

AP chem solutions MCQ Unit 2 - set 1

Molecular and Ionic Compound Structure and Properties

Multiple Choice I

Name: _____

CALCULATORS CANNOT BE USED IN THIS SECTION

1. Identify the answer choice that contains only non-polar molecules.

(A) BH_3 , PH_3 , CH_4
(B) O_3 , BCl_3 , PCl_3
(C) CO_2 , O_3 , CF_4
(D) CH_2F_2 , NH_3 , CO_2

2. Identify the compound from the list below that contains the most polar bonds.

(A) CBr_4
(B) NF_3
(C) BF_3
(D) CF_4

3. Which answer choice identifies the bonds that exist between the carbon and nitrogen atoms in the HCN molecule?

(A) Two σ -bonds and two π -bonds
(B) Two σ -bonds and one π -bond
(C) One σ -bond and one π -bond
(D) One σ -bond and two π -bonds

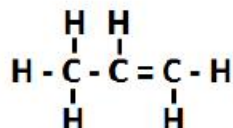
4. What is the effective number of bonds (bond order) between the sulfur and oxygen atoms in SO_2 ?

(A) 1
(B) 1.3
(C) 1.5
(D) 2

5. Which of the following lists compounds in order of increasing melting point?

(A) $\text{NaBr} < \text{NaCl} < \text{MgS}$
(B) $\text{LiF} < \text{LiCl} < \text{LiBr}$
(C) $\text{NaCl} < \text{CO}_2 < \text{NF}_4$
(D) $\text{BeO} < \text{BeS} < \text{LiF}$

6.



Use the Lewis above structure for C_3H_5 to identify the type(s) of hybrid orbitals that exist around the three carbon atoms.

- (A) sp^3 , sp^2 , and sp
- (B) sp^3 , sp^2 , and sp^2
- (C) sp^2 , sp^2 , and sp
- (D) sp^3 , sp^3 , and sp^3

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7. A certain compound exhibits sp^2 hybridization around the central atom. What shape results from the mutual repulsion of these hybrid orbitals?
- (A) linear
 - (B) trigonal planar
 - (C) trigonal pyramidal
 - (D) tetrahedral

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8. Which of the following sets lists compounds in order of increasing bond angle?
- (A) $\text{SF}_6 < \text{BH}_3 < \text{XeF}_2$
 - (B) $\text{BF}_3 < \text{H}_2\text{O} < \text{CH}_4$
 - (C) $\text{H}_2\text{O} < \text{Cl}_4 < \text{PH}_3$
 - (D) $\text{O}_3 < \text{BBr}_3 < \text{NF}_3$

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9. Which of the following correctly identifies the type of bonding that occurs in SO_2 , ZrO_2 , and O_3 ?
- (A) SO_2 – polar covalent; ZrO_2 – ionic; O_3 – non-polar covalent
 - (B) SO_2 – non-polar covalent; ZrO_2 – ionic; O_3 – polar covalent
 - (C) SO_2 – ionic; ZrO_2 – polar covalent; O_3 – non-polar covalent
 - (D) SO_2 – polar covalent; ZrO_2 – non-polar covalent; O_3 – ionic