



21102130

QP CODE: 21102130

Reg No : .....

Name : .....

**B.A DEGREE (CBCS) EXAMINATION, AUGUST 2021**

**Third Semester**

B.A Economics Model I

**COMPLEMENTARY COURSE - EC3CMT03 - MATHEMATICS FOR ECONOMIC ANALYSIS**

2017 Admission Onwards

06722BB7

Time: 3 Hours

Max. Marks : 80

**Part A**

Answer any **ten** questions.

Each question carries 2 marks.

1. Find  $2A - 3B$ .  $A = \begin{pmatrix} 2 & 3 & 1 \\ 0 & -1 & 5 \end{pmatrix}$   $B = \begin{pmatrix} 1 & 2 & -1 \\ 0 & -1 & 3 \end{pmatrix}$

2. Find the minor value  $A = \begin{pmatrix} 2 & 3 & 1 \\ 0 & -1 & -2 \\ 3 & 8 & 6 \end{pmatrix}$

3. Define rank of a Matrix.

4. Define Parameter.

5. Solve  $x^2 - 6x + 8 = 0$  use Factorisation method.

6. Give any 2 examples for quadratic equations.

7. Find the second order derivatives of the following function.  $y = 80 - 2x + x^2$ .

8. What are the necessary conditions of maxima and minima.

9. Define Leontief's Dynamic Model.

10. What is technical feasibility?

11. What are linear constraints in LPP ?

12. Minimum Ratio.





(10×2=20)

**Part B**

Answer any **six** questions.

Each question carries **5** marks.

- 13. What is adjoint of a matrix?
- 14. The cost of manufacturing and selling a tin of chocolate powder is Rs. 15, with a fixed cost is Rs. 900. Each is sold out for Rs. 20 per tin. Determine (i) cost function (ii) Revenue function (iii) Profit function (iv) what is the profit if 1000 tins are manufactured and sold ?
- 15. Solve the simultaneous equations.  $2x-y=5$  and  $3x-4y=10$ .
- 16. Find the differential coefficient of  $x^2(1+x^3)$ .
- 17. Given the production function  $q=10a-a^2+ab$ , determine the marginal productivity with respect to a.
- 18. What is dual of a linear programming problem?
- 19. Explain Leontief open and closed model.
- 20. An animal feed company must produce at least 200 kg of mixture consisting of ingredients X1,X2, costing Rs.5 and 8 per Kg respectively .Not more than 50 Kg of X1 can be used and atleast 80 kg of X2 has to be used .Formulate a mathematical model to the problem. ( LPP).
- 21. What is a slack variable ?

(6×5=30)

**Part C**

Answer any **two** questions.

Each question carries **15** marks.

- 22. A trucking company owns three type of trucks X,Y,Z which are equipped to carry three types of machines per load as shown below

	Trucks		
	Type X	Type Y	Type Z
Machine 1	2	3	4
Machine 2	1	1	2
Machine 3	3	2	1

How many trucks each type should be used carry exactly 29 X type of machines, 13 type of Y machines and 16 type of Z machines ?. Assume that each truck is fully loaded.





23. Integrate  $x/(x-1)(2x+1)$ .
24. Explain the use of Hawkin Simon condition for proving economic viability.
25. Explain the uses of linear programming and also bring out its limitations .

(2×15=30)

