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Total No. of Pages : 02

Total No. of Questions : 08

BCA/B.Sc.(GWD)/B.Sc. (IT) (Sem.-1)

MATHEMATICS

Subject Code : UGCA1901

M.Code : 76961

Date of Examination : 05-07-21

Time : 2 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. Attempt any FIVE question(s), each question carries 12 marks.

1. Let $U = \{1, 2, 3, 4, 5, 6, 7, 8, 9\}$, $A = \{2, 4, 6, 8\}$ and $B = \{2, 3, 5, 7\}$

Verify that $(A \cup B)^c = A^c \cap B^c$ and $(A \cap B)^c = A^c \cup B^c$.

2. Find the union of each of the following pairs of sets :

a) $A = \{x : x \text{ is a natural number and } 1 \leq x \leq 6\}$, $B = \{x : x \text{ is a natural number and } 6 \leq x \leq 10\}$

b) $A = \{1, 2, 3\}$, $B = \phi$

c) $A = \{x : x \text{ is a natural number and multiple of } 3\}$, $B = \{x : x \text{ is a natural number less than } 6\}$

3. Show that

a) $\sim(p \vee \sim q) = \sim p \wedge q$

b) $(\sim p \wedge \sim q) \rightarrow (p \rightarrow q)$ is a tautology.

4. Which of the proposition among $q \rightarrow p$, $\sim p \rightarrow \sim q$, $\sim q \rightarrow \sim p$ is logically equivalent to $p \rightarrow q$

5. a) If $A = \begin{bmatrix} 0 & 0 & 1 \\ 0 & 1 & 0 \\ 1 & 0 & 0 \end{bmatrix}$ verify that $A^2 = I$

b) If $\begin{bmatrix} a+b & 2 \\ 5 & b \end{bmatrix} = \begin{bmatrix} 6 & 5 \\ 2 & 2 \end{bmatrix}$ find a & b.

6. If $A = \begin{bmatrix} 5 & 2 \\ -1 & 2 \end{bmatrix}$ and $I = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ show that $(A - 3I)(A - 4I) = O$
7. If the tenth and eleventh term of an A.P. are 23 & 27 respectively then write the sum of its first 20 terms.
8. For what n , n th terms of the following G.P. are equal
 $5 + 10 + 20 + \dots$ and $1280 + 640 + 320 + \dots$

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.