

Quiz 1, Key

1. Which of the following is the ground-state electron configuration of **fluorine**?

- A) $1s^2 2s^1$
 B) $1s^2 2s^2 2p_x^1 2p_y^1 2p_z^1$
 C) $1s^2 2s^2 2p_x^2 2p_y^2 2p_z^1$
 D) $2s^2 3s^2 3s^2 3p_x^2 3p_y^1 3p_z^1$

2. Which of elements below is **least electronegative**?

- A) carbon
 B) boron
 C) nitrogen
 D) fluorine

3. Which of the following correctly describes **bond polarity** in a molecule of amine?

- A) $\text{H}-\overset{\delta+}{\text{C}}-\overset{\delta+}{\text{N}}-\text{H}$
 B) $\text{H}-\overset{\delta+}{\text{C}}-\overset{\delta-}{\text{N}}-\text{H}$
 C) $\text{H}-\overset{\delta-}{\text{C}}-\overset{\delta-}{\text{N}}-\text{H}$
 D) $\text{H}-\overset{\delta-}{\text{C}}-\overset{\delta+}{\text{N}}-\text{H}$

4. Which of the following molecules or polyatomic ions is a **correct Lewis structure** with correct formal charges?

- A) $\text{H}-\overset{+}{\text{C}}-\text{H}$
 B) $\text{H}-\text{C}=\text{N}-\text{H}$
 C) $\text{H}-\text{C}-\overset{-}{\text{B}}-\text{H}$
 D) $\text{H}-\overset{+}{\text{O}}-\text{C}-\text{H}$

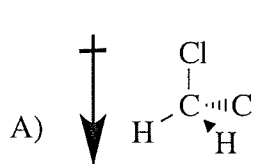
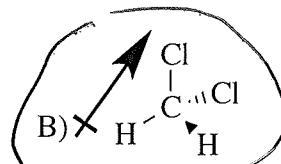
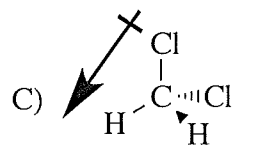
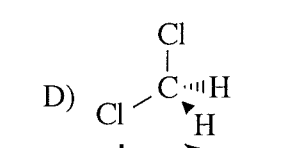
5. What is an approximate **O-C-H bond angle** in formaldehyde, $\text{H}_2\text{C}=\text{O}$, according to VSEPR?

- A) 90°
 B) 120°
 C) 109.5°
 D) 180°

6. Which of the following molecules has **dipole moment $\mu = 0 \text{ D}$** ?

- A) BF_3
 B) CHF_3
 C) $\text{F}_2\text{C}=\text{CH}_2$
 D) CH_3OH

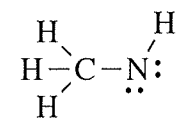
7. Which represents correct **direction of dipole moment** of dichloromethane?

- A) 
 B) 
 C) 
 D) 

8. Which of the following compounds has a **nonpolar covalent bond**?

- A) CF_4
 B) NF_3
 C) C_2F_6
 D) CO_2
- Handwritten note: non-polar bond*

9. What is the **formal charge** of the atom of **nitrogen** in the following molecule?

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 A) -1
 B) +1
 C) 0
 D) -2

10. Which of the following compounds has the functional group of an **aldehyde**?

- A) $\text{CH}_3\text{CO}_2\text{CH}_3$
 B) $\text{CH}_3\text{CO}_2\text{H}$
 C) $(\text{CH}_3)_3\text{CCHO}$
 D) $\text{HOCH}_2\text{COCH}_3$