

Name: _____ Date: _____ Period: _____

AP Chemistry Chapter 8 Essentials Pt I

VSEPR THEORY

1. Which electrons in an atom are involved with bonding?
2. What do the acronyms VSEPR and VB stand for? What are the differences between the two theories?
3. Summarize the 8 steps used to help analyze the structure and bonding in any compound on pg. 288 in your textbook.
4. Describe how the valance shell electrons are arranged around the central atom in a VSEPR model.
5. Using Table 8-1, determine the proper geometry around the central atom for the following situations:
 - a. 2 bonded atoms, no unshared e- pairs:
 - b. 3 bonded atoms, no unshared e- pairs:
 - c. 4 bonded atoms, no unshared e- pairs:
 - d. 5 bonded atoms, no unshared e- pairs:
 - e. 6 bonded atoms, no unshared e- pairs:

6. How do you determine whether a molecule that has more than 2 bonded atoms is polar or nonpolar?
7. Explain how a H₂O molecule can contain polar bonds and be polar overall yet a CO₂ molecule which also has polar bonds yet is nonpolar overall?
8. Explain the process of hybridization. What color does the book use to differentiate hybrid orbitals from atomic orbitals?
9. What are the three different types of hybrid orbitals and their associated geometries that can be produced from s and p orbitals?
10. Determine and draw the geometry of BeCl₂.
11. What is the bond angle of BeCl₂?
12. Is BeCl₂ polar or nonpolar?
13. Does BeCl₂ satisfy the octet rule?
14. Is BeCl₂ ionic or covalent? Are hybrid orbitals use? If so which type?