K24U 1755

Reg. No. : ....

Name : ....

Second Semester B.A. Degree (CBCSS – Supplementary/One Time Mercy Chance) Examination, April 2024
(2014-2018 Admissions)
COMPLEMENTARY COURSE IN ECONOMICS/DEVELOPMENT ECONOMICS
2C02ECO : Mathematics for Economic Analysis – II

Time : 3 Hours

Max. Marks : 40

PART – A

Answer **all** the 4 questions. **Each** carries **1** mark.

1. $\int x^8 dx = $ _____

2. If a matrix has 4 rows and 5 columns, then it is a matrix of order _____

3. If number of rows is equal to the number of columns, the matrix is a _____ matrix.

4. A matrix is said to be a _____ matrix, if and only if each of its elements is zero. **(1×4=4)**

PART – B

Answer **any 7** questions. **Each** carries **2** marks.

5. Write down the power rule. Calculate $\int 1 dx$.

6. Find the area above x-axis bounded by $y = 4x - x^2 - 3$, x = 1 and x = 3.

7. Explain discounted value of P_t.

8. $A = \begin{bmatrix} 1 & 3 & 2 \\ 5 & 8 & 4 \\ 4 & 3 & 5 \end{bmatrix} B = \begin{bmatrix} 1 & 2 & 1 \\ 3 & 2 & 3 \\ 1 & 4 & 3 \end{bmatrix}$, find 2A − 3B.

P.T.O.

9. Write down linear dependence and linear independence of a matrix.

10. Define symmetric matrix. Write an example.

11. Illustrate with an example that AI = I.A for any matrix A, where I is the identity matrix.

12. Integrate $3e^{5x} + \dfrac{1}{x}$.

13. Integrate x.sinx.

14. $A = \begin{bmatrix} 3 & 5 & 8 \\ 1 & 6 & 9 \\ 7 & 4 & 2 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 2 & 4 \\ 3 & 5 & 2 \\ 7 & 1 & 1 \end{bmatrix}$, S.T. $A^T + B^T = (A + B)^T$. **(7×2=14)**

PART – C

Answer **any 4** questions. **Each** carries **3** marks.

15. Evaluate $\begin{vmatrix} 2 & 45 & 55 \\ 1 & 29 & 32 \\ 3 & 68 & 87 \end{vmatrix}$.

16. Check whether the matrix is singular or not.

$A = \begin{bmatrix} 8 & 6 & 3 \\ 4 & 5 & 7 \\ 2 & 4 & 6 \end{bmatrix}$

17. $\int x^8 \log x \ dx$.

18. Marginal cost function of a function is $2 + 3e^x$, where x is the output. Find the total average cost function, if the fixed cost is Rs. 500.

19. If the demand and supply functions are given by $P_d = 20 - 5x$ and $P_s = 4x + 8$. Obtain producer's surplus ?

20. Find A^{-1} if $A = \begin{bmatrix} 1 & 7 \\ 2 & 9 \end{bmatrix}$. **(4×3=12)**

PART – D

Answer **any 2** questions. **Each** carries **5** marks.

21. Illustrate with suitable examples.
    i) Transpose of transpose of a matrix is the original matrix
    ii) Transpose of the sum of matrices is the sum of the transposes of the individual matrices.
    iii) Transpose of a product of matrices is the product of the transpose of the matrices in the reverse order.

22. Solve by Cramer's Rule.

    $x - 2y + 3z = 1$

    $3x - y + 4z = 3$

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

23. i) Describe present value, capital value and flow value.
    ii) If the demand function is $P = 35 - 2x - x^2$ and the demand x_0 is 3, what will be the consumer's surplus.

24. If $MR = 25 - x^2$, find the maximum total revenue, also find AR and demand function. **(2×5=10)**

_____