Roll No. | | | | | | | | | | | | Total No. of Pages : 02

Total No. of Questions : 07

B.Sc. (IT)/ Graphics & Web Designing / BCA (Sem–1)

MATHEMATICS

Subject Code : UGCA-1901

M.Code : 76961

Date of Examination : 17-06-2023

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) Set builder method

b) Null set

c) Disjunction

d) Contradiction

e) Diagonal matrix

f) Arithmetic progression

g) Geometric mean

h) Show that $AUA^c = U$

i) If $A = \begin{bmatrix} 2 & 5 \\ 1 & 3 \end{bmatrix}$, $B = \begin{bmatrix} 1 & -1 \\ -3 & 0 \end{bmatrix}$, find $5A - 3B$.

j) Prove by an example that AB can be zero matrix when either of A and B is zero matrix.

SECTION-B

2. a) Let U={0,1,2,3,----,9}, A={x $\in$ U: x is multiple of 3 }, B={x $\in$ U: $x^2-5 \geq 0$}. Determine

   i) $A \cap B$

   ii) $A \cup B$

   b) List all the members of the power set of the set A={ a,b,c,d}.

3. Prove $p \wedge (q \vee r) = (p \wedge q) \vee (p \wedge r)$

4. For what values of x, y, z, w

$$3\begin{bmatrix} x & y \\ z & w \end{bmatrix} = \begin{bmatrix} x & i \\ -1 & 2w \end{bmatrix} + \begin{bmatrix} 4 & x+y \\ z+w & 3 \end{bmatrix}$$

5. If $A = \begin{bmatrix} 1 & 0 & 2 \\ -1 & 2 & -3 \end{bmatrix}$, $B = \begin{bmatrix} 2 & 0 \\ 1 & -1 \\ 0 & -2 \end{bmatrix}$ verify that (AB)' = B'A'.

6. a) Prove that if a, b, c are in AP. then $a^2(b+c)$, $b^2(c+a)$, $c^2(a+b)$ are in AP

   b) Insert 5 AMs between 9 and 27.

7. a) The sum of three terms of a GP is 21 and their product is 216.Find the terms.

   b) Insert 5 GMs between 3 and 192.

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.