Assignment 1

1) Solve the following problems from chapter 1 of the textbook.
1.2, 1.7, 1.9, 1.16, 1.19,1.20

2) Calculate the surface density of valence electrons in (100), (110) and (111) planes of silicon crystal. Explain the significance of knowing these values?

3) Calculate the distances between {100}, {110} and {111} planes in silicon crystal. Consider the lattice constant, a=5.4Å. (calculation is necessary).

4) What is the surface density of atoms in {110} plane of the crystal with a unit cell pictured below? The cell is cubic with lattice constant a.