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Total No. of Questions : 09

Total No. of Pages : 02

BBA (2012 & Onwards Batches)
BRDM(2014 & Onwards)
Bachelor In Service Industry Management (SIM) (2014 & Onwards)
(Sem.–2)

BUSINESS MATHEMATICS

Subject Code : BBA-203
Paper ID : [C0242]

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :
1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B consists of FOUR Sub-sections : Units-I, II, III & IV.**
3. **Each Sub-section contains TWO questions each, carrying TEN marks each.**
4. **Student have to attempt any ONE question from each Sub-section.**

SECTION-A

1. **Write briefly :**

   (a) State Binomial Theorem for positive integral index.

   (b) Find a, b, c, d where $\begin{bmatrix} a+b & c+d \\ c-d & a-b \end{bmatrix} = \begin{bmatrix} 15 & -2 \\ -6 & 3 \end{bmatrix}$.

   (c) Find the derivative of $x^n \cdot n^x$ of *w.r.t. x*.

   (d) Define symmetric and skew symmetric matrices giving one example of each.

   (e) Find $\dfrac{dy}{dx}$ if $y \log x = x \log y$.

   (f) Prove that $\log_a(mn) = \log_a m + \log_a n$.

   (g) If A = {1, 3, 5, 7}, B = {2, 5, 9, 10}. Find A – B and B – A.

   (h) If A = $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$, find $A^2 - 3A$.

   (i) Expand $(1 + 2x)^{-2}$ upto four terms where $|x| < \dfrac{1}{2}$

   (j) If A = {1, 2, 3, 5} B = {2, 5, 8, 9} C = {2, 4, 6, 8}. Find $(A \cup B) \cap (A \cup C)$.

SECTION-B

UNIT-I

2. (a) Show that $7\log_{10}\left(\dfrac{16}{15}\right)+5\log_{10}\left(\dfrac{25}{24}\right)+3\log_{10}\left(\dfrac{81}{80}\right)=\log_{10}2$.

    (b) Using logarithms evaluate $(0.02374)^{1/4}$.

3. (a) If A = {1, 2, 3, 4, 5}, B = {3, 4, 5, 7, 9} U = {1, 2, 3, 4, ………, 10} verify that $(A\cup B)^c = A^c \cap B^c$.

    (b) In a survey of 600 students in a school, 150 students were found to be taking tea and 225 taking coffee, 100 were taking both tea and coffee. Find how many students were taking neither tea nor coffee.

UNIT-II

4. Find the inverse of matrix $A = \begin{bmatrix} 1 & 3 & -7 \\ 5 & 0 & 6 \\ 9 & -2 & 7 \end{bmatrix}$.

5. Solve the following system of equations using Cramer's rule.

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

    $2x + y - 3z = 5,$

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

UNIT-III

6. (a) Differentiate $\dfrac{ax+b}{cx+d}$ *w.r.t. x* from first principle.

    (b) Differentiate $x^{\log x}+(\log x)^x$ *w.r.t. x.*

7. Find maximum and minimum values of the function $f(x)=x^3-6x^2+9x+15$

UNIT-IV

8. The 3rd, 4th and 5th terms in the expansion of $(x + a)^n$ are respectively 84, 280 and 560. Find x, a, n.

9. (a) Find 4th term from the end in the expansion of $\left(\dfrac{4x}{5}-\dfrac{5}{2x}\right)^9$.

    (b) Using Binomial Theorem, find cube root of 999 upto four decimal places.