

Roll No. ....

Total No. of Questions : 07]

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**BBA (Sem. - 1<sup>st</sup>)**  
**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) Define universal subset.
- b) Prove that for set A,  $A \cup A = A$ .
- c) Define Disjunction.
- d) Construct the truth table for  $p \Rightarrow q$ .
- e) Find 4<sup>th</sup> term from the end in the expansion of  $\left(\frac{x^3}{2} - \frac{2}{x^2}\right)^9$ .
- f) The second term of G.P. is 24 and 5<sup>th</sup> term is 81. Find the series and 12<sup>th</sup> term.
- g) If  $A = \begin{bmatrix} \alpha & \beta \\ \gamma & \delta \end{bmatrix}$ , then find Adj A.
- h) Given  $\log_{10} 2 = 0.30103$ . Calculate  $\log_{10} \left(\frac{1000}{256}\right)$ .
- i) In what time would a sum of money truble itself at 8% compound interest.
- j) Use definition of limit to prove that  $\lim_{x \rightarrow 2} (2 - 3x) = -4$ .

**J-268 [8129]**

**P.T.O.**

Section - B

(4 × 10 = 40)

- Q2)** (a) If  $b > a > 0$  and  $C > 0$ , then  $\frac{a+c}{b+c} > \frac{a}{b}$ , prove.
- (b) Find the number of unordered sample of size five (repetition allowed) from the set  $\{a, b, c, d, e, f\}$
- (i) No further restrictions.
- (ii)  $a$  occur at least twice.
- (iii)  $a$  occurs exactly twice.
- Q3)** Let  $f: X \rightarrow Y$  and  $g: Y \rightarrow Z$  and let  $f, g$  be one-one, onto, then prove  $gof: X \rightarrow Z$  is also one-one and onto and  $(gof)^{-1} = f^{-1}og^{-1}$ .
- Q4)** Use matrix inversion method to find the solution of equations
- $$2x - y + 3z = 9,$$
- $$x + y + z = 6,$$
- $$x - y + z = 2.$$
- Q5)** Solve  $\frac{a}{x+a} + \frac{b}{x+b} + \frac{c}{x+c} = 3$ .
- Q6)** Solve using Crammer's Rule.  $3x - 2y + z = 4, 2x + 3y - z = 3, x + y + z = 8$ .
- Q7)** (a) Prove that  $\frac{\log \sqrt{27} + \log 8 + \log \sqrt{1000}}{\log 120} = \frac{3}{2}$
- (b) What is the rate percent per annum if a sum double itself in 17 years at compound interest.

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