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Wednesday, January 28, 2015 11:24 AM

Bonding Study Test
Chemistry

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

- 1) An ionic bond forms between two atoms through _____.
- A) transferring of electrons from metallic atoms to nonmetallic atoms
B) each atom acquiring a negative charge
C) transferring protons from the nucleus of the nonmetal to the nucleus of the metal
D) sharing of electron pairs

- 2) How many valence electrons does a tin (Sn) atom have?
A) 2 B) 4 C) 8 D) 14

- 3) Which of the following statements about the noble gases is *incorrect*?
- A) All exist in nature as individual atoms rather than molecular form.
B) All have 8 valence electrons.
C) They are the most reactive of all gases.
D) All have very stable electron arrangements.

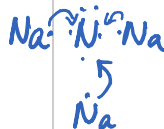


- 4) Which of the following ions would *not* possess an octet of electrons?

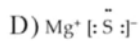
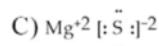
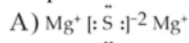
- A) P^{2-} B) S^{2-} C) Be^{2+} D) K^+

- 5) In the process of forming sodium nitride, Na_3N , each sodium atom _____ electron(s) and each nitride atom _____ electron(s).

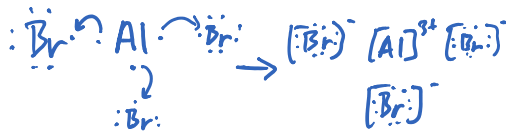
- A) loses one; gains two B) loses one; gains three
C) loses three; gains three D) loses three; gains one



- 6) Which Lewis structure below correctly represents the compound formed between magnesium and sulfur?



- 7) The Lewis model predicts that the formula of a compound formed between bromine and aluminum is:



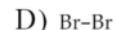
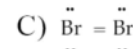
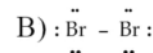
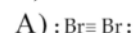
- 8) When a nonmetal bonds with a nonmetal:

- A) a covalent bond is involved.
B) a molecular compound forms.
C) electrons are shared.
D) all of the above are true
E) none of the above

- 9) The Lewis structure for carbon monoxide is $:C \equiv O:$. This structure shows:

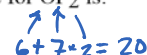
- A) 2 lone pairs and 3 bonding pairs.
B) 2 lone pairs and 1 bonding pair.
C) 4 lone pairs and 3 bonding pairs.
D) 4 lone pairs and 1 bonding pair.
E) none of the above

- 10) What is the correct Lewis structure for Br_2 ?

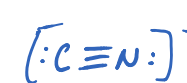
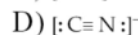
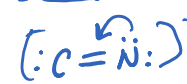
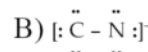
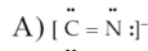


- 11) The total number of electrons which would be shown as "dots" in a correctly written Lewis structure for OF_2 is:

- A) 26 B) 18 C) 32 D) 20



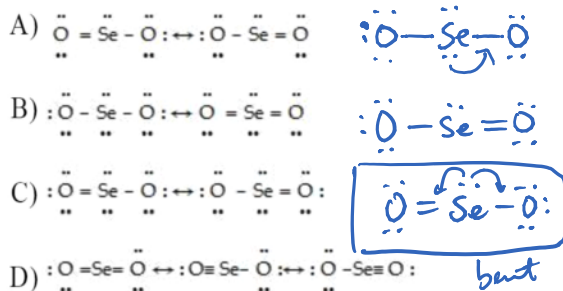
- 12) What is the correct Lewis structure for CN^- ?



- E) none of the above

linear



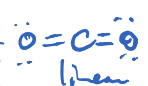
13) Which set shows the correct resonance structures for SeO_2 ?



14) What is the angle between electron groups in the linear electron geometry?

- A) 109.5° *tetrahedral* B) 90° C) 180° *linear* D) 120° *trig. planar*

15) Which of the following compounds would have a linear molecular geometry?

1. N_2 *linear* 
2. H_2S *bent* 
3. CO_2 *linear* 
- A) 1, 2 and 3 B) 2 and 3 only C) 1 and 2 only D) 1 and 3 only E) neither 1, 2, or 3

16) What is the molecular geometry of SiH_4 ?

- A) bent B) linear C) tetrahedral D) trigonal pyramidal

17) Which term matches the definition: The ability of an element to attract electrons within a covalent bond?

