

(1) [5 points] If $U = \{0, 1, 2, 3, 4, 5, 6, 7, 8, 9\}$ is the universal set and $A = \{0, 1, 5, 7\}$, $B = \{2, 3, 5, 8\}$ and $C = \{5, 6, 9\}$, determine $(A \cap B) \cup (B \cap C)$.

(2) [5 points] Use a Venn Diagram to illustrate the set $(A \cup B) \cap (A \cup C)$.

(3) [5 points] Determine $n(A)$ if $n(B) = 8$, $n(A \cap B) = 4$, and $n(A \cup B) = 14$.