Roll No. | | | | | | | | | | | | | Total No. of Pages : 03

Total No. of Questions : 09

BBA (2013 to 2017) BRDM/B.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. a) List the set of letter needed to spell "CATARACT".

b) If $A = \begin{bmatrix} 2 & -2 \\ 4 & -3 \end{bmatrix}$ and $I = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$, find k so that $A^2 = kA - 2I$.

c) Find matrix A^2 if $A = \begin{bmatrix} \cos 2\theta & \sin 2\theta \\ -\sin 2\theta & \cos 2\theta \end{bmatrix}$

d) Find the derivative of $e^{2x} + (7-2x)^3$.

e) Find the cofactor of each element of the determinant $\begin{vmatrix} 3 & 4 \\ 9 & -7 \end{vmatrix}$.

f) Find the term independent of x in the expansion $\left(2x - \frac{1}{x}\right)^{10}$.

g) If A {1, 2, 3, 4, 5}, B = {4, 5, 6, 7, 8} and C ={7, 8, 9, 10, 11}, then find A ∪ B ∪ C.

h) Find derivative of $\log x + 9x^{2/3} + 3a^{-7x}$.

i) If A = {1, 2, 3, 4, 5} B = {4, 5, 6, 7, 8} and C = {7, 8, 9, 10, 11}, Then find A ∪ (B – C) using Venn diagram.

j) Find the 10th term in the expansion of $\left(2x^2 + \frac{1}{x}\right)^{12}$

SECTION–B

UNIT–I

2. (a) If X = {a, b, c, d} and Y = {f, b, d, g}, find (i) X – Y (ii) X ∩ Y.

(b) If U = {1,2,3,4,5,6,7,8,9} A = {2,4,6,8} and B = {2, 3, 5, 7}. Verify that (i) (A ∪ B′) = A′ ∪ B′ (ii) (A ∩ B′) = A′ ∩ B′.

3. (a) Find the value of $(\log_5 5)(\log_3 2)(\log_4 9)$.

(b) If A = {x:x is natural number}, B = {x:x is an even natural number}, C = {x:x is an odd natural number} and D = {x:x is a prime number}. Find (*i*) A ∪ B = (*ii*) A ∩ C ∩ D.

UNIT–II

4. (a) If $A = \begin{bmatrix} 1 & 1 & -1 \\ 2 & 0 & 3 \\ 3 & -1 & 2 \end{bmatrix}$, $B = \begin{bmatrix} 1 & 3 \\ 0 & 2 \\ -1 & 4 \end{bmatrix}$ and $C = \begin{bmatrix} 1 & 2 & 3 & -4 \\ 2 & 0 & -2 & 1 \end{bmatrix}$ Find A(BC).

(b) Express A = $\begin{bmatrix} 1 & 3 & 5 \\ -6 & 8 & 3 \\ -4 & 6 & 5 \end{bmatrix}$ as the sum of symmetric and skew symmetric matrices.

5. (a) Using Cramer's rule, solve $x - y + 3z = 6$; $x + 3y - 3z = -4$; $5x + 3y + 3z = 10$.

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

UNIT–III

6. (a) Find the derivative of $\frac{3x+2}{(x+5)(2x+1)+3}$.

(b) Find the derivative of y with respect to x : $ax^2 + 2hxy + by^2 + 2gx + 2fy + c = 0$.

7. (a) Find $\frac{dy}{dx}$ when $x = a\frac{1-t^2}{1+t^2}$, $y = b\frac{2t}{1+t^2}$.

(b) Find the derivative of $7^x \cdot x^{-7}$.

UNIT–IV

8. (a) Compute $(98)^5$ using Binomial theorem.

   (b) Find value of 'a' if the 17^{th} and 18^{th} term of the expansion $(2+a)^{50}$ are equal.

9. a) Find the value of $\log \frac{75}{16} - 2 \log \frac{5}{4} + 3 \log \frac{2}{3}$.

   (b) Find the general term in the expansion of $\left(\frac{x}{3} + \frac{1}{x}\right)^{31}$.