

Bonding Practice Test

- Which of the following groups contains no ionic compounds?
 - HCN, NO₂, Ca(NO₃)₂
 - PCl₅, LiBr, Zn(OH)₂
 - KOH, CCl₄, SF₄
 - NaH, CaF₂, NaNH₂
 - CH₂O, H₂S, NH₃
- Atoms having equal or nearly equal electronegativities are expected to form
 - no bonds
 - polar covalent bonds
 - nonpolar covalent bonds
 - ionic bonds
 - covalent bonds
- Atoms with greatly different electronegativity values are expected to form
 - no bonds
 - covalent bonds
 - triple bonds
 - ionic bonds
 - none of these
- In which case is the bond polarity *incorrect*?
 - $\delta^+ \text{H} - \text{F}^{\delta-}$
 - $\delta^+ \text{K} - \text{O}^{\delta-}$
 - $\delta^+ \text{Mg} - \text{H}^{\delta-}$
 - $\delta^+ \text{Cl} - \text{I}^{\delta-}$
 - $\delta^+ \text{Si} - \text{S}^{\delta-}$
- The electron pair in a C-F bond could be considered
 - closer to C because carbon has a larger radius and thus exerts greater control over the shared electron pair
 - closer to F because fluorine has a higher electronegativity than carbon
 - closer to C because carbon has a lower electronegativity than fluorine
 - an inadequate model since the bond is ionic
 - centrally located directly between the C and F
- Based on electronegativity differences, which of the following is most likely to be ionic?
 - CaF₂
 - Br₂

- C) BH_3
- D) NO
- E) CF_4

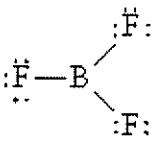
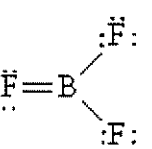
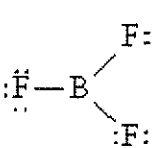
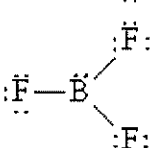
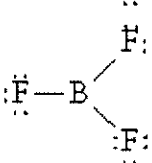
7. In the reaction between magnesium and sulfur, the magnesium atoms

- A) become anions
- B) become cations
- C) become part of polyatomic ions
- D) share electrons with sulfur
- E) crystallize

8. In the Lewis structure for SF_6 , the central sulfur atom shares _____ electrons.

- A) 4
- B) 8
- C) 10
- D) 12
- E) None of the above, because SF_6 is an ionic compound.

9. Which of the following Lewis structures best describes BF_3 ?

- A) 
- B) 
- C) 
- D) 
- E) 

10. Which of the following has an incomplete octet in its Lewis structure?

- A) SO_2
- B) ICl

- C) CO_2
- D) F_2
- E) NO

11. Consider the following molecules.

- I. BF_3
- II. CHBr_3 (C is the central atom)
- III. Br_2
- IV. XeCl_2
- V. CO
- VI. SF_4

Select the molecule(s) that fit the given statement.

These molecules violate the octet rule.

- A) I, II, IV
- B) I, III, IV, VI
- C) III, V, VI
- D) I, IV, VI
- E) I, II, IV, VI

Select the correct molecular structure for the given species from the choices below:

12. H_2O

- A) linear
- B) trigonal planar
- C) tetrahedral
- D) bent
- E) none of these

13. CO_2

- A) linear
- B) trigonal planar
- C) tetrahedral
- D) bent
- E) none of these

14. BeCl_2

- A) linear
- B) trigonal planar
- C) tetrahedral
- D) bent
- E) none of these

15. SF_4

- A) linear
- B) trigonal planar
- C) tetrahedral
- D) bent
- E) none of these

16 .When nonmetals chemically combine, they tend to form what type of bond?

17. For each of the following compounds:

- a) Draw the Lewis structure.
- b) Give the shape of the molecule.
- c) Indicate the polarity of the molecule.



