

3) Calculate the ionization energy of a donor atom in Si. Assume $\epsilon_s/\epsilon_0 = K_s = 11.8$ and $m_n^*/m_0 = 1.18$ for Si. You can start from the fact that the electron binding energy within the hydrogen atom is 13.6 eV as calculated in class activity 2.

4) Mention two n-type dopants and two p-type dopants in Si. Draw the band diagram of an n-type Si sample. Draw the band diagram of a p-type Si sample.

5) Electrons in a filled band cannot participate in current flow. Explain why.