21102628

QP CODE: 21102628

Reg No : .....

Name : .....

B.A DEGREE (CBCS) EXAMINATIONS, OCTOBER 2021

First Semester

B.A Corporate Economics Model III

Core Course - EC1CRT28 - MATHEMATICS FOR ECONOMISTS - I

2017 Admission Onwards

569D0785

Time: 3 Hours Max. Marks : 80

Part A

*Answer any **ten** questions.*

*Each question carries **2** marks.*

1. What is null vector?
2. Plot $2v_1$ on diagram where $v_1=(2,3)$
3. Define diagonal matrix.
4. What is matrix method?
5. Define rank of a matrix.
6. Define cofactor matrix.
7. What you mean by input output analysis?
8. Define input output transaction matrix.
9. What do you mean by infeasible solution?
10. What is dual problem in linear programming problem?
11. Two third of a number is increased by 5 equals 27. Find the number.
12. Solve x(x-3)=4

(10×2=20)

Part B

*Answer any **six** questions.*

*Each question carries **5** marks.*

13. Define singular matrix. Show that the matrix $\begin{bmatrix} 5 & 7 & 2 \\ 2 & 3 & 1 \\ 4 & 6 & 2 \end{bmatrix}$ is singular

14. Find the inverse of $\begin{bmatrix} 2 & 3 \\ 4 & 5 \end{bmatrix}$

15. Examine the the economic application of input output analysis.

16. Analyse the scope of input output analysis.

17. Two industries I and II input output relationships are given below in A with final demand vector B

A= $\begin{bmatrix} 50 & 75 \\ 100 & 50 \end{bmatrix}$, B= $\begin{bmatrix} 75 \\ 50 \end{bmatrix}$ .If the gross output increases to $\begin{bmatrix} 400 \\ 600 \end{bmatrix}$.Determine the final demand which can be satisfied.

18. What are the basic assumptions in linear programming problem?

19. A manufacturer of furniture makes two products chairs and tables.Processing of these products is done on two machines A and B.A chair requires 2 hours on machine A and 6 hours on machine B.A table requires 5 hours on machine A and no time on machine B.There are 16 hours of time per day available on machine A and 13 hours on machine B.Profit gained by the manufacturer from a chair is Rs.2 and from a table is Rs.5 respectively .Formulate the problem into a L.P.P inorder to maximise the total profit.

20. Solve $\frac{3}{y} + \frac{7}{x} = \frac{11}{5}$, $\frac{5}{y} - \frac{15}{x} = 1$

21. Solve x+y=5 and xy=6

(6×5=30)

Part C

*Answer any **two** questions.*

*Each question carries **15** marks.*

22. If A= $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$, B= $\begin{bmatrix} 1 & 0 \\ 2 & -3 \end{bmatrix}$,C= $\begin{bmatrix} 1 & -1 \\ 0 & 1 \end{bmatrix}$. Show that A(B+C)=AB+AC and (AB)C= A(BC)

23. Solve the system of equations 2x-3y+5z=11, 5x+2y-7z=-12, -4x+3y+z=5 using Matrix method

24. Solve Max Z= 2x+3y
subject to $x+y \leq 1$
$3x+y \leq 4$
$x,y \geq 0$

25. Solve 3x-4y+70z=0
2x+3y-10z=0
x+2y+3z=13

(2×15=30)