Sets Ex 1.5 Q3(iii)

We have,

$$A = \{x : x \in N\}$$
$$= \{1, 2, 3, \ldots\}, \text{ the set of natrual numbers}$$

and $D = \{x : x \text{ is a prime natural number}\}$
$$= \{2, 3, 5, 7, \ldots\}$$

$$A \cap D = \{x : x \in A \text{ and } x \in D\}$$
$$= D \qquad [\because D \subset A]$$

Sets Ex 1.5 Q3(iv)

We have,

$$B = \{x : x = 2n, x \in N\}$$
$$= \{2, 4, 6, 8, \ldots\}, \text{ the set of even natural numbers}$$

and

$$C = \{x : x = 2n - 1, x \in N\}$$
$$= \{1, 3, 5, \ldots\}, \text{ the set of odd natural numbers}$$

$$B \cap C = \{x : x \in B \text{ and } x \in C\}$$
$$= \phi \qquad [\because B \text{ and } C \text{ are disjoint sets, i.e., have no elements in common}]$$

Sets Ex 1.5 Q3(v)

Here,

$$B = \{x : x = 2n, x \in N\}$$
$$= \{2, 4, 6, 8, \ldots\}, \text{ the set of even natural numbers}$$

and $D = \{x : x \text{ is a prime natural number}\}$
$$= \{2, 3, 5, 7, \ldots\}$$

$$B \cap D = \{x : x \in B \text{ and } x \in D\}$$
$$= \{2\}$$

Sets Ex 1.5 Q3(vi)

Here,

$$C = \{x : x = 2n - 1, x \in N\}$$
$$= \{1, 3, 5, \ldots\}, \text{ the set of odd natural numbers}$$

and $D = \{x : x \text{ is a prime natural number}\}$
$$= \{2, 3, 5, 7, \ldots\}$$

$C \cap D = \{x : x \in C \text{ and } x \in D\}$

We observe that except, the element 2, every other element in D is an odd natural number.

Hence, $C \cap D = D - \{2\}$
$$= \{x \in D : x \neq 2\}$$

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