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)