

APOLLO

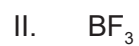
The covalent model SL

Chemistry

First assessment 2025

14 questions | questions

9. In which of the following molecules do all atoms obey the octet rule?



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

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11. Which row puts these molecules in order of decreasing bond angle?

A. NH_3 , H_2O , C_2H_4 , CH_4

B. H_2O , C_2H_4 , CH_4 , NH_3

C. C_2H_4 , CH_4 , NH_3 , H_2O

D. CH_4 , NH_3 , H_2O , C_2H_4

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- 13.** Aluminium trichloride, $\text{AlCl}_3(\text{g})$, and beryllium chloride, $\text{BeCl}_2(\text{g})$, have been known for many years. Which adaptation of the bonding model was made to explain the bonding in $\text{AlCl}_3(\text{g})$ and $\text{BeCl}_2(\text{g})$?
- A. The existence of coordination bonding was proposed.
 - B. Ideas about oxidation states were formed.
 - C. Exceptions to the octet rule were introduced.
 - D. Lewis formulas of molecules were developed.

7. Which molecule is polar?

- A. CH_4
- B. C_6H_6
- C. SO_2
- D. CO_2

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8. Which forces of attraction cause the boiling point of ammonia, NH_3 , to be significantly higher than that of phosphine, PH_3 ?
- A. Covalent bonds
 - B. Dipole–dipole forces
 - C. London (dispersion) forces
 - D. Hydrogen bonds

22. Which molecule has the shortest carbon to oxygen bond?

- A. CH_3OH
- B. H_2CO
- C. CO
- D. CO_2

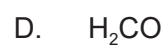
23. What are the electron domain geometries around the carbon and nitrogen atoms, shown in bold, in glycine $\text{H}_2\text{NCH}_2\text{COOH}$?

	Carbon	Nitrogen
A.	tetrahedral	tetrahedral
B.	trigonal pyramidal	trigonal pyramidal
C.	trigonal planar	tetrahedral
D.	trigonal planar	trigonal pyramidal

7. Which row shows the correct electron domain geometry and molecular geometry for the nitrate ion, NO_3^- ?

	Electron domain geometry	Molecular geometry
A.	Trigonal planar	Trigonal planar
B.	Trigonal planar	Trigonal pyramidal
C.	Trigonal pyramidal	Trigonal planar
D.	Trigonal pyramidal	Trigonal pyramidal

8. Which substance has dipole-dipole forces between molecules?



10. Which material is a good electrical conductor?

- A. Diamond
- B. Graphite
- C. Fullerene
- D. Silicon

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6. What are the electron domain geometry and molecular geometry of sulfur dichloride, SCl_2 ?

	Electron domain geometry	Molecular geometry
A.	Tetrahedral	Linear
B.	Tetrahedral	Bent
C.	Linear	Linear
D.	Trigonal planar	Bent

7. Which molecule is most polar?

- A. CF_4
- B. CO_2
- C. NBr_3
- D. NH_3

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14. Which compound has the highest boiling point?

- A. $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_3$
- B. $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_3$
- C. $(\text{CH}_3)_3\text{CCH}_2\text{CH}_3$
- D. $\text{CH}_3\text{CH}_2\text{CH}(\text{CH}_3)\text{CH}_2\text{CH}_3$

7. Which species contains a coordination bond?

