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Total No. of Pages: 02
Total No. of Questions: 07

BBA (Sem.-1st)
BUSINESS MATHEMATICS
Subject code: BB-102
Paper ID: [C0202]

Time: 3 Hrs.

Max. Marks: 60

INSTRUCTION TO THE CANDIDATES:

1. *Section- A is compulsory consisting of Ten question carrying two marks each.*
2. *Section-B contain Six question carrying Ten marks each and students has to attempt any four questions*

SECTION -A

(10x2=20)

- Q.1. (i) If $A = \{x: x = 2n, n \in \mathbb{Z}\}$ and $B = \{x: x = 3n, n \in \mathbb{Z}\}$, then find $A \cap B$.
- (ii) Evaluate: $\lim_{x \rightarrow 2} \frac{x^2 - 4}{x + 3}$
- (iii) Differentiate the function w.r.t. $x(x^2 - 3x + 2)(x + 2)$
- (iv) Solve the equation $(4x^2 + 9) = 0$ by factorization method.
- (v) Define Law of operation?
- (vi) What is Depreciation?
- (vii) If $\frac{1}{9} + \frac{1}{10} = \frac{x}{11}$, find x
- (viii) If ${}^nP_r = 720$ and ${}^nC_r = 120$, find r.
- (ix) Evaluate $3A - 4B$ where $A = \begin{bmatrix} 3 & -4 & 6 \\ 5 & 1 & 7 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 0 & 1 \\ 2 & 0 & 3 \end{bmatrix}$
- (x) What is compound interest?

SECTION - B

(4x10=40)

- Q.2. If the coefficient of x and x^2 in the expansion of $(1 + x)^m (1 + x)^n$ are 3 and -6 respectively. Find the value of m and n.
- Q.3. If the first term of an A.P. is 2 and the sum of first five term is equal to one-fourth of the sum of the next five terms, find the sum of first 30 terms.
- Q.4. Solve, using Cramer's rule, the following system of linear equations:
$$\begin{aligned} 2x - y - z &= 7 \\ 3x + y - z &= 7 \\ x + y - z &= 3 \end{aligned}$$

Q.5. Show that $\lim_{x \rightarrow \infty} (\sqrt{x^2 + x + 1} - x) \neq \lim_{x \rightarrow \infty} (\sqrt{x^2} + 1 - x)$

Q.6. Find from first principal the derivative of $\sqrt{x} + \frac{1}{\sqrt{x}}$ w. r. t. x

Q.7. Given below is a set of equations. Solve then simultaneously by the Gauss-Elimination method.

$$3x_1 + 6x_2 + x_3 = 16$$

$$2x_1 + 4x_2 + 3x_3 = 13$$

$$x_1 + 3x_2 + 2x_3 = 9$$

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