SETS - WS2

1	If A = {1, 2, 4, 6, 7, 8}; B = {2, 5, 7, 9, 10} and C = {4 , 5, 9, 10}. Find (1) A ∪ B (2) B ∪ C (3) A ∪ C (4) A ∩ B (5) B ∩ C (6) A ∪ B ∪ C (7) A ∩ B ∩ C (8) (A ∩ B) ∪ (C ∩ A)
2	If A = {2, 4, 6, 7, 8, 12}; B = {2, 7, 9, 10} and C = {5, 9, 10, 12}. Find (1) A – B (2) B – C (3) A – C (4) B – A (5) C – A (6) (A ∪ B) – C (7) A – {B ∩ C) (8) (A ∩ B) – (C ∩ A)
3	If U = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12}; A = {2, 7, 9, 10} B = {5, 9, 10, 12} and C = {1, 4, 5, 7, 11}. Find (1) A' (2) B' (3) A' – C (4) (B – A)' (5) B' ∩ C' (6) (A ∪ B)' (7) A' ∩ B'
4	Let A and B be two sets such that n(A) = 20, n(A ∪ B) = 42, n(A ∩ B) = 4. Find (1) n(B) (2) n(B – A) (3) n(A – B)
5	In a committee, 50 people speak French, 20 speak Spanish and 10 speak both Spanish and French. How many speaks at least one of these two languages?
6	In a group of 65 people, 40 like cricket, 10 like both cricket and tennis, how many like tennis only and not cricket? How many like tennis?
7	In a school, all pupils play either Hockey or Football or both. 400 play Football, 150 play Hockey, and 130 play both the games. Find (i) The number of pupils who play Football only, (ii) The number of pupils who play Hockey only, (iii) The total number of pupils in the school.
8	There are certain number of students in a school. Of them 130 students passed in subject A, 113 students passed in subject B and 117 students passed in subject C. But 60 of the students passed exactly two of the subjects whereas 20 students passed all the three. Further 70 students failed in all subjects. Find the total number of students in the school.

SETS - 2 (Answer Key)

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

2	
	1. $A - B = \{4, 6, 8, 12\}$
	2. $B - C = \{2, 7\}$
	3. $A - C = \{2, 4, 6, 7, 8\}$
	4. $B - A = \{9, 10\}$
	5. $C - A = \{5, 9, 10\}$
	6. $(A \cup B) - C = \{2, 4, 6, 7, 8, 9, 10, 12\} - \{5, 9, 10, 12\} = \{2, 4, 6, 7, 8\}$.
	7. $A - (B \cap C) = \{2, 4, 6, 7, 8, 12\} - \{9, 10\} = \{2, 4, 6, 7, 8, 12\}$
	8. $(A \cap B) - (C \cap A) = \{2, 7\} - \{12\} = \{2, 7\}$

3	
	1. $A' = \{1, 3, 4, 5, 6, 8, 11, 12\}$
	2. $B' = \{1, 2, 3, 4, 6, 7, 8, 11\}$
	3. $A' - C = \{1, 3, 4, 5, 6, 8, 11, 12\} - \{2, 3, 6, 8, 9, 10, 12\} = \{1, 4, 5, 11\}$
	4. $(B - A)' = \{5, 12\}' = \{1, 2, 3, 4, 6, 7, 8, 9, 10, 11\}$
	5. $B' \cap C' = \{1, 2, 3, 4, 6, 7, 8, 11\} - \{2, 3, 6, 8, 9, 10, 12\} = \{2, 3, 6, 8\}$
	6. $(A \cup B)' = \{2, 5, 7, 9, 10, 12\}' = \{1, 3, 4, 6, 8, 11\}$
	7. $A' \cap B' = \{1, 3, 4, 5, 6, 8, 11, 12\} \cap \{1, 2, 3, 4, 6, 7, 8, 11\} = \{1, 3, 4, 6, 8, 11\}$

4	
	1. $n(A \cup B) = n(A) + n(B) - n(A \cap B)$ $\Rightarrow 42 = 20 + n(B) - 4 \Rightarrow n(B) = 26$
	2. $n(B - A) = n(B) - n(A \cap B) = 26 - 4 = 22$
	3. $n(A - B) = n(A) - n(A \cap B) = 20 - 4 = 16$.

5	$n(F \cup S) = n(F) + n(S) - n(F \cap S) = 50 + 20 - 10 = 60$.
6	$n(T) = 35$ & $n(T \cup C') = n(T) - n(T \cap C) = 35 - 10 = 25$.
7	(i) 270 (ii) 20 (iii) 420
8	330