

Roll No.

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BBA (Sem. - 1st)
BUSINESS MATHEMATICS

SUBJECT CODE : BB - 102

Paper ID : [C0202]

[Note : Please fill subject code and paper ID on OMR]

Time : 03 Hours

Maximum Marks : 60

Instruction to Candidates:

- 1) Section - A is **Compulsory**.
- 2) Attempt any **Four** questions from Section - B.

Section - A

Q1)

(10 × 2 = 20)

- a) Write the set $X = \left\{1, \frac{1}{4}, \frac{1}{9}, \frac{1}{16}, \frac{1}{25}, \dots\right\}$ in the set builder form.
- b) Find roots of the quadratic equation $6x^2 - x - 2 = 0$.
- c) Evaluate $5P_3$.
- d) If ${}^nP_r = 720$ and ${}^nC_r = 120$, find r .
- e) Find General Term in the expansion of $(x^2 - y)^6$.
- f) Insert three arithmetic means between 3 and 19.
- g) Find the sum of 7 terms of G.P. 3, 6, 12,
- h) If $s = \{1, 2, 3\}$ and $f = \{(1, 3), (3, 2), (2, 1)\}$. Determine whether the function $f: s \rightarrow s$ have inverse. Find f^{-1} , if it exists.
- i) Find $\frac{d}{dx} (1 + \log x)$.
- j) Find the value of x for which $\begin{vmatrix} 3 & x \\ x & 1 \end{vmatrix} = \begin{vmatrix} 3 & 2 \\ 4 & 1 \end{vmatrix}$.

Section - B

(4 × 10 = 40)

Q2) Solve $x^2 - (3\sqrt{2} - 2i)x - 6\sqrt{2}i = 0$.

Q3) How many words can be formed from the letter of the word 'DAUGHTER' so that

- (a) The vowels always come together.
- (b) The vowels never come together.

Q4) Expand $(2x - 3y)^4$ by Binomial Theorem.

Q5) (a) Differentiate $y = x^3 \log x$.

(b) Differentiate $y = 3e^{2x} + 2e^{3x}$.

Q6) If $f(x) = \begin{cases} 5x - 4; & 0 < x \leq 1 \\ 4x^3 - 3x; & 1 < x < 2 \end{cases}$

Show that $\lim_{x \rightarrow 1} f(x)$ exists.

Q7) Solve the following system of equations by matrix method.

$$3x - 2y + 3z = 8$$

$$2x + y - z = 1$$

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

