

22U110

(Pages: 2)

Name:

Reg.No:

FIRST SEMESTER B.C.A. DEGREE EXAMINATION, NOVEMBER 2022

(CBCSS - UG)

(Regular/Supplementary/Improvement)

CC19U BCA1 C01 - MATHEMATICAL FOUNDATION OF COMPUTER APPLICATION

(Computer Application - Complementary Course)

(2019 Admission onwards)

Time : 2.00 Hours

Maximum : 60 Marks

Credit : 3

Part A (Short answer questions)

Answer *all* questions. Each question carries 2 marks.

1. Find $5A$, if $A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$
2. Define Null matrix of order 4
3. Define Symmetric and Skew Symmetric matrix.
4. Write $x + y = 2; x - y = 0$ in matrix form.
5. Check the dependency of $v_1 = [3 \ 5]$, and $v_2 = [2 \ 8]$
6. Find $|A|$, if $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$
7. Give the expression for A^{-1}
8. Define the 'Eigen value' of a square matrix A
9. Evaluate $\lim_{y \rightarrow 2} \left(\frac{y + 2}{y^2 + 5y + 6} \right)$
10. Find $\frac{dy}{dx}$, if $y = 2x^3$
11. Evaluate $\int_a^b x^3 dx$
12. Evaluate $\int_2^7 5dx$

(Ceiling: 20 Marks)

Part B (Short essay questions - Paragraph)

Answer *all* questions. Each question carries 5 marks.

13. Solve using Gauss-Jordan Elimination method
$$-2y - 2z = -8$$
$$3x + 4y - 5z = 13$$

14. Using Cramer's rule, solve

$$x + 2y + 3z = 14$$

$$2x - y + 5z = 15$$

$$3x - 2y - 4z = -13$$

15. Find the angle between the vectors $\vec{i} - 2\vec{j} + 3\vec{k}$ and $3\vec{i} - 2\vec{j} + \vec{k}$

16. Find $\frac{dy}{dx}$ by using first principle, if $y = \sqrt{x}$

17. Find $\frac{dy}{dx}$, if $y = (x - 1)(x^2 + x + 1)$

18. Evaluate $\int \frac{1 - \sin x}{\cos^2(x)} dx$

19. Evaluate $\int \frac{dx}{(x - 1)(x - 2)}$

(Ceiling: 30 Marks)

Part C (Essay questions)

Answer any **one** question. The question carries 10 marks.

20. Find the rank of the matrix $A = \begin{pmatrix} 1 & 1 & 1 & 1 \\ 1 & 3 & -2 & 1 \\ 2 & 0 & -3 & 2 \\ 3 & 3 & -3 & 3 \end{pmatrix}$

21. (a) Find $\frac{dy}{dx}$, if $y = \cos(\sin x)$

(b) Find $\frac{dy}{dx}$, if $y = \sec(\tan(\sqrt{x}))$

(1 × 10 = 10 Marks)
