BAL BHARATI PUBLIC SCHOOL
Ganga Ram Hospital Marg, New Delhi-60

CLASS –XI **SUBJECT – MATHEMATICS**
ASSIGNMENT- 2 **TOPIC – SETS**

Q1. If A = {1, 2, 3, 4, 5}, B = {4, 5, 6, 7, 8}, C = {7, 8, 9, 10, 11} and D = {10, 11, 12, 13, 14}. Find (i) A U B (ii)B U C (iii) A ⊓C (iv) A ⊓ D (v) A ⊓ B

Verify the following

(i) A U (B ⊓ C) = (A U B) ⊓ (A U C)
(ii) A ⊓ (B UC) = (A ⊓ B) U (A ⊓ C)
(iii) A ⊓ (B - C) = (A ⊓ B) - (A ⊓ C)

Q2. Let U = { 1, 2, 3, 4, 5, 6, 7, 8, 9}. A = {2, 4, 6, 8} and B = {2, 3, 5, 7, 8}. Find (i) A′ (ii) (A′)′ (iii) (A U B) ′ (iv) (A ⊓ B) ′

Verify the following

(i) (A U B) ′ = A′ ⊓ B′ (ii) (A ⊓ B) ′ = A′ U B′ (III) B – A = B ⊓ A′

Q3. Let A and B be two sets such that n(A) = 24, n(A U B) = 46 and n (A ⊓ B) = 8. Find (i) n(B) (ii) n (A – B) (iii) n (B – A)

Q4. What is the number of subsets and proper sub sets of a set containing n-elements.

Q5. In a survey of 800 students in a school 200 were listed as taking apple juice, 250 taking orange juice and 125 were taking both apple as well as orange juice. Find how many students were taking neither apple juice nor orange juice.

Q6. There 40 students in a chemistry class and 60 students in physics class. Find the number of students which are either in Physics class or Chemistry class in the cases.

(i) the two classes meet at the same hour.
(ii) the two classes meet at different hours and 20 students are enrolled in both the subjects.

Q7. In a class of 35 students, 17 have taken mathematics 10 have taken mathematics but not economics. Find the number of students who have taken both mathematics and economics and the number of students who have taken economics but not mathematics, if it is given that each student has taken either mathematics or economics or both.

Q8. If A {x : x = 2n + 1, n ≤ 4, n ∈ N} and B = { y : 2 < y < 7, y ∈ N}, find (i) A ⊓ B (ii) A U B

Q9. Using laws of algebra of sets, show that (i) (A U B) ⊓ (A U B') = A (ii) AU (B – A) = A U B

Q10. Of the members of three athletic teams in a certain school, 21 are in the basket ball team, 26 in hockey team and 29 in the football team. 14 play hockey and basket ball, 15 play hockey and football, 12 play football and basket ball and 8 play all the three games. How many members are there in all?

Q11. If A {a, b, c}. write subsets of set A. Also mention the proper subsets of A.

Q12. Describe the following sets in set builder form :-

(i) $\{1, \frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \frac{1}{5} \ldots\}$ (ii) {3, 6, 9, - - -}

Q13. Write the following intervals in set-builder form :-

(i) (-6, 0) (ii) (2, 5] (iii) [-20, 3) (iv) [5, 10]

Q14. Draw venu diagram of (i) $(A \cup B)' \cap C$

(ii) $(A - B)' \cap (B - A)'$ (iii) $A - (A \cup B)$

Q15. How many element has P(A), if A = { }

Q16. If A is a subset of { }. Prove that A = { }.

Q17. Find the smallest set A such that

$A \cup \{3, 5\} = \{1, 2, 3, 5, 4\}$