1. [2 *points*]
Let the universal set U be $U = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$ and let $A = \{x \mid x^2 < 20\}$, $B = \{x \mid x$ is a factor of $24\}$ and $C = \{3, 4, 5\}$.

    (a) State if the following are true or false and justify your answer:

        (i) $B \subseteq A$ (ii) $2 \in A - B$ (iii) $(A \cup B \cup C)^c = \varnothing$

    (b) Write down all elements of $B \cap C$.

2. [2 *points*]
Represent the following on Venn diagrams.

    (i) $(A \cap B)^c$ (ii) $(A \cup B) - C$

3. [2 *points*]
Let $n(U) = 25, n(A) = 14, n(B) = 7$ and $n(A \cup B) = 18$. Represent this information on Venn diagram and find $n(A - B)$.

4. [4 *points*]
In a group of 40 students:
22 like physics,
12 like chemistry,
13 like biology,
7 like physics and chemistry,
3 like physics and biology,
5 like biology and chemistry,
6 students do not like any of the three mentioned subjects.

Represent the information on a Venn diagram and find the number of students who like exactly one of the three subjects.