

Discrete Mathematics

Question (3) $\boxed{270} \Rightarrow$ College Students (S) $\boxed{64} \rightarrow$ likes tea (A_1), $\boxed{94}$ likes coffee (A_2), $\boxed{58}$ likes canflower (A_3) $\boxed{26} \rightarrow$ likes both tea and coffee, $\boxed{28}$ like both tea and mint-drink $\boxed{22} \rightarrow$ like both coffee and mint-drink, $\boxed{14} \rightarrow$ like all three drinks

$$|A_1| = \boxed{64}, |A_2| = \boxed{94}, |A_3| = \boxed{58}$$

$$|A_1 \cap A_2| = \boxed{26}, |A_1 \cap A_3| = \boxed{28}, |A_2 \cap A_3| = \boxed{22}$$

$$|S| = \boxed{270}, |A_1 \cap A_2 \cap A_3| = \boxed{14}$$

$$\begin{aligned}
 \text{① } |A_1 \cup A_2 \cup A_3| &= |A_1| + |A_2| + |A_3| - |A_1 \cap A_2| - |A_1 \cap A_3| - |A_2 \cap A_3| + |A_1 \cap A_2 \cap A_3| \\
 &= 64 + 94 + 58 - 26 - 28 - 22 + 14 \\
 &= 154
 \end{aligned}$$

$$\Rightarrow |\overline{A_1 \cup A_2 \cup A_3}| = |S| - |A_1 \cup A_2 \cup A_3| = 270 - 154 = \boxed{116} \text{ students}$$

$$\begin{aligned}
 \text{② } |A_1 \cup A_3| &= |A_1| + |A_3| - |A_1 \cap A_3| \\
 &= 64 + 58 - 28 = 94
 \end{aligned}$$

$$\Rightarrow |A_1 \cup A_3| = \boxed{94} \text{ students}$$

$$\text{③ } |\overline{A_3}| = |S| - |A_3| = 270 - 58 = 212$$

$$\Rightarrow |\overline{A_3}| = \boxed{212} \text{ students}$$