KENDRIYA VIDYALAYA NEW CANTT ALLAHABAD

1st Periodic Test (2017-18)

Class-XI Subject: Mathematics

Max Marks: 50 Time: 1.30 Hours

General Instructions:

1. Attempt all questions.
2. Marks are indicated in front of question.

Section A

Fill in the blank spaces:

1 $A \cup A' =$-------- 1

2 $\varphi' \cap A =$ ------ 1

3 $A \cap A' =$------- 1

4 $U' \cap A =$-------- 1

Section B

5 If A={0,1,3,9,8}, B= {3,5,4,8,0}, and C= {0,1,3,9,8} then find – 4

i) $A \cap (B \cap C)$.

ii) $A \cup (B \cap C)$.

6 Find the domain of the following functions: 4

i) $f(x) = \frac{x}{x^2+3x+2}$

ii) $f(x) = \sqrt{x^2 - 6x + 8}$

7 Draw the graph of y= |x| in the interval [-2, 2]. 4

8 If f: R-{0} → R be given by $f(x) = x^3 - \frac{1}{x^3}$ then find the value of $f(x)+f\left(\frac{1}{x}\right)$. 4

9 Verify $A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$ by using Venn Diagram. 4

10 Prove that $n(A \cup B) = n(A) + n(B) - n(A \cap B)$. 4

11 Convert 6 radians into degree measure. 4

Section C

12 In a college of 400 students, 180 students have taken Mathematics as a major subject, 160 students have taken Physics as a major subject and 150 takes neither. Find: 6

i) How many students take both Mathematics and Physics as major subjects?

ii) How many have taken Mathematics but not Physics?

13 Find the domain and range of the function f: R→R+ defined by $f(x) = \sqrt{16 - x^2}$. 6

14 If the arcs of the same lengths in two circles subtend angles 65°and 110° at the centre, find the ratio of their radii. 6