1. Exercise 2.2 in Hill. Give a complete and detailed justification for your answer.

2. Let $C$ be the binary repetition code of odd length $n = 2t + 1$, i.e., let $C = \{\vec{0}, \vec{1}\}$, where $\vec{0} = (0, \ldots, 0)$ and $\vec{1} = (1, \ldots, 1)$. Show that $\{B_t(\vec{0}), B_t(\vec{1})\}$ is a perfect cover, and conclude that $C$ is a perfect code.

3. Exercises 3.7, 3.8 and 3.12 in Chapter 3 of the notes.