

Practice Test 007

\_\_\_\_\_ 1. Which of the following has the most uneven sharing of electrons between two atoms in the molecule?

- a. O<sub>2</sub>                      b. PBr                      c. CCl                      d. HO

\_\_\_\_\_ 2. Which of the following energy changes is the most exothermic (energy out)?

- a. ionization energy                      b. electron affinity  
c. bond energy                      d. lattice energy

\_\_\_\_\_ 3. Which of the following compounds is most likely to be insoluble? (think about charge)

- a. KCl                      b. MgCl<sub>2</sub>                      c. NaF                      d. MgO                      e. K<sub>2</sub>S

\_\_\_\_\_ 4. Which of the following would be easiest to pull apart? (Think and about charge and size)

- a. KCl                      b. MgCl<sub>2</sub>                      c. NaF                      d. AlN                      e. K<sub>2</sub>S

\_\_\_\_\_ 5. Which of the following steps in the Born Haber cycle would involve a loss of energy?

- a. heat of sublimation                      b. ionization energy  
c. lattice energy                      d. bond energy

\_\_\_\_\_ 6. Which of the following would tend to lose two electrons during the formation of an ionic bond?

- a. Mg                      b. Ca                      c. Al                      d. Na                      e. Rb

\_\_\_\_\_ 7. How many atoms of magnesium would combine with 2 atoms of nitrogen when magnesium nitride is formed?

- a. 1                      b. 2                      c. 3                      d. 4                      e. 5

\_\_\_\_\_ 8. Which of the following is **not** polar?

- a. H<sub>2</sub>                      b. H<sub>2</sub>O                      c. NH<sub>3</sub>                      d. HCl

\_\_\_\_\_ 9. Which of the following contains the strongest **intramolecular** bond?

a. CO<sub>2</sub>

b. N<sub>2</sub>

c. H<sub>2</sub>O

d. HCl

\_\_\_\_\_ 10. A process releases more energy than is put in. The process is:

a. endothermic

b. exothermic

\_\_\_\_\_ 11. Which of the following is nonpolar?

a. CH<sub>2</sub>O

b. BrF<sub>3</sub>

c. HCN

d. CO<sub>2</sub>

\_\_\_\_\_ 12. Which of the following has 90 degree bond angles?

a. H<sub>2</sub>O

b. NH<sub>3</sub>

c. CCl<sub>4</sub>

d. SO<sub>3</sub>

e. XeF<sub>4</sub>

\_\_\_\_\_ 13. Which of the following requires the expansion of the octet in order to minimize the formal charge on the central atom?

a. H<sub>2</sub>O

b. PH<sub>3</sub>

c. CCl<sub>4</sub>

d. SO<sub>4</sub><sup>-2</sup>

\_\_\_\_\_ 14. In which pair does *neither* compound exhibit an ionic bond? (Bonds between metals and polyatomic ions are ionic).

a. SO<sub>2</sub>, HCl

b. KNO<sub>3</sub>, CH<sub>4</sub>

c. NaF, K<sub>2</sub>SO<sub>4</sub>

d. KCl, CO<sub>2</sub>

e. NaCl, H<sub>2</sub>O

\_\_\_\_\_15. Which of the following species is pyramidal?

- a.  $\text{NO}_3^-$                       b.  $\text{SO}_3$                       c.  $\text{ClO}_3^-$                       d.  $\text{BCl}_3$                       e.  $\text{H}_2\text{CO}$

\_\_\_\_\_16. Which of the following species contains three  $\pi$  bonds?

- a.  $\text{CHO CN}$                       b.  $\text{HCCH}$                       c.  $\text{CN}^-$                       d.  $\text{CO}_2$                       e.  $\text{CO}_3^{2-}$

\_\_\_\_\_17. Which type of bond results from “UNEVEN” sharing of electrons?

- a. ionic                      b. nonpolar                      c. polar                      d. none of these

\_\_\_\_\_18. Which of the following has bond angles **less than** 109.5?

- a.  $\text{H}_2\text{S}$                       b. carbon dioxide                      c.  $\text{CH}_4$                       d.  $\text{BCl}_3$

\_\_\_\_\_19. Which of the following molecules could best be described as square planar?

- a.  $\text{CF}_4$                       b.  $\text{CCl}_4$                       c.  $\text{BrF}_4^-$                       d.  $\text{XeF}_4$                       e. none of these

\_\_\_\_\_20. Of the molecules listed in number 23, which has/have  $\text{sp}^3$  hybridization?

- a. a only                      b. b only                      c. c only                      d. a and b only                      e. a, b and d

\_\_\_\_ 21. Which of the following would exhibit resonance?

- a.  $\text{CO}_2$                       b.  $\text{CH}_2\text{O}$                       c.  $\text{NaCl}$                       d.  $\text{SO}_3$                       e.  $\text{BrF}_3$

\_\_\_\_ 22. Which of the following has no pi bonds?

- a.  $\text{CO}_2$                       b.  $\text{HCN}$                       c.  $\text{NH}_4^+$                       d.  $\text{NO}_3^-$                       e.  $\text{SO}_2$

\_\_\_\_ 23. Which of the following has a t-shaped molecular geometry?

- a.  $\text{CO}_2$                       b.  $\text{CH}_2\text{O}$                       c.  $\text{NaCl}$                       d.  $\text{SO}_3$                       e.  $\text{BrF}_3$

\_\_\_\_ 24. Which of the following involves moving electrons from a metal to a nonmetal?

- a. ionic bonding                      b. non polar covalent bonding  
c. polar covalent bonding                      d. network covalent bonding

\_\_\_\_ 25. Which of the following could involve sharing electrons between two atoms a molecule?

- a. ionic bonding                      b. covalent bonding  
c. metallic bonding                      d. network covalent bonding

\_\_\_\_ 26. Which of the following involves sharing electrons unevenly between two atoms in a molecule?

- a. ionic bonding                      b. non polar covalent bonding  
c. polar covalent bonding                      d. network covalent bonding

\_\_\_\_ 27. Which of the following involves even sharing of electrons in a molecule?

- a. ionic bonding                      b. non polar covalent bonding  
c. polar covalent bonding                      d. network covalent bonding