Homework	4:	Chapter	4
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e. see-saw

1. Which of the following is not a correct Lewis symbol?			
	• Be • b. • B c. • F • d. • S • The Sulfite ion is, a. $SO_3^{2-}$ b. $NO_3$ • c. $SO_4^{2-}$ d. $CrO_4$		
•			
3.	The acetate ion is, a. $CO_3^{2-}$ b. $CN^-$ c. $NH_4^+$ d. $C_2H_3O_2^-$		
4.	The correct name for the compound CoCl <sub>3</sub> is, a) Cobalt chlorate b) cobalt (III) chloride c) cobalt (I) chloride d) cobalt (III) chloride		
5.	Which name/formula combination is wrong? a) phosphate/PO <sub>4</sub> <sup>3-</sup> b) bisulfate/HSO <sub>4</sub> <sup>-</sup>		
	c) sulfurous acid/H <sub>2</sub> SO <sub>3</sub> d) sodium nitrate/NaNO <sub>2</sub> e) dinitrogen tetroxide/ N <sub>2</sub> O <sub>4</sub> .		
6.	Which name/formula combination is wrong?		
	a) phosphorous acid/H <sub>3</sub> PO <sub>3</sub> b) sodium cyanide/NaCN		
	c) chloric acid/HClO <sub>4</sub> d) calcium hydrogensulfite/Ca(HSO <sub>3</sub> ) <sub>2</sub> e) ammonium fluoride/NH <sub>4</sub> F		
7.	How many valence electrons does a phosphorus atom have?		
	a. 3 b. 5 c. 15 d. 18 e. 31		
<b>8.</b> '	The <u>total</u> number of valence electrons in the Lewis formula for PBr <sub>3</sub> is		
_	a. 8 b. 12 c. 18 d. 26 e. 30		
9.	The <u>total</u> number of <u>non-bonding-pairs</u> of electrons in the Lewis formula for		
	NH <sub>3</sub> is a. 0 b. 1 c. 2 d. 3 e. 4		
10	Resonance Lewis structures can be drawn for all the ions and molecules of the		
	following list except,		
	a. $CO_3^2$ b. $NO_3$ c. $NO_2$ d. $CO_2$		
11.	. Which species of the following list possesses a central atom with more than		
	octet of electrons?  a. SO <sub>2</sub> b. PF <sub>5</sub> c. BF <sub>3</sub> d. H <sub>2</sub> O e. NH <sub>3</sub>		
12.	The (H-O) bond in water is best characterized as		
	a. polar covalent. b. ionic.		
	c. coordinate covalent. d. pure covalent.		
13.	. Which molecule will not contain a multiple bond?		
1.4	a. N <sub>2</sub> b. CO c. SO <sub>2</sub> d. F <sub>2</sub> e. HCN		
14.	According to VSEPR theory, what is the molecular geometry of the PF <sub>5</sub> molecule?		
	a. Square pyramidal b. octahedral c. tetrahedral d. trigonal bipyramidal e. see-saw		
15.	According to VSEPR theory, what is the molecular geometry of the SF <sub>4</sub> molecule?		
	a. trigonal planar b. T-shaped c. tetrahedral d. trigonal pyramidal		

#### 16. Which molecular geometry is matched to CORRECT bond angles?

a. octahedral - 90° and 180° b. trigonal planar - 90° and 120° c. tetrahedral - 120° d. trigonal bipyramidal- 109.5°

e. linear - 120°

## 17. Which of the following is a <u>non-polar</u> molecule?

a.  $CCl_4$  b.  $NH_3$  c.  $H_2S$  d.  $NF_3$  e.  $OF_2$ 

## 18. Which of the listed molecules possesses a square planar geometry?

a. SiCl<sub>4</sub> b. SF<sub>4</sub> c. XeF<sub>4</sub> d. CCl<sub>4</sub> e. CH<sub>4</sub>

#### 19. Which of the following molecules is no polar?

a. NH<sub>3</sub> b. H<sub>2</sub>S c. SF<sub>6</sub> d.HCl e. CO

# 20. What is the major type of force that must be overcome to allow the processes below?

I. the evaporation of propanol (CH<sub>3</sub>CH<sub>2</sub>CH<sub>2</sub>OH)

II. the melting of solid Br<sub>2</sub>

III. the boiling of liquid BF<sub>3</sub>

IV. the boiling of liquid CH<sub>2</sub>Cl<sub>2</sub>

- a. London forces, covalent bonding, dipole-dipole, dipole-dipole
- b. London forces, London forces, London forces
- c. hydrogen bonding, dipole-dipole, dipole-dipole, London forces
- d. hydrogen bonding, London forces, London forces, dipole-dipole
- e. dipole-dipole, dipole-dipole, London forces, London forces