Sets Ex 1.7 Q2(iii)

LHS $= A \cap (A \cup B')$

$= A \cap (A' \cap B')$ [By De-morgan's law]

$= (A \cap A') \cap B'$ [By associative law]

$= \phi \cap B'$ $[\because A \cap A' = \phi]$

$= \phi$

$=$ RHS

$\therefore$ LHS = RHS Proved.

Sets Ex 1.7 Q2(iv)

RHS $= A \Delta (A \cap B)$

$= (A - (A \cap B)) \cup (A \cap B - A)$ $[\because E \Delta F = (E - F) \cup (F - E)]$

$= (A \cap (A \cap B)') \cup (A \cap B \cap A')$ $[\because E - F = E \cap F']$

$= (A \cap (A' \cup B')) \cup (A \cap A' \cap B)$ [By De-morgan's law & associative law]

$= (A \cap A') \cup (A \cap B') \cup (\phi \cap B)$ [$\because \cap$ distributes over $\cup$ and $A \cap A' = \phi$]

$= \phi \cup (A \cap B') \cup \phi$ $[\because \phi \cap B = \phi]$

$= A \cap B'$ $[\because \phi \cup x = x$ for any set $x]$

$= A - B$ $[\because A \cap B' = A - B]$

$=$ LHS

$\therefore$ LHS = RHS Proved.

Sets Ex 1.7 Q3

We have, $A \subset B$

To show: $C - B \subset C - A$

Let, $x \in C - B$

$\Rightarrow \quad x \in C$ and $x \notin B$

$\Rightarrow \quad x \in C$ and $x \notin A$ $[\because A \subset B]$

$\Rightarrow \quad x \in C - A$

Thus, $x \in C - B \Rightarrow x \in C - A$

This is true for all $x \in C - B$

$\therefore \quad C - B \subset C - A$

Sets Ex 1.7 Q4(i)

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

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

$= A - B$

Sets Ex 1.7 Q4(ii)

ii. $A - (A \cap B) = (A - A) \cap (A - B)$

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

$= A - B$

Sets Ex 1.7 Q4(iii)

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