



K20U 0258

Reg. No. :

Name :

**II Semester B.A. Degree (CBCSS – Supplementary/Improvement)
Examination, April 2020
(2014-2018 Admissions)**

**COMPLEMENTARY COURSE IN ECONOMICS
2C02 ECO : Mathematics For Economic Analysis – II**

Time : 3 Hours

Max. Marks : 40

PART – A

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

1. A second degree equation is called a _____
2. If $A^T A = A A^T = I$; then A is called _____
3. The determinant of a quadratic form is called a _____
4. Reversing the process of differentiation and finding the original function from then derivative is called _____ **(4×1=4)**

PART – B

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

5. Distinguish between scalar matrix and diagonal matrix.
6. Define characteristic equation.
7. What is rank of a matrix ?
8. Show that matrix addition satisfies commutative law.

P.T.O.



9. Show that $\begin{bmatrix} 2 & -1 & 3 \\ -1 & 2 & 1 \\ 3 & 1 & 4 \end{bmatrix}$ is symmetric.
10. Evaluate $\int \frac{x}{x^2+1} dx$.
11. Find $\int_2^3 (x^2 + 5x + 7) dx$.
12. If $MC = 3 - 2x - x^2$, find the total cost.
13. Write down the relationship between total and marginal values in economics.
14. If $A = \begin{bmatrix} 6 & 1 \\ 9 & 4 \end{bmatrix}$; compute A^2 . **(7×2=14)**

PART – C

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

15. Write down the properties of definite integral.
16. Marginal Revenue function for some product is $100 - 8q$ where q is the quantity sold. Calculate the total revenue when the demand for the product, $q = 10$.
17. Integrate e^{5x+2} .
18. Obtain the characteristic equation and characteristic roots of the matrix $A = \begin{bmatrix} 3 & 2 \\ 1 & 4 \end{bmatrix}$.
19. Verify whether $AB = BA$ for the matrices $A = \begin{bmatrix} 2 & 1 & 0 \\ 1 & -1 & 2 \\ 0 & 1 & 3 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 2 & -1 \\ -2 & 0 & 1 \\ 1 & 1 & 2 \end{bmatrix}$.
20. If $A = \begin{bmatrix} 1 & 2 & 3 \\ 2 & 3 & 1 \\ 3 & 2 & 1 \end{bmatrix}$, find $|A|$. **(4×3=12)**



PART – D

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

21. Given the demand function $P = 8 - 2x$ and the supply function $P = 2 + x$, find the Consumer's Surplus and Producer's Surplus.

22. Solve the following set of Linear Simultaneous Equations.

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

$$4x - 6y + 5z = 2$$

$$-2x + y - z = 1$$

23. Use discriminants to determine whether each of the following quadratic function is positive or negative definite :

a) $y = -3x_1^2 + 4x_1x_2 - 4x_2^2$

b) $y = 5x_1^2 - 2x_1x_2 + 7x_2^2$.

24. Find the rank of $\begin{bmatrix} 1 & 2 & 3 \\ 3 & 6 & 9 \\ 2 & 4 & 6 \end{bmatrix}$.

(2x5=10)
