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Reg No   :   ....

Name   :   ....

B A DEGREE (CBCS)EXAMINATION, NOVEMBER 2019

First Semester

B.A Corporate Economics Model III

Core Course - EC1CRT28 - MATHEMATICS FOR ECONOMISTS - I

2017 Admission Onwards

019516F4

Time: 3 Hours   Maximum Marks :80

Part A

*Answer any **ten** questions.*

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

1. Define unit vector.

2. If $v_1=(5,2,3)$,find $3v_1$

3. Define skew symmetric matrix.

4. Define inverse of a matrix.

5. Find the rank of $\begin{bmatrix} 5 & 2 & 1 \\ 0 & 1 & 3 \\ 2 & 1 & 0 \end{bmatrix}$

6. Define cofactor matrix.

7. What you mean by input output analysis?

8. State Hawkins Simon condition in 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. Find two numbers whose sum is 30 and difference is 4.

$(10×2=20)$

Part B

*Answer any **six** questions.*

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

13. Find the value of $\begin{vmatrix} 1 & 2 & -3 \\ 2 & -1 & 2 \\ 3 & 2 & 4 \end{vmatrix}$

14. Find the adjoint of A where A= $\begin{bmatrix} 3 & 5 & 7 \\ 2 & -3 & 1 \\ 1 & 1 & 2 \end{bmatrix}$

15. Examine the economic application of input output analysis.

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

17. Analyse the scope of input output analysis.

18. 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.

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

20. Solve x+y=1, y+z=1, z+x=4

21. Solve $2x + \frac{5}{x} = 7$

(6×5=30)

Part C

*Answer any **two** questions.*

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

22. If A= $\begin{bmatrix} 1 & 2 & 3 \\ 3 & -2 & 1 \\ 4 & 2 & 1 \end{bmatrix}$ find A^3-23A-40I

23. Sove the system of equations x+y+z=7, x+2y+3z=16, x+3y +4z=22 using Cramer's rule.

24. Solve Max Z= 3x+2y

subject to   -2x+y≤1

 x≤2

x+y≤3

x, y≥0

25. Solve(i) x-y=3 , xy=10

(ii) x+y=19 , $x^2+y^2=185$

(2×15=30)