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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) 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 $\left(\dfrac{x^3}{2} - \dfrac{2}{x^2} \right)^9$.

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 $\log_{10} \left(\dfrac{1000}{256} \right)$.

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 $\dfrac{a+c}{b+c} > \dfrac{a}{b}$, 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 $\dfrac{a}{x+a} + \dfrac{b}{x+b} + \dfrac{c}{x+c} = 3$.

Q6) Solve using Crammer's Rule. $3x - 2y + z = 4$, $2x + 3y - z = 3$, $x + y + z = 8$.

Q7) (a) Prove that $\dfrac{\log \sqrt{27} + \log 8 + \log \sqrt{1000}}{\log 120} = \dfrac{3}{2}$

(b) What is the rate percent per annum if a sum double itself in 17 years at compound interest.

$$\boxtimes\boxtimes\boxtimes\boxtimes$$