INDIAN SCHOOL DARSAIT
DEPARTMENT OF MATHEMATICS

Subject : Mathematics   Topic : Sets   Date of Worksheet :22/04/2019

Resource Person: Premela Isac   Date of submission:29/04/2019

Name of the Student :_____   Class & Division : XI   Roll Number : __

S.No.	Questions	Marks

Section A (Basics):

1 .   i)$A \cup A = A$ ii) $A \cap A = A$

2.   i) $A \cup \emptyset = A$ ii) $A \cap U = A$

3.   i)$(A')' = A$ ii)$U' = \emptyset$ iii) $\emptyset' = U$

4.   De Morgan's Laws :
i) $(A \cup B)' = A' \cap B'$ ii) $(A \cap B)' = A' \cup B'$

5.   i)$n(A \cup B) = n(A) + n(B) - n(A \cap B)$
ii) $n(A \cup B \cup C) = n(A) + n(B) + n(C) - n(A \cup B) - n(B \cup C) - n(A \cup C) + n(A \cap B \cap C)$

Section B :

1.   Are the following pair of sets equal   1
A = $\{2, 3\}$,   B = $\{x : x \text{ is a solution of } x^2 + 5x + 6 = 0\}$

2.   Draw a Venn – diagram to represent the sets A – B and B – A.   1

3.   If A= $\{x : x \text{ is a natural number}\}$ 1
B = $\{x : x \text{ is an even natural number}\}$
C = $\{x : x \text{ is an odd natural number}\}$
D= $\{x : x \text{ is a prime number}\}$
Find i) A $\cap$ B   ii) C $\cap$ D.

4.   If U = $\{1, 2, 3, 4, 5, 6, 7\}$, A = $\{2, 4, 6\}$ and B = $\{3, 5\}$ and C = $\{1, 2, 4, 7\}$ determine the   4
following sets:

i)$A' \cup (B \cap C')$ ii) $(B - A) \cup (A - C)$

5.   In a survey it was found that 21 people liked product A, 26 liked product B and 29   6
liked product C. If 14 people liked products A and B, 12 people liked products C
and A, 14 people liked products B and C and 8 liked all the three products. Find
how many liked products C only.

6. The following information was observed during a survey of 100 TV viewers, 18 watch programme P only, 23 watch programme P but not Q, 8 watch programme P and R, 26 watch programme P, 48watch programme R, 8 watch programme Q and R, 14 watch none of these programme. Find the number of people who watch Exactly 2 programme   b) only one programme   c) Q only | 6

7. In a survey conducted on a group of 1000 people it is found that 40% buy product A, 20% buy product B, and 10% buy product C, 5% buy products A and B, 3% buy products B and C and 4% buy products A and C. If 2% of the group buy all the three products, then find the number of people who buy
Products A only   ii) At least one of the products A, B and C. | **6**

8. In a survey of 100 students, the number of students studying the various languages were found to be; English only 18, English but not Hindi 23, English and Sanskrit 8, English 26, Sanskrit 48, Sanskrit and Hindi 8, no language 24. Find
 i) How many students were studying Hindi?
ii) How many students were studying English and Hindi? | 6

9. A college awarded 38 medals in football, 15 in basketball and 20 to cricket. If these medals went to a total of 58 men and only 3 men got medals in all the three sports, how many received medals in exactly two of the three sports? | 6

10. Write the set $\left\{ \dfrac{1}{2}, \dfrac{2}{5}, \dfrac{3}{10}, \dfrac{4}{17}, \dfrac{5}{26}, \dfrac{6}{37}, \dfrac{7}{50} \right\}$ in the set builder form. | 1

Section C (Hots):

1. For any two sets A and B , prove that A ∪ B = A ∩ B ↔ A= B. | 4

2. For any two sets A and B , prove that P(A) = P(B) = A ∩ B → A= B | 4

3. Two finite sets have m and n elements. The total number of subsets of the first set is 56 more than the total number of subsets of the second set. Find the values of m and n. | 4

4. For any natural number a , we define aN={ ax: x∈ N }. If b, c ,d ∈ N such that (bN) ∩ (cN)=dN,then prove that d is the L.C.M of b and c. | 4