

Lesson 34: Solids I

text: 792-809

what to know:

- difference between crystalline and amorphous solids, p-792
- how the structure of condensed phases are studied, §20-1
- symmetry in crystals, §20-2
- crystal systems, crystal lattice, unit cells, primitive cells, nonprimitive cells, face-centered, body-centered and side-centered cells, §20-2

questions:

Questions 9, 11, 19 on page 825 in the text

Lesson 35: Solids II

text: 809-823

handout: Types of solids (20), Properties and types of solids (21)

what to know:

- the types of solids and their characteristic physical properties, §20-3, sup-20 & 21
- effect of defects in solids, §20-4
- liquid crystals & displays, §20-5, p-823

questions:

1. Which of the following statements are true?
 - a. Molecular substances have relatively high melting points.
 - b. Network covalent solids tend to be soluble in water as well as in nonpolar solvents.
 - c. Ionic solids are good conductors of electricity.
 - d. NaCl(s) is better conductor of electricity than silver metal because it is more polar.
 - e. The "electron-sea" model is used to explain the electrical conductivity of network covalent solids.
2. Classify the following substances as nonpolar molecular, polar molecular, network covalent, ionic, metallic or amorphous solids. CaCO_3 , SiO_2 , KNO_3 , $\text{H}_2\text{O}(\text{ice})$, Ca, CO_2 , I_2 , glass, diamond
3. Classify the following substances:
 - a. A solid is hard, brittle and electrically nonconducting. Its melt (the liquid form of the substance) and an aqueous solution containing the substance do conduct electricity.
 - b. A solid is soft and has a low melting point. The solid, its melt and an aqueous solution containing the substance are all nonconductors of electricity.
 - c. A solid is very hard and has a high melting point. Neither the solid or its melt conducts electricity.
4. Questions 29, 31, 33 on page 826 of the text.