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

Total No. of Questions : 07

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

1. Write briefly :

a) Define Disjoints set and Equivalent sets.

b) If A ={1, 2, 3} and B = {1, 5, 7}, determine the following sets :

i) A – B

ii) A ∩ B

c) Define Symmetric difference of sets using diagram.

d) Find component statement of ''*Number 7 is prime and odd*''.

e) Translate statement in to symbolic form ''*2, 3 and 6 are factors of 12*''.

f) Define Null and Scalar matrix

g) 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.

h) If *a, b* and *c* are in A.P. then show that $2b = a + c$

i) Give an example of a sequence which is A.P. and G.P. together.

j) Determine *k* so that $k + 2, 4k - 6, 3k - 2$ are the three consecutive terms of an A.P.

SECTION-B

2. a) Write the following sets in roaster form : 6

i) A = $\{x : x$ is positive factor of 36$\}$

ii) B = $\{x : x \in R, 2x + 11 = 25\}$

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$\cup$N) = (L – M) $\cap$ (L – N). 4

3. Write the following equation in Symbolic form and find its negation : 10

''*If he is Good in studies then he will either do M.B.A. or M.C.A.*''

4. a) If $2A + 3B = \begin{bmatrix} 1 & -2 & 3 \\ 2 & 0 & -1 \end{bmatrix}$ and $A - 2B = \begin{bmatrix} 3 & 0 & 1 \\ -1 & 6 & 2 \end{bmatrix}$, then find A and B. 5

b) If $A = \begin{bmatrix} 2 & -2 \\ -3 & 2 \end{bmatrix}$, then show that (A + I) (A – 4I) = 0. 5

5. a) The third term of an A.P. is 1 and 6^{th} term is –11. Determine the 11^{th} term and *mth* term. 5

b) Insert three Geometric means between 1 and 256. 5

6. a) If $A = \begin{bmatrix} 2 & 0 & 1 \\ 2 & 1 & 3 \\ 1 & -1 & 0 \end{bmatrix}$, compute $A^2 - 3A + 2I$. 6

b) Define negation and Tautology with examples. 4

7. a) If *m* times the *mth* term of an A.P. is equal to *n* times the *nth* term, show that the (*m* + *n*)*th* term of the A.P. is zero. 6

b) In each of the following, determine whether the statement is true or false. If it is true, prove it. If it is false, give an example. 4

i) If $x \in A$ and $A \in B$, then $x \in B$.

ii) If $A \subset B$ and $B \in C$, then $A \in C$.

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.