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

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) 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 4th 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 5th term is 81. Find the series and 12th 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 $\underset{x \to 2}{Lt}\,(2-3x) = -4$.

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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 $f : X \to Y$ and $g : Y \to Z$ and let f, g be one-one, onto, then prove $gof : X \to Z$ is also one-one and onto and $(gof)^{-1} = f^{-1}og^{-1}$.

Q4) Use matrix inversion method to find the solution of equations

$2x - y + 3z = 9$,

$x + y + z = 6$,

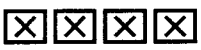
$x - y + z = 2$.

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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