Roll No. | | | | | | | | | | | | **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 :

i) A = $\{x : x$ is positive factor of prime number P$\}$

ii) B = $\{x : x \in r, 2x + 11 = 15\}$

iii) C = $\left[x : \frac{x-2}{x+3} = 3, x \in R\right]$

b) Given that L = {1, 2, 3, 4}, M = {3, 4, 5, 6} and N = {1, 3, 5}, verify that L – (M ∩ N) = (L – M) ∩ (L – N).

12. Write the following equation is 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 ≠ BA.

14. a) Determine the number of terms in the A.P. $17, 14\frac{1}{2}, 12, \ldots\ldots, -38$

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 *pth* term of an A.P. is *q* and *qth* term is *p*, show that *rth* 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.

i) If A ∈ B and B ∈ C, then A ∈ C.

ii) If A ∉ B and B ∉ C, then A ∉ 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.