and X_2 daily. X_1 costs Rs.3 per kg and X_2 Rs. 8 per kg. Not more than 80 kg of X_1 can be used and atleast 60 kgs of X_2 must be used .Formulate a mathematical model to the problem.

19. Explain infeasible and unbounded solution of a linear programming problem.

20. Solve $4x+3y=2x+7$
 $3x=3y+2x-1$

21. Solve $(x+y)^2+(x+y)-6=0, x-y=1$

(6×5=30)

Part C

Answer any **two** questions.

Each question carries **15** marks.

22. If $A = \begin{bmatrix} 0 & 1 & 2 \\ 2 & -3 & 0 \\ 1 & 1 & -1 \end{bmatrix}$ find $A^3+4A^2-A-12I$

23. Find the inverse of the matrix $\begin{bmatrix} 3 & 5 & 7 \\ 2 & -3 & 1 \\ 1 & 1 & 2 \end{bmatrix}$





24. Solve Max $Z = 5x + 8y$
subject to $3x + 2y \leq 36$
 $x + 2y \leq 20$
 $3x + 4y \leq 42$
 $x, y \geq 0$

25. Solve $7x - 4y - 20z = 0$
 $10x - 13y - 14z = 0$
 $3x + 4y - 9z = 11$

(2×15=30)

