

Name: CALVIN
Date:
Hour:

AP Chem Ch.8 Practice

- 1) Which of the following groups contains no ionic compounds?
 - A) HCN, NO₂, Ca(NO₃)₂
 - B) PCl₅, LiBr, Zn(OH)₂
 - C) KOH, CCl₄, SF₄
 - D) NaH, CaF₂, NaNH₂
 - E) CH₂O, H₂S, NH₃
- 2) In which pair do both compounds exhibit predominantly ionic bonding?
 - A) SCl₆ and HF
 - B) Na₂SO₃ and NH₃
 - C) KI and O₃
 - D) LiF and H₂O
 - E) LiBr and MgO
- 3) Atoms having equal or nearly equal electronegativities are expected to form
 - A) no bonds
 - B) polar covalent bonds
 - C) nonpolar covalent bonds
 - D) ionic bonds
 - E) covalent bonds
- 4) Choose the compound with the most ionic bond.
 - A) LiCl
 - B) KF
 - C) NaCl
 - D) LiF
 - E) KCl
- 5) Which of the following bonds is least polar?
 - A) C—O
 - B) H—C
 - C) S—Cl
 - D) Br—Br
 - E) They are all nonpolar.
- 6) Atoms with greatly different electronegativity values are expected to form
 - A) no bonds
 - B) covalent bonds
 - C) triple bonds
 - D) ionic bonds
 - E) none of these

7) For the elements Cs, F, and P, the order of increasing electronegativity is:

- A) $Cs < F < P$
- B) $Cs < P < F$
- C) $P < F < Cs$
- D) $F < Cs < P$
- E) none of these

8) Based on electronegativities, which of the following would you expect to be most ionic?

- A) N_2
- B) CaF_2
- C) CO_2
- D) CH_4
- E) CF_4

9) 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
- E) centrally located directly between the C and F

10) In which of the following compounds does the bond between the central atom and bromine have the greatest ionic character?

- A) $LiBr$
- B) KBr
- C) $SeBr_2$
- D) $AsBr_3$
- E) $CaBr_2$

11) Which of the following molecules has no dipole moment?

- A) CO_2
- B) NH_3
- C) H_2O
- D) all
- E) None

12) Which of the following has the smallest radius?

- A) Br^-
- B) S^{2-}
- C) Xe
- D) Ca^{2+}
- E) Kr

13) Which of the following pairs is isoelectronic?

- A) Li^+ and K^+
- B) Na^+ and Ne
- C) I^- and Cl^-
- D) S^{2-} and