18. Choose the member of each set that best matches the label.

- | | |
|---------------------------|---|
| More metallic | Be or Ba |
| More covalent | $\text{N}_2\text{O}(\text{g})$, $\text{MgO}(\text{s})$ |
| Highest electronegativity | O, S, Br |
- A) Be, N_2O , O
 - B) Ba, MgO , Br
 - C) Ba, N_2O , S
 - D) Be, MgO , O
 - E) Ba, N_2O , O

19. In a phosphorous-chlorine bond, the bond is _____ and the _____ atoms bears _____ charge

- A) polar, P, a partial negative
- B) nonpolar, Cl, no partial
- C) polar, P, a partial positive
- D) nonpolar, P, no partial
- E) polar, Cl, a partial positive

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1. Which of the following groups contains no ionic compounds?

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B) PCl₅, LiBr, Zn(OH)₂

C) KOH, CCl₄, SF₄

D) NaH, CaF₂, NaNH₂

E) CH₂O, H₂S, NH₃

↑ should

2. Atoms having equal or nearly equal electronegativities are expected to form

A) no bonds

B) polar covalent bonds

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3. Atoms with greatly different electronegativity values are expected to form

A) no bonds

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C) triple bonds

D) ionic bonds

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4. In which case is the bond polarity *incorrect*?

A) $\delta^+ \text{H}-\text{F}^{\delta-}$

B) $\delta^+ \text{K}-\text{O}^{\delta-}$

C) $\delta^+ \text{Mg}-\text{H}^{\delta-}$

D) $\delta^+ \text{Cl}-\text{I}^{\delta-}$

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highly electroneg. this means
it "pulls" the electrons
closer to it

5. The electron pair in a C-F bond could be considered

A) closer to C because carbon has a larger radius and thus exerts greater control over the shared electron pair

B) closer to F because fluorine has a higher electronegativity than carbon

C) closer to C because carbon has a lower electronegativity than fluorine

D) an inadequate model since the bond is ionic

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6. Based on electronegativity differences, which of the following is most likely to be ionic?

A) CaF₂

B) Br₂

look for
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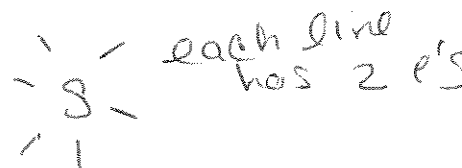
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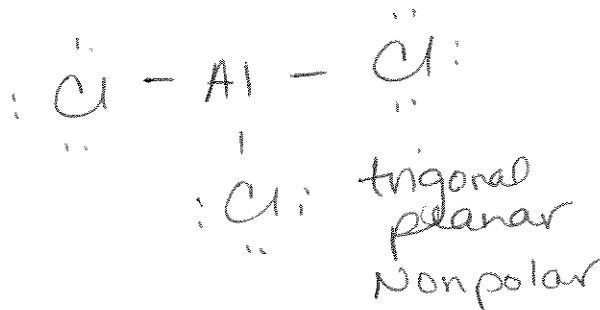
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- a) Draw the Lewis structure.
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More covalent

Highest electronegativity

Be or Ba

$\text{N}_2\text{O}(\text{g})$, $\text{MgO}(\text{s})$

O, S, Br

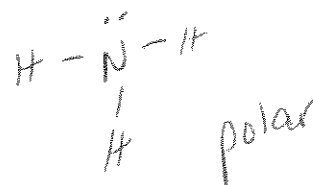
A) Be, N_2O , O

B) Ba, MgO , Br

C) Ba, N_2O , S

D) Be, MgO , O

E) Ba, N_2O , O



19. In a phosphorous-chlorine bond, the bond is _____ and the _____ atoms bears _____ charge

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C) polar, P, a partial positive

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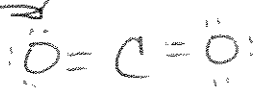
E) polar, Cl, a partial positive



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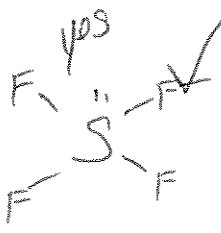
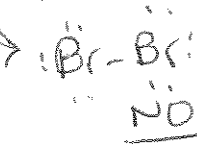
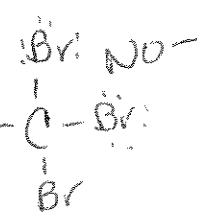
C) III, V, VI

D) I, IV, VI

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14. BeCl_2

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D) bent

E) none of these

15. SF_4

Remember to go to
my website and copy down
the shapes from "molecular
shapes"