Roll No. ☐☐☐☐☐☐☐☐☐☐☐☐☐   Total No. of Pages : 02

Total No. of Questions : 07

BBA (2011 Batch)   (Sem.–1)
BUSINESS MATHEMATICS
Subject Code : BB-102
Paper ID : [C0202]

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 contains SIX questions carrying TEN marks each and students have to attempt any FOUR questions.**

SECTION-A

1. **Write briefly :**

    a) Construct the truth table of $\sim (p \wedge \sim q)$.

    b) Solve the equation $\sqrt{3x^2 - 14x + 10} = 1 - 7x$.

    c) Evaluate the number of ways of selecting 8 objects out of 10 objects.

    d) Examine the following function for continuity at $x = 0$

$$f(x) = \begin{cases} \dfrac{|x|}{x}, & x \neq 0 \\ 0, & x = 0 \end{cases}.$$

    e) Define the right continuity of a function at a point.

    f) Differentiate $\dfrac{x+2}{3x+5}$ w.r.t. x.

    g) Define a scalar matrix.

    h) Find BA where

$$A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix} \text{ and } B = \begin{bmatrix} 2 & 1 \\ 4 & 0 \end{bmatrix}.$$

i) Find the cofactor of the element 5 in A, where

$$\begin{bmatrix} 4 & 3 & 2 \\ 1 & 5 & 7 \\ 9 & 8 & 0 \end{bmatrix}.$$

j) Find the 12th term of the G.P. 2, 6, 18, 54, …

SECTION-B

2. Evaluate :

$$\underset{x \to 1}{\text{Lt}} \ \frac{x^6 - 5x + 4}{x^3 - 2x + 1}.$$

3. Discuss the continuity of $f(x) = \begin{cases} \dfrac{x - |x|}{x}, & x \neq 0 \\ 2, & x = 0 \end{cases}$.

4. Find the derivative of $f(x) = \begin{cases} x^2 + 3x + a, & x \leq 1 \\ 5x + 2, & x > 1 \end{cases}$ at the point $x = 1$.

5. Find the inverse of $\begin{bmatrix} 1 & 1 & 3 \\ 1 & 3 & -3 \\ -2 & -4 & -4 \end{bmatrix}.$

6. In a G.P. the sum is 224 and the last term is 128 and common ratio is 2. Find the number of terms in the G.P.

7. Find the present value of Rs. 20,000 due 6 years hence at 6% p.a. interest compounded half yearly. Given log 20,000 = 4.3010, log (1.03) = 0.0129, AL 4.1462 = 14002.0.