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Total No. of Pages : 02

Total No. of Questions : 08

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

B.Sc.(Graphics & Web Designing)

MATHEMATICS

Subject Code : UGCA1901

M.Code : 76961

Time : 2 Hrs.

Max. Marks : 30

INSTRUCTIONS TO CANDIDATES :

1. Attempt any FIVE question(s), each question carries 6 marks.

1. a) Write the set of all vowels in the English alphabets which precede q.
b) Let $U = \{1, 2, 3, 4, 5, 6, 7, 8, 9\}$ $A = \{2, 4, 6, 8\}$ and $B = \{2, 3, 5, 7\}$. Verify that $(A \cup B)' = A' \cap B'$.
2. a) Define Tautology with example.
b) Define diagonal matrix with example.
3. a) Find the symmetric difference of two set A and B where $A = \{1, 2, 3, 4\}$ $B = \{2, 3, 5\}$.
b) In a group of people, 50 speak both English and Hindi and 30 speak English but not Hindi. All the people speak at least one of the two languages. How many people speak English?
4. a) Show that the statement $(p \wedge \sim q) \wedge (\sim p \wedge q)$ is a contradiction.
b) Prove that $p \rightarrow q \equiv (p \rightarrow q) \wedge (q \rightarrow p)$.
5. If $A = \begin{bmatrix} 1 & 2 & 1 \\ 0 & 1 & -1 \\ 3 & -1 & 1 \end{bmatrix}$ Show that $A^3 - 3A^2 - A + 9I = 0$.
6. a) Solve the equation $1 + 6 + 11 + 1 + 6 + \dots + x = 148$.
b) How many terms of the sequence 18, 16, 14, ... should be taken so that the sum is zero?
7. a) How many terms of the G.P $3, 3^2, 3^3, \dots$ are needed to give the sum 120?
b) Which terms of the G.P $2, 2\sqrt{2}, 4, \dots$ is 128?

8. a) Let $A = \begin{bmatrix} 1 & 2 \\ 4 & 3 \end{bmatrix}$ $B = \begin{bmatrix} 2 & 0 & -4 \\ 3 & -2 & 6 \end{bmatrix}$. Find AB , BA .

b) Find x such that $\begin{bmatrix} 1 & x & 1 \end{bmatrix} \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 3 & 2 & 5 \end{bmatrix} \begin{bmatrix} 1 & -2 & 3 \end{bmatrix} = 0$.

Note: Any student found attempting answer sheet from any other person(s), using incriminating material or involved in any wrong activity reported by evaluator shall be treated under UMC provisions.

Student found sharing the question paper(s)/answer sheet on digital media or with any other person or any organization/institution shall also be treated under UMC.

Any student found making any change/addition/modification in contents of scanned copy of answer sheet and original answer sheet, shall be covered under UMC provisions.