

(i) Printed Pages : 3

Roll No.

(ii) Questions : 7

Sub. Code :

1	0	0	7	2
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Exam. Code :

5	0	0	1
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NEP U.G. (Common-Inter Disciplinary Course) 1st Semester
(2125)

MATHEMATICS

Paper : Basic Mathematics MATIDC

Time Allowed : Three Hours]

[Maximum Marks : 60

Note :— Attempt **FOUR** questions in all, by selecting at least **ONE** from each unit. Question Number 1 is compulsory.

1. (a) Find subsets of the set $\{0, 1\}$. 2
- (b) If $A = \{1, 2, 3\}$, $B = \{3, 4, 5\}$, find $A \cup B$, $A \cap B$. 2
- (c) Find the n th term of the series 1, 3, 5, 7, ... 2
- (d) Find the n th term of the series $1, \frac{1}{2}, \frac{1}{4}, \dots$ 2
- (e) Define central tendency. 2
- (f) Find the AM of 13, 17, 10, 20, 50. 2

UNIT—I

2. (a) If $A = \{1, 2, 3, 4\}$, $B = \{3, 5, 7, 8\}$, then show that $(A \cup B)^c = A^c \cap B^c$ and $(A \cap B)^c = A^c \cup B^c$. 4
- (b) Using a Venn diagram, show that if $A \subset B$ then $B^c \subset A^c$. 4

- (c) In a group of 65 people, 37 like coffee, 52 like tea, and each person likes at least one of the two drinks. How many people like both drinks? 8
3. (a) Find the domain and range of the function $f(x) = \sqrt{x^2 - 9}$. 6
- (b) Define reflexive, transitive, and symmetric relations. 6
- (c) If $f : \mathbb{R} \rightarrow \mathbb{R}$ is defined by $f(x) = x^2$, then check whether this function is bijective or not. 4

UNIT—II

4. (a) Find the sum of the first 100 natural numbers. 4
- (b) Find the G.P. for which the sum of the first two terms is -4 and the fifth term is 4 times the third term. 6
- (c) Find p if S , p , and 10 are in H.P. 6
5. (a) Define the following :
- (i) Negative of a statement.
- (ii) Compound statement.
- (iii) Quantifiers. 6
- (b) Identify the quantifier and write the negation of the statement. There exists a number which is equal to its square. 4
- (c) The sum of n terms of two Arithmetic Progressions (A.P.) are in the ratio $(3n + 8) : (7n + 15)$. Find the ratio of their 12^{th} terms. 6

UNIT—III

6. (a) Find the mean deviation about the mean for the data :
1, 4, 7, 8, 9, 10, 12, 13, 17. 4
- (b) Find the mean and variance of 1.6, 7, 10, 12, 4, 8, 12.
4
- (c) From the prices of shares X and Y below, find out which is more suitable in value :

X	35	54	52	53	56	58	52	50	51	49
Y	108	107	105	105	106	107	104	103	104	101

8

7. (a) What is the mode of 10, 12, 11, 10, 15, 20, 19, 21, 11, 9, 10
4
- (b) Find the median of the following data:

Class Interval	Frequency
0-10	4
10-20	8
20-30	5
30-40	9
40-50	2

8

- (c) What are various measures of dispersion? 4