

Roll No.

Total No. of Pages : 02

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B.Sc. (IT)/ BCA (2019 Batch) (Sem.-1)

B.Sc.(Graphics & Web Designing)

MATHEMATICS

Subject Code : UGCA1901

M.Code : 76961

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

- 1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
- 2. SECTION-B contains SIX questions carrying TEN marks each and students have to attempt any FOUR questions.**

SECTION-A

- 1. Write briefly :**

- a) Define Disjoints set and Equivalent sets.
- b) If $A = \{1, 2, 3\}$ and $B = \{1, 5, 7\}$, determine the following sets :
 - i) $A - B$
 - ii) $A \cap B$
- c) Define Symmetric difference of sets using diagram.
- d) Find component statement of “*Number 7 is prime and odd*”.
- e) Translate statement in to symbolic form “*2, 3 and 6 are factors of 12*”.
- f) Define Null and Scalar matrix

g) If $\begin{bmatrix} 2 & 1 & 3 \end{bmatrix} \begin{bmatrix} -1 & 0 & -1 \\ -1 & 1 & 0 \\ 0 & 1 & 1 \end{bmatrix} \begin{bmatrix} 1 \\ 0 \\ -1 \end{bmatrix} = A$, Find A.

- h) If a , b and c are in A.P. then show that $2b = a + c$
- i) Give an example of a sequence which is A.P. and G.P. together.
- j) Determine k so that $k + 2$, $4k - 6$, $3k - 2$ are the three consecutive terms of an A.P.

SECTION-B

2. a) Write the following sets in roaster form : 6
- i) $A = \{x : x \text{ is positive factor of } 36\}$
- ii) $B = \{x : x \in \mathbb{R}, 2x + 11 = 25\}$
- iii) $C = \left\{x : \frac{x-2}{x+3} = 3, x \in \mathbb{R}\right\}$
- b) Given that $L = \{1, 2, 3, 4\}$, $M = \{3, 4, 5, 6\}$ and $N = \{1, 3, 5\}$, Verify that $L - (M \cup N) = (L - M) \cap (L - N)$. 4
3. Write the following equation in Symbolic form and find its negation : 10
- “If he is Good in studies then he will either do M.B.A. or M.C.A.”
4. a) If $2A + 3B = \begin{bmatrix} 1 & -2 & 3 \\ 2 & 0 & -1 \end{bmatrix}$ and $A - 2B = \begin{bmatrix} 3 & 0 & 1 \\ -1 & 6 & 2 \end{bmatrix}$, then find A and B. 5
- b) If $A = \begin{bmatrix} 2 & -2 \\ -3 & 2 \end{bmatrix}$, then show that $(A + I)(A - 4I) = 0$. 5
5. a) The third term of an A.P. is 1 and 6th term is -11. Determine the 11th term and m th term. 5
- b) Insert three Geometric means between 1 and 256. 5
6. a) If $A = \begin{bmatrix} 2 & 0 & 1 \\ 2 & 1 & 3 \\ 1 & -1 & 0 \end{bmatrix}$, compute $A^2 - 3A + 2I$. 6
- b) Define negation and Tautology with examples. 4
7. a) If m times the m th term of an A.P. is equal to n times the n th term, show that the $(m + n)$ th term of the A.P. is zero. 6
- b) In each of the following, determine whether the statement is true or false. If it is true, prove it. If it is false, give an example. 4
- i) If $x \in A$ and $A \in B$, then $x \in B$.
- ii) If $A \subset B$ and $B \in C$, then $A \in C$.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.