<u>Sets</u>

1. Write the following sets in roaster form :

$$\begin{split} A &= \{ x : x \text{ is a positive integer and a divisor of 9 } \} \\ B &= \{ x : x \in Z \text{ and } |x| < 16 \} \\ C &= \{ x : x = \frac{n}{n^2 + 1} \text{ , } n < 7, n \in N \} \\ D &= \{ x : x \text{ is a vowel in English } \} \end{split}$$

2. Write the following sets in set builder form :

 $A = \{ 1, 4, 9, 16, 25, 36, 49 \}$ $B = \{ \frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \frac{1}{5}, \frac{1}{6}, \frac{1}{7}, \frac{1}{8} \}$ $C = \{ 5, 25, 125, 625, 3125 \}$ $D = \{ 2, 4, 6, 8, 10, \dots \}$

- 3. Write the following intervals in the set builder form : (2, 6), [-6, 9], [4, 10), (-3, 9]
- 4. Write the following sets in form of intervals : $A = \{ x : x \in R , 3 < x \le 12 \}$ $B = \{ x : x \in R , -4 \le x \le 10 \}$
- 5. Draw Venn Diagrams for the following sets :
 - (i) $A \cup B$, $A \cap B$ if A and B are disjoint sets.
 - (ii) $(A \cup B)'$ and $A' \cup B'$ if A and B are not disjoint sets.
- **6.** If $A = \{1, 2, 3, 4, 5\}$, $B = \{2, 4, 5, 7, 8, 9\}$, $C = \{1, 4, 6, 7, 10\}$, $D = \{1, 2, 6, 8, 12, 13\}$ then find : A - B, B - A, D - A, A - C, $A \cup B$, $A \cup D$, $C \cap D$, $B \cap C$, $A \cap (B \cup C)$, $A \cup (C \cap D)$
- **7.** If $U = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12\}$, $A = \{1, 4, 6, 7, 8, 11, 12\}$, $B = \{2, 3, 4, 5, 9, 10, 11, 12\}$ then verify the De Morgan's Law.
- 8. In a group of 400 people , 250 can speak Hindi and 300 can speak English. How many people can speak both Hindi and English ? How many of them can speak only Hindi ?
- 9. In a group of certain number of people, 500 people like tea , 350 people like coffee and 100 people like both tea and coffee. How many of them like only coffee but not tea ? How many people are there in the group ?

10. (i) If $A = \{1, 2, \dots, n\}$	3} then number of elen	nents in $P(A)$ are :	
(a) 3	(b) 6	(c) 8	(d) 9
(ii) If $A \cup B = 1$	A , then		
(a) A ⊂ B	(b) B ⊂ A	(c) B = U	(d) none of these.
(iii). If $n(A) = -$	4 then number of subse	ets of A are :	
(a) 4	(b) 16	(c) 8	(d) 64
(iv). If $A = \{1, $	2, 3, 4, 5, 6} then :		
(a) 2 ∈ A	(b) 7 ∈ A	(c) 3 ∉ A	(d) 4 ∉ A

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