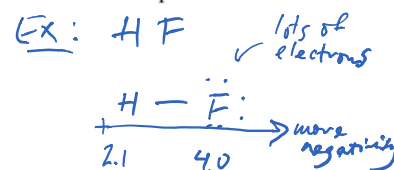
- A) polar covalent B) nonpolar covalent C) dipole moment D) coulombic attraction E) electronegativity

18) Which molecule listed below has a nonpolar covalent bond?

- A) H_2O B) NaCl C) H_2 D) all of the compounds

19) Which term matches the definition: A separation of charge within a bond?

- A) dipole moment B) pure covalent C) electronegativity D) nonpolar covalent E) coulombic attraction



20) The electronegativity value for N is 3.0 and that for O is 3.5. Based on these values, which of the following statements is TRUE about the compound NO?

- A) NO is a pure covalent compound. B) NO is a polar covalent compound. *small difference, but not zero* C) NO is an ionic compound. D) There is not enough information to determine the nature of NO.

21) Consider the following electronegativity values: H = 2.1, Cl = 3.0, F = 4.0

Which molecule below would you expect to have the more polar bond?

- A) H_2 B) HCl C) F_2 D) Cl_2 E) HF

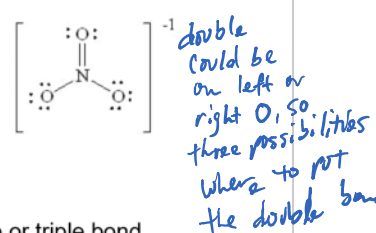
22) If the electronegativity difference between two elements X and Y is 0.2, the bond between the two elements would be

- A) nonpolar covalent B) polar covalent C) ionic D) coordinate covalent

almost zero

23) One of the resonance structures for the polyatomic ion NO_3^- is given. How many other resonance structures are there for this ion?

- A) 3 B) 4 C) 1 D) 2



three total

Written Section Practice

A) Write a Lewis structure for each of the following molecules. Each contains at least one double or triple bond.

- 1 C_2H_4 2 CO 3 O_2

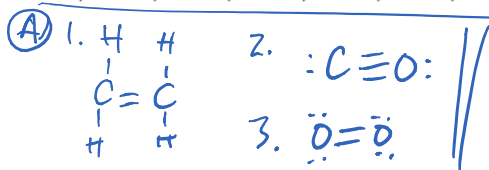
B) Write a Lewis Structure for each of the following molecules. Then draw the three dimensional structure, and give the molecular geometry name.

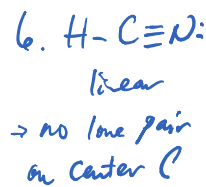
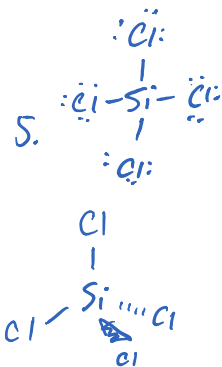
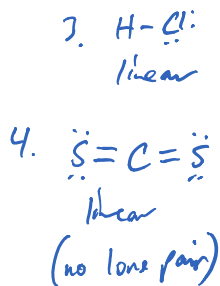
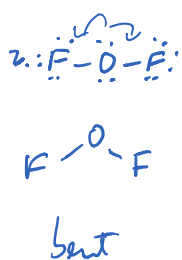
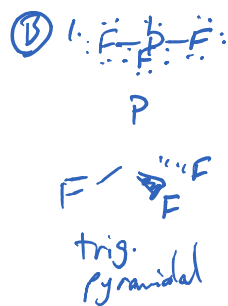
- 1 PF_3 2 OF_2 3 HCl
 4 CS_2 5 SiCl_4 6 HCN



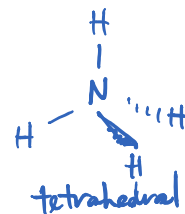
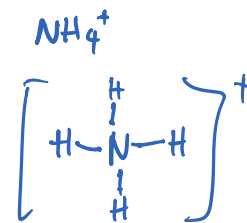
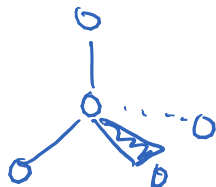
Multiple Choice Answers

- 1) A 2) B 3) C 4) A 5) B 6) C 7) B 8) D 9) A 10) B 11) D 12) D 13) A 14) C
 15) D 16) C 17) E 18) C 19) A 20) B 21) E 22) A 23) D





tetrahedral



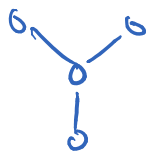
trigonal pyramidal



bent



trigonal planar



linear

