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(FOR THE CANDIDATES ADMITTED

23UCF3A1

DURING THE ACADEMIC YEAR 20 23 Onwards)

REG.NO. :

N.G.M.COLLEGE (AUTONOMOUS) : POLLACHI

END-OF-SEMESTER EXAMINATIONS : NOVEMBER 2024

BCOM(Finance)

MAXIMUM MARKS: 75

SEMESTER: III

TIME : 3 HOURS

PART - III

23UCF3A1- BUSINESS MATHEMATICS

SECTION – A

(10 X 1 = 10 MARKS)

ANSWER THE FOLLOWING QUESTIONS.

(K1)

1. Banker's discount =

- a) And b) Ad c) Pnd d) Pd

2. If $A = \{0\}$, $B = \{0,1,2\}$, $C = \{0,2\}$, $A \cup B \cup C =$

- a) A b) B c) C d) ϕ

3. The order of the matrix $\begin{bmatrix} 3 & 8 & 9 & -1 \end{bmatrix}$ is

- a) 4 x 1 b) 1 x 4 c) 1 x 1 d) 4 x 2

4. $\frac{d}{dx}(e^{-x}) =$

- a) e^x b) e^{-x} c) $-e^{-x}$ d) $-e^x$

5. $\int_{-1}^1 5x^4 dx =$

- a) 0 b) 2 c) 4 d) 5

ANSWER THE FOLLOWING IN ONE (OR) TWO SENTENCES

(K2)

6. Calculate the simple interest on Rs. 5000 at 10% for 3 years?

7. Write the n^{th} term of an arithmetic progression.

8. Define row matrix.

9. What is the derivative of $1/x$?

10. Write the formula for integration by parts.

(CONTD 2)

SECTION – B

(5 X 5 = 25 MARKS)

ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS. (K3)

11. a) A certain sum amounts to Rs. 4000 at the end of 5 years at 12% p.a. interest. Find the sum.

(OR)

- b) The banker's gain on a sum due 10 months hence at 6% p.a. is Rs. 25. Find the sum.

12. a) Find the sum of n terms of $7 + 77 + 777 + \dots$

(OR)

- b) Verify by Venn diagram. $(A \cup B)' = A' \cap B'$

13. a) If $A = \begin{bmatrix} 2 & 3 & 5 \\ 4 & 7 & 9 \\ 1 & 6 & 4 \end{bmatrix}$ and $B = \begin{bmatrix} 3 & 1 & 2 \\ 4 & 2 & 5 \\ 6 & -2 & 7 \end{bmatrix}$, show that $5(A + B) = 5A + 5B$.

(OR)

- b) Solve by Cramer's rule. $3x + 2y = 8, 5x - 3y = 7$.

14. a) Differentiate the following with respect to x. (i) $x^3 - 3x^2 + 4x + 3$ (ii) $x^5 + 3 \log x - 4e^x$.

(OR)

- b) If C(x) rupees is the total cost of manufacturing x toys and $C(x) = 500 + \frac{50}{x} + \frac{x^2}{10}$, find the average cost and the marginal cost when $x = 20$.

15. a) Evaluate (i) $\int_{-2}^2 (x^2 + 2x + 8) dx$ (ii) $\int (x^3 + 4x^2 - 5x - 6) dx$

(OR)

- b) Evaluate by the method of substitution $\int \frac{e^x - e^{-x}}{e^x + e^{-x}} dx$.

SECTION – C

(5 X 8 = 40 MARKS)

ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS.

(K4 (Or) K5)

16. a) A sum of money amounted to Rs. 1071 in 6 months and Rs. 1106 in 16 months. Calculate the rate of interest.

(OR)

- b) The difference between the compound interest and the simple interest for 3 years at 5% p.a. on a certain sum of money was Rs. 610. Find the sum.

(CONTD ... 3)

17. a) If $A = \{1,2,3,4\}$, $B = \{3,4,5,6\}$, and $C = \{1,5,6,7,8\}$, verify distributive laws.

(OR)

- b) The sum of three numbers in Arithmetic Progression is 24 and their product is 440. Find the numbers.

18. a) Find the inverse of $A = \begin{bmatrix} 1 & 0 & -1 \\ 3 & 4 & 5 \\ 0 & -6 & -7 \end{bmatrix}$

(OR)

- b) Verify that $B^T A^T = (AB)^T$ when $a = \begin{bmatrix} 1 & 1 & 2 \\ 2 & 1 & 0 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 2 \\ 2 & 0 \\ -1 & 1 \end{bmatrix}$.

19. a) Find the derivative of $y = \frac{3x^2}{4x-1}$

(OR)

- b) Find the maximum and minimum value of $2x^3 - 21x^2 + 36x - 20$.

20. a) Integrate $x \log x$ with respect to x .

(OR)

- b) Evaluate $\int \frac{x dx}{(x-1)(2x+1)}$
