Sets Ex 1.7 Q4(iii)

iii.Let $x \in A-(A-B) \Leftrightarrow x \in A$ and $x \notin (A-B)$

$\Leftrightarrow x \in A$ and $x \in (A \cap B)$

$\Leftrightarrow x \in A \cap (A \cap B)$

$\Leftrightarrow x \in (A \cap B)$

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

Sets Ex 1.7 Q4(iv)

iv.Let $x \in A \cup (B-A) \Rightarrow x \in A$ or $x \in (B-A)$

$\Rightarrow x \in A$ or $x \in B$ and $x \notin A$

$\Rightarrow x \in B$

$\Rightarrow x \in (A \cup B) \quad [\because B \subset (A \cup B)]$

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

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

Conversely,

Let, $x \in (A \cup B)$

$\Rightarrow x \in A$ or $x \in B$

$\Rightarrow x \in A$ or $x \in (B-A) \quad [\because B \subset (B-A)]$

$\Rightarrow x \in A \cup (B-A)$

$\therefore (A \cup B) \subset A \cup (B-A) \ldots\ldots\ldots (2)$

From (1) and (2), we get

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

Sets Ex 1.7 Q4(v)

v.Let $x \in A$.

Then either $x \in (A-B)$ or $x \in (A \cap B)$

$\Rightarrow x \in (A-B) \cup (A \cap B)$

$\therefore A \subset (A-B) \cup (A \cap B) \ldots\ldots\ldots (1)$

Conversely,

Let $x \in (A-B) \cup (A \cap B)$

$\Rightarrow x \in (A-B)$ or $x \in (A \cap B)$

$\Rightarrow x \in A$ and $x \notin B$ or $x \in A$ and $x \in B$

$\Rightarrow x \in A$

$\therefore (A-B) \cup (A \cap B) \subset A \ldots\ldots\ldots\ldots (2)$

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

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

********** END **********