1 Exercise 6 (D)

i) A = (4, 5, 6)
B = (0, 1, 2, 3)

ii) A ∪ B = {0, 1, 2, 3, 4, 5, 6}

iii) A ∪ B = (ϕ)

iv) A - B = (4, 5, 6)

v) B - A = (0, 1, 2, 3)

2.

i) P = (4, 5, 6, 7, 8)

ii) Q = (1, 2, 3, 4, 5)

P ∪ Q = (1, 2, 3, 4, 5, 6, 7, 8)

P ∩ Q = (4, 5)

iii) Yes, all the element of P ∪ Q are contained in the set

$P \cap Q$ ∴ Therefore $P \cup Q$ is a proper subset of $P \cap Q$

3. $A = (5, 6, 7, 8, 9)$
$B = (4, 5, 6, 7)$
$C = (1, 2, 3, 4, 5)$

i) $A \cup B = (4, 5, 6, 7, 8, 9)$
$(A \cup B) \cup C = (1, 2, 3, 4, 5, 6, 7, 8, 9)$

ii) $B \cup C = (1, 2, 3, 4, 5, 6, 7)$,
$A \cup (B \cup C) = (1, 2, 3, 4, 5, 6, 7, 8, 9)$

iii) $A \cap B = (5, 6, 7)$
$(A \cap B) \cap C = 5$

iv) $B \cap C = (4, 5)$
$A \cap (B \cap C) = 5$

v) $(A \cup B) \cup C = (1, 2, 3, 4, 5, 6, 7, 8, 9)$
$A \cup (B \cup C) = (1, 2, 3, 4, 5, 6, 7, 8, 9)$

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

$\{5\} = \{5\}$

Yes these is equal.