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Total No. of Pages : 02

Total No. of Questions : 16

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

B.Voc.(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

Answer briefly :

1. Define power set and equal sets.
2. If $A = \{1, 2, 3\}$ and $B = \{1, 5, 7\}$, determine the following sets (i) $A - \phi$ (ii) $A \cup B$
3. Define complement of a set, with example.
4. Find component statement of "*The number 100 is divisible by 3, 11 and 5*".
5. Translate statement in to symbolic form "*A number is either divisible by 2 or 3*".
6. Define transpose and equal matrix.
7. 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.
8. Give an example of a sequence which is A.P. and G.P together.
9. If a, b and c are in G.P. then find value of b^2 .
10. Determine k so that $k + 2, 4k - 6, 3k - 2$ are the three consecutive terms of an A.P.

SECTION-B

11. a) Write the following sets in roaster form :
- $A = \{x : x \text{ is positive factor of prime number } P\}$
 - $B = \{x : x \in \mathbb{R}, 2x + 11 = 15\}$
 - $C = \left[x : \frac{x-2}{x+3} = 3, x \in \mathbb{R} \right]$
- b) Given that $L = \{1, 2, 3, 4\}$, $M = \{3, 4, 5, 6\}$ and $N = \{1, 3, 5\}$, verify that $L - (M \cap N) = (L - M) \cap (L - N)$.
12. Write the following equation in Symbolic form and find its negation "*If he is successful then he will either join M.B.A. or M.C.A.*"
13. a) If $A = \begin{bmatrix} 8 & 0 \\ 4 & -2 \\ 3 & 6 \end{bmatrix}$ and $B = \begin{bmatrix} 2 & -2 \\ 4 & -2 \\ -5 & 1 \end{bmatrix}$, then find X, such that $2A + 3X = 5B$.
- b) Let $A = \begin{bmatrix} 1 & 3 & 2 \\ 0 & 1 & 4 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 4 \\ 0 & 1 \\ 2 & 3 \end{bmatrix}$, then show that $AB \neq BA$.
14. a) Determine the number of terms in the A.P. $17, 14\frac{1}{2}, 12, \dots, -38$
- b) Insert Five Geometric means between 4 and 256.
15. a) If $A = \begin{bmatrix} 0 & 0 & 0 \\ 1 & 0 & 0 \\ 0 & 1 & 0 \end{bmatrix}$, verify that $A^3 = 0$
- b) Define conjunction and disjunction with examples.
16. a) If the p th term of an A.P. is q and q th term is p , show that r th term is $p + q - r$.
- b) In each of the following, determine whether the statement is true or false. If it is true, prove it. If it is false, given an example.
- If $A \in B$ and $B \in C$, then $A \in C$.
 - If $A \notin B$ and $B \notin C$, then $A \notin C$.

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.