



AP Chemistry

Unit 3: Bonding

HW 3.4 – Bonding/LDS Multiple Choice

Chemist: _____

Date: _____

Directions: Please answer the following multiple choice questions and show your work or reasoning on EVERY question.

Questions 1-5: The set of lettered choices below is a list of classes of solids and refers to the numbered phrases immediately following it. Select the one lettered choice that best fits each phrase. A choice may be used once, more than once, or not at all.

- A. An ionic solid
- B. A metallic solid
- C. A network solid with covalent bonds
- D. A molecular solid

1. Cu, copper wire
2. I₂, iodine crystals
3. C₁₂H₂₂O₁₁, granular sugar
4. MgSO₄, magnesium sulfate crystals
5. SiC, powdered silicon carbide

6. All species below have Lewis dot diagrams that illustrate the octet rule EXCEPT:

- A. NO₃⁻
- B. NH₃
- C. NH₄⁺
- D. N₂
- E. NO₂

Question 7-9: Consider the chemical bonds found in solid sodium hydrogen carbonate. For each bond specified, choose the best description from the list of bond types below.

- A. Ionic bond
- B. Single covalent bond
- C. Double covalent bond
- D. Resonance covalent bond with bond order between 1 and 2

7. Carbon/oxygen bond
8. Sodium/hydrogen carbonate bond
9. Oxygen/hydrogen bond

10. Which pair of characteristics is most closely associated with metallic solids?

- i. Low melting point
- ii. High malleability
- iii. Low thermal conductivity
- iv. High electrical conductivity

- A. I and II
- B. I and III
- C. II and III
- D. II and IV
- E. III and IV

11. Which correctly compares single bonds with equal sharing of electrons to single bonds with unequal sharing of electrons?

- i. Bonds with equal sharing are weaker.
- ii. Bonds with equal sharing have smaller bond energy.
- iii. Bonds with equal sharing are associated with smaller electronegativity difference between atoms.

- A. I only
- B. II only
- C. I and II only
- D. I and III only
- E. I, II, and III

12. The Lewis Structure of SeS_2 has a total of:

- A. 2 bonding pairs and 7 non-bonding pairs
- B. 2 bonding pairs and 6 non-bonding pairs
- C. 3 bonding pairs and 6 non-bonding pairs
- D. 4 bonding pairs and 5 non-bonding pairs
- E. 5 bonding pairs and 4 non-bonding pairs