

AP Chemistry Multiple Choice Questions - Chapter 13

1 What is the electron sea model?

- a The model of metallic bonding where electrons float free in a sea of electrons around metal atoms
- b The model of metallic bonding where protons float free in a sea of electrons around metal atoms
- c A model depicting the different bonds that electrons can make
- d The model of metallic bonding where electrons are fixed in place in a sea of metal atoms
- e Where electrons float free in a sea of salt water

	13.3
--	------

2 Why do metals conduct electricity well?

- a Because their protons are mobile
- b Because their electrons are negatively charged
- c Because their electrons are static
- d Because their electrons are mobile
- e Because their atoms form cations

	13.3
--	------

3 Which property of metals cannot be explained with the electron sea model?

- a Shine
- b High thermal conductivity
- c High electric conductivity
- d Malleability and ductility
- e Trends in melting points

	13.3
--	------

1 The "sea of electrons" model is used to describe

- a Molecular Substances
- b Metallic substances
- c Covalent Substances
- d Ionic Substances

	13.3
--	------

1 The behavior of metals and semiconductors is usually discussed in terms of band theory. Which of the following statements is true?

- a A partially filled band is characteristic of a metal
- b Doping Si with As enhances its semiconducting properties
- c Band gaps vary among different semiconductors but are always relatively large
- d Band gaps for insulators are large

	13.3
--	------

AP Chemistry Multiple Choice Questions - Chapter 13

- 1 Lattice enthalpy may be calculated using the thermodynamic relationship known as
- a Clausius-Clapeyron equation b Born-Haber cycle
 c Dynamic Equilibrium Expression d Avogadro's Hypothesis
 e Cubic Cell Enthalpy of Formation Equation

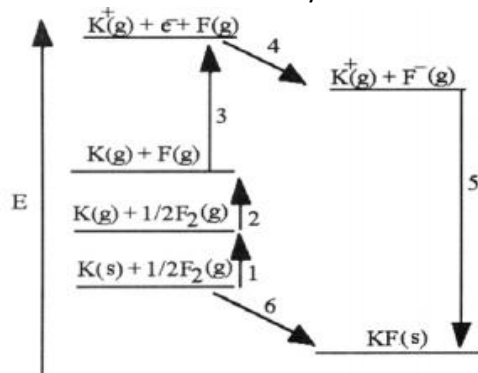
	13.4
--	-------------

- 2 Lattice energy is always
- a Endothermic b Exothermic
 c Ectothermic d Hypothermic
 e It varies

	13.4
--	-------------

- 3 The diagram below is the Born-Haber cycle for the formation of crystalline potassium fluoride

	13.4
--	-------------



Which energy change corresponds to the negative lattice energy of potassium fluoride?

- a 5 b 1
 c 6 d 4
 e 2



AP Chemistry Multiple Choice Questions - Chapter 13

1 Which of the following statements is false?

- a Molecular solids generally have lower melting points than covalent solids
- b Metallic solids exhibit a wide range of melting points because metallic bonds cover a wide range of strength
- c The metallic solid can be viewed as positive ions closely packed in a sea of valence electrons
- d Most molecular solids melt at lower temperatures than metallic solids
- e The interactions among molecules in molecular solids are generally stronger than those among the particles that define either covalent or ionic crystal lattices

	13.5
--	------

2 Which one of the following classifications is incorrect?

- a $\text{H}_2\text{O}(\text{s})$, molecular solid
- b $\text{C}_4\text{H}_{10}(\text{s})$, molecular solid
- c $\text{KF}(\text{s})$, ionic solid
- d $\text{SiC}(\text{s})$, covalent solid
- e $\text{S}(\text{s})$, metallic solid

	13.5
--	------

3 Which of the following statements is true?

- a The electrical conductivity of a metal increases with temperature
- b The electrical conductivity of a semiconductor increases with temperature
- c The resistivity of a semiconductor increases with temperature
- d Metals and semiconductors have similar electrical conducting properties

	13.5
--	------

153 Glass is a

- a Crystalline ceramic
- b Noncrystalline ceramic
- c An ionic compound
- d Polymer

	13.5
--	------

1 Which of the following is/are physical properties of amorphous solids?

1. Amorphous solids have well defined melting points
2. At the particulate level, amorphous solids do not have long range order
3. Polymeric materials never form amorphous solids

- a 1 only
- b 2 only
- c 3 only
- d 1 and 3 only
- e 2 and 3 only

	13.5
--	------

AP Chemistry Multiple Choice Questions - Chapter 13

1 Which of the following is NOT a network solid?

- a Elemental silicon, Si (s)
- b Diamond, C (s)
- c Buckminster fullerene, C₆₀ (s)
- d Silicon dioxide, SiO₂ (s)
- e Aluminum oxide, Al₂O₃ (s)

	13.5
--	------

3 Which two of the following materials are most likely to be amorphous solids:

water, nylon, glass, potassium nitrate

- a water and glass
- b nylon and potassium nitrate
- c water and nylon
- d water and potassium nitrate
- e nylon and glass

	13.5
--	------