



Sets Ex 1.7 Q4(iii)

$$\begin{aligned}\text{iii. Let } x \in A - (A - B) &\Leftrightarrow x \in A \text{ and } x \notin (A - B) \\ &\Leftrightarrow x \in A \text{ and } x \in (A \cap B) \\ &\Leftrightarrow x \in A \cap (A \cap B) \\ &\Leftrightarrow x \in (A \cap B)\end{aligned}$$

$$\therefore A - (A - B) = (A \cap B)$$

Sets Ex 1.7 Q4(iv)

$$\begin{aligned}\text{iv. Let } x \in A \cup (B - A) &\Rightarrow x \in A \text{ or } x \in (B - A) \\ &\Rightarrow x \in A \text{ or } x \in B \text{ and } x \notin A \\ &\Rightarrow x \in B \\ &\Rightarrow x \in (A \cup B) \quad [\because B \subset (A \cup B)]\end{aligned}$$

This is true for all  $x \in A \cup (B - A)$

$$\therefore A \cup (B - A) \subset (A \cup B) \dots \dots \dots (1)$$

Conversely,

$$\begin{aligned}\text{Let, } x \in (A \cup B) &\Rightarrow x \in A \text{ or } x \in B \\ &\Rightarrow x \in A \text{ or } x \in (B - A) \quad [\because B \subset (B - A)] \\ &\Rightarrow x \in A \cup (B - A) \\ \therefore (A \cup B) &\subset A \cup (B - A) \dots \dots \dots (2)\end{aligned}$$

From (1) and (2), we get

$$A \cup (B - A) = (A \cup B)$$

Sets Ex 1.7 Q4(v)

$$\begin{aligned}\text{v. Let } x \in A. & \\ \text{Then either } x \in (A - B) \text{ or } x \in (A \cap B) & \\ &\Rightarrow x \in (A - B) \cup (A \cap B) \\ \therefore A &\subset (A - B) \cup (A \cap B) \dots \dots \dots (1)\end{aligned}$$

Conversely,

$$\begin{aligned}\text{Let } x \in (A - B) \cup (A \cap B) & \\ &\Rightarrow x \in (A - B) \text{ or } x \in (A \cap B) \\ &\Rightarrow x \in A \text{ and } x \notin B \text{ or } x \in A \text{ and } x \in B \\ &\Rightarrow x \in A \\ \therefore (A - B) \cup (A \cap B) &\subset A \dots \dots \dots (2)\end{aligned}$$

$\therefore$  From (1) and (2), we get

$$(A - B) \cup (A \cap B) = A$$

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