



Sets Ex 1.5 Q2(ix)

$$(A \cap B) \cap (B \cap C) = \{x | x \in (A \cap B) \text{ and } x \in (B \cap C)\}$$

Now,

$$A \cap B = \{x | x \in A \text{ and } x \in B\}$$

i.e., elements which are common to A & B

$$\begin{aligned} \therefore A \cap B &= \{1, 2, 3, 4, 5\} \cap \{4, 5, 6, 7, 8\} \\ &= \{4, 5\} \end{aligned}$$

Also,

$$\begin{aligned} B \cap C &= \{4, 5, 6, 7, 8\} \cap \{7, 8, 9, 10, 11\} \\ &= \{7, 8\} \end{aligned}$$

$$\text{Hence, } (A \cap B) \cap (B \cap C) = \{4, 5\} \cap \{7, 8\}$$

$$= \emptyset$$

[\because there is no element common in $\{4, 5\}$ and $\{7, 8\}$]

Sets Ex 1.5 Q2(x)

$$(A \cup D) \cap (B \cup C) = \{x | x \in (A \cup D) \text{ or } x \in (B \cup C)\}$$

Now,

$$A \cup D = \{1, 2, 3, 4, 5, 10, 11, 12, 13, 14\}$$

$$\text{and } B \cup C = \{4, 5, 6, 7, 8, 9, 10, 11\}$$

$$\therefore (A \cup D) \cap (B \cup C) = \{4, 5, 10, 11\}$$

Sets Ex 1.5 Q3(i)

We have,

$$\begin{aligned} A &= \{x : x \in \mathbb{N}\} \\ &= \{1, 2, 3, \dots\}, \text{ the set of natural numbers} \end{aligned}$$

$$\begin{aligned} B &= \{x : x = 2n, x \in \mathbb{N}\} \\ &= \{2, 4, 6, 8, \dots\}, \text{ the set of even natural numbers} \end{aligned}$$

$$\begin{aligned} \therefore A \cap B &= \{x : x \in A \text{ and } x \in B\} \\ &= \{2, 4, 6, \dots\} \\ &= B \end{aligned}$$

[$\because B \subset A$]

Sets Ex 1.5 Q3(ii)

We have,

$$\begin{aligned} A &= \{x : x \in \mathbb{N}\} \\ &= \{1, 2, 3, \dots\}, \text{ the set of natural numbers} \end{aligned}$$

$$\begin{aligned} C &= \{x : x = 2n - 1, x \in \mathbb{N}\} \\ &= \{1, 3, 5, \dots\}, \text{ the set of odd natural numbers} \end{aligned}$$

$$\begin{aligned} A \cap C &= \{x : x \in A \text{ and } x \in C\} \\ &= C \end{aligned} \quad [\because C \subseteq A]$$

***** END *****