Sets Ex 1.5 Q1

(i)

$A \cap B$ denotes intersection of the two sets A and B, which consists of elements which are common to both A and B.

Since $A \subset B$, every element of A is already an element of B.

$\therefore A \cap B = A$

(ii)

$A \cup B$ denotes the union of the sets A and B which consists of elements which are either in A or B or in both A and B.

Since $A \subset B$, every element of A is already an element of B.

$\therefore A \cup B = B$

Sets Ex 1.5 Q2(i)

$$A = \{1, 2, 3, 4, 5\}$$

$$B = \{4, 5, 6, 7, 8\}$$

$$\text{So, } A \cup B = \{x : x \in A \text{ or } x \in B\}$$

$$= \{1, 2, 3, 4, 5, 6, 7, 8\}$$

Sets Ex 1.5 Q2(ii)

$$A \cup C = \{x : x \in A \text{ or } x \in C\}$$

$$= \{1, 2, 3, 4, 5, 7, 8, 9, 10, 11\}$$

Sets Ex 1.5 Q2(iii)

$$B \cup C = \{x : x \in B \text{ or } x \in C\}$$

$$= \{4, 5, 6, 7, 8, 9, 10, 11\}$$

Sets Ex 1.5 Q2(iv)

$$B \cup D = \{x : x \in B \text{ or } x \in D\}$$

$$= \{4, 5, 6, 7, 8, 10, 11, 12, 13, 14\}$$

Sets Ex 1.5 Q2(v)

$$A \cup B \cup C = \{x | x \in A \text{ or } x \in B \text{ or } x \in C\}$$

$$= \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11\}$$

Sets Ex 1.5 Q2(vi)

$$A \cup B \cup D = \{x : x \in A \text{ or } x \in B \text{ or } x \in D\}$$

$$= \{1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 13, 14\}$$

Sets Ex 1.5 Q2(vii)

$$B \cup C \cup D = \{x | x \in B \text{ or } x \in C \text{ or } x \in D\}$$

$$= \{4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14\}$$

Sets Ex 1.5 Q2(viii)

$A \cap (B \cup C)$ = all those elements which are common to A and $B \cup C$

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

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

$$\therefore \quad A \cap (B \cup C) = \{1, 2, 3, 4, 5\} \cap \{4, 5, 6, 7, 8, 9, 10, 11\}$$

$$= \{4, 5\}$$

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