Problem 1) Difference Between Wurtzite and Zinc Blend Structures
Problem 5 - Chapter 3 of the text. Also, how does the wurtzite structure differ from the rhombohedral structure.

Problem 2) Symmetry Operations of a Space Group
Problem 9 - Chapter 3 of the text.

Problem 3) Tridymite- High Temperature Form of SiO₂
Tridymite, the high temperature form of silicon dioxide, is hexagonal with a = 5.03, c = 8.22 Å. The space group is P6₃/mmc, and there are four SiO₂⁺ per unit cell. The Si sites occupy the positions 1/3, 2/3, 0.44 ; 2/3,1/3, 0.56; 2/3,1/3, 0.94 ; 1/3, 2/3, 0.06 . Two oxygen atoms, O(1) , are in positions 1/3, 2/3, 1/4 ; 2/3,1/3,3/4. The other six O(2) are in the positions 1/2,0,0; 0,1/2,0 ; 1/2,1/2,0 ; 1/2, 0, 1/2 ; 0,1/2, 1/2 ; 1/2, 1/2, 1/2.
   a) Draw the diagram of this structure projected onto the (001) plane. Show all the atoms in at least one unit cell. Label each atom with the atomic type [Si, O(1), O(2)] and with the z-coordinate.
   b) From you diagram deduce the point symmetry at Si, at O(1), and at O(2).
   c) Calculate the distances from the Si to each of the two atoms to which it is bonded.

Problem 4) Reciprocal Lattices
Problem 6 - Chapter 4 of the text.

Problem 5) Basic Conservation of Momentum and Energy in Elastic Scattering
Problem 2 - Chapter 4 of the text.

Problem 6) - Example of a Van der Waal Solid
Problem 7 - Chapter 6 of the text.