

END OF SEMESTER EXAMINATIONS, NOVEMBER - 2018
BUSINESS MATHEMATICS
SUBJECT CODE: 13UBMAC1

MAJOR: B.COM (CA)
TIME : 3 HOURS

SEMESTER : III
MAX.MARKS: 75

SECTION - A (10 X 1 = 10)

Answer ALL the questions:

1. Find the simple interest on Rs. 20,000 for 5 years at 20% per annum.
2. Write the formula for present value of an Immediate Annuity.
3. State Distribution laws over union and intersection of sets.
4. Write the formula to find the sum of first n terms of an A.P.
5. Define the rank of a matrix.
6. Define singular matrix.
7. Find $\frac{dy}{dx}$ if $y = x^2 - 4x + 5$.
8. Find $\frac{d^2y}{dx^2}$ given $\frac{dy}{dx} = e^{mx}$.
9. Integrate $\int e^x dx$.
10. Write the value of $\int x^n dx$.

SECTION - B (5 X 4 = 20)

Answer any FIVE questions:

11. If a term deposit of Rs. 4,000 earns an interest of Rs. 2,500 in 50 months. Find the rate of Interest.
12. Write the formula to find present value of as Annuity due and Amount of Immediate Annuity.
13. Find the sum of n terms of the following series $7 + 77 + 777 + \dots$
14. If $A = \{1, 2, 3, 4\}$ $B = \{2, 4, 5, 6\}$ and $C = \{1, 3, 5\}$ verify
 $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$
15. Find the inverse of $A = \begin{bmatrix} 1 & 2 \\ 1 & 3 \end{bmatrix}$ and show that $A^{-1}.A = A.A^{-1} = I$.
16. Find the rank of $A = \begin{bmatrix} 3 & 2 & -1 \\ 7 & 8 & 0 \\ 4 & 6 & 1 \end{bmatrix}$.

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17. Find the derivative of $\frac{3x^4 - x^2 + 8}{x}$

18. Evaluate $\int (15 - 9x - 3x^2) dx$.

SECTION - C (3 X 15 = 45)

Answer any THREE questions:

19. a) Find the Banker's gain on a bill of Rs. 2,000 for 4.5 months at 4% p.a .

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

20. a) If $U = \{0,1,2,3,4,5\}$ $A = \{0,1,2\}$ and $B = \{2,4\}$

Prove that $(A \cup B)^c = A^c \cap B^c$

$(A \cap B)^c = A^c \cup B^c$

b) Find the 3 numbers in G.P whose sum is 21 and the product is 216.

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

22. Investigate the maximum and minimum of the function $2x^3 + 3x^2 - 36x + 10$.

23. Evaluate $\int \frac{dx}{(x-1)(x-2)(x-3)}$.

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