Reg. No. : .....

Name : .....

K21U 3559

II Semester B.A. Degree (CBCSS – Supple.) Examination, April 2021
(2014-2018 Admission)
COMPLEMENTARY COURSE IN ECONOMICS
2C 02 ECO – Mathematics for Economic Analysis – II

Time : 3 Hours

Max. Marks : 40

PART – A

Answer **all** questions. (**Each** question carries **1** mark.)

1. _____ is a square matrix with zeros except on the leading diagonal.
2. If the upper limit of integration equals the lower limit of integration, the value of the definite integral is _____
3. The determinant of a quadratic form is called a _____
4. A second degree equation is called a _____

(4×1=4)

PART – B

Answer **any 7** questions. (**Each** question carries **2** marks.)

5. What is a quadratic form ? Give an example.
6. What is Eigen values ?
7. Give mathematical definition to consumer's surplus.
8. What is discriminant ?
9. $\int(8x^3 - 3x^2 + x - 1)\,dx$.
10. What is rank of a matrix ?

P.T.O.

11. Write down the relationship between total and marginal values in economics.

12. Compute total cost for the marginal cost function $C = 2 + 6x - 4x^2$.

13. If $A = \begin{bmatrix} 3 & 7 \\ 2 & 9 \\ 5 & 11 \end{bmatrix}$; compute A^T.

14. Differentiate singular and non-singular matrices. **(7×2=14)**

PART – C

Answer **any 4** questions. (**Each** question carries **3** marks.)

15. Determine the rank of the following matrix.

$$\begin{bmatrix} 1 & 4 & 0 \\ 2 & 5 & 0 \\ 3 & 6 & 0 \end{bmatrix}$$

16. Find the area beneath the curve $y = x^5$ between $x = 2$ and $x = 3$.

17. Evaluate $\int 4x^2 (x^3 + 5)^3 \, dx$.

18. Write down the properties of definite integral.

19. If $A = \begin{bmatrix} 5 \\ 6 \\ 3 \\ 2 \end{bmatrix}$ and $B = [1 \quad 2 \quad 6 \quad 3 \quad 5]$. Find AB.

20. Prove that matrix addition satisfies commutative law. **(4×3=12)**

PART – D

Answer **any 2** questions. (**Each** question carries **5** marks.)

21. Find the inverse of A where $A = \begin{bmatrix} 0 & -1 & 2 \\ 1 & -2 & -3 \\ 3 & 1 & 1 \end{bmatrix}$.

22. Solve the following set of Linear Simultaneous Equations.

$2x - 3y + 4z = 5$

$x + 2y - 3z = 8$

$x - y - z = 1$

23. The demand function for a commodity $P = 25D - 20$. The supply function $P = 5D + 60$. Find the producer's surplus.

24. Use discriminants to determine the sign definiteness of the function;

$y = -2x_1^2 + 4x_1x_2 - 5x_2^2 + 2x_2x_3 - 3x_3^2 + 2x_1x_3$.

(2×5=10)