Assignment

1) Consider the sets,

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

i) Find $A \cup (B \cap C)$

$B = \{3, 4, 5\}$

ii) $(A \cup B) \cap (A \cup C)$

$C = \{3, 6, 7\}$

Ans) i) $B \cap C = \{3\}$

$\therefore A \cup (B \cap C) = \{1, 2, 3, 4\}$

ii) $(A \cup B) \cap (A \cup C)$

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

$A \cup C = \{1, 2, 3, 4, 6, 7\}$

$\therefore (A \cup B) \cap (A \cup C) = \{1, 2, 3, 4\}$

From i) and ii)

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

2) Consider the sets, $A = \{x : x \text{ is an odd natural number}\}$
$\qquad\qquad\qquad B = \{x : x \text{ is a prime number}\}$

   Find $A \cap B$

Ans) $A = \{1, 3, 5, 7, 9, \cdots\}$

   $B = \{2, 3, 5, 7, 11, 13, 17, 19, 23, \cdots\}$

   $A \cap B = \{3, 5, 7, 11, 13, 17, 19, \cdots\}$

   From this $A \cap B$ = set of odd natural numbers.