MATH R-15

Exam. Code: 5002
Sub. Code: 10523

2046
NEP U.G. Common-Inter Disciplinary Course
Second Semester
Mathematics
Paper: Basic Mathematics

Time allowed: 3 Hours Max. Marks: 60

NOTE: Attempt four questions in all, including Question No. I which is compulsory and selecting one question from each Unit.

x-x-x

I. Attempt the following:-

a) If $A=\{10,11,12\}$, $B=\{11,12,13\}$ find $A\cup B$, $A\cap B$.

b) Find domain of the function $f(x)=x+5$.

c) Find 10^{th} terms of the series 3,7,11,15, ……..

d) Find range of the series 2,9,11,1,5,7.

e) Define mode.

f) Find nth term of the series $1,\frac{1}{2},\frac{1}{4},$…… (6x2)

UNIT - I

II. a) If $U=\{1,2,3,.....20\}$, is universal set, $A=\{11,12,13\}$, $B=\{13,14,15,16,17\}$ then show that $(A\cup B)^c=A^c\cap B^c$ and $(A\cap B)^c=A^c\cup B^c$.

b) Using Venn diagram, show that if $A\subset B$ then $B^c\subset A^c$.

c) A survey of 100 students found that 70 like pizza, 75 like burger and 60 like both. How many students like neither pizza nor burger? (8,4,4)

III. a) If $A=\{4,5,6\}$ and R is relation on A is given by $R=\{(4,4),(5,5),(4,5),(5,4),(5,6)\}$ show that R is neither reflexive nor transitive.

b) If $f:IR\to IR$ is defined by $f(x)=x-1$, show that f is bijective and also find inverse of f.

c) What is range of the function $f(x)=\frac{x}{x}$, where $x\neq 0$. (6,6,4)

UNIT - II

IV. a) What is sum of first 30 odd natural numbers?

b) Find sum of n terms of the series 8, 88, 888,…… (8,8)

V. a) Check whether following compound statement is true of false:-

"A square is a quadrilateral and its four sides are equal'.

b) Determine the truth value of the following statement:-

If a and b are integers and both are divisible by 7. Then their product is also divisible by 7.

c) Write negation of the following statement:-

"Some students are absent'. (6,6,4)

P.T.O.

UNIT - III

VI. a) Find median of the following data:-

Marks less than	80	70	60	50	40	30	20	10
No. of students	100	90	80	60	32	20	13	5

b) Find mean deviation about mean of the following data:-

X:	3	5	7	9	11	13
f(x):	2	7	10	9	5	2

(8,8)

VII. a) Ten students of a class obtained marks in a subject out of 100 as follow:-

S. No.	1	2	3	4	5	6	7	8	9	10
Marks	5	10	20	25	40	42	45	48	70	80

Find the standard deviation.

b) Find Harmonic mean of 20, 30, 40, 50.

c) Find modes of 1, 2, 5, 1, 7, 9, 1, 10, 5, 1, 4, 12,1.

(8,4,4)

x-x-x