1.

a) $P(A \cap B \cap \bar{C}) + P(A \cap \bar{B} \cap C) + P(\bar{A} \cap B \cap C)$

$= 3 \cdot P(\emptyset) = 0$

b) Since $\left.\begin{matrix} A \cap B = \emptyset, & A \subseteq \bar{B} \\ A \cap C = \emptyset, & A \subseteq \bar{C} \end{matrix}\right\} \Rightarrow A \subseteq \bar{B} \cap \bar{C}$

$\Rightarrow A \cap \bar{B} \cap \bar{C} = A$

$P(A \cap \bar{B} \cap \bar{C}) + P(\bar{A} \cap B \cap \bar{C}) + P(\bar{A} \cap \bar{B} \cap C)$

$= P(A) + P(B) + P(C) = P(A \cup B \cup C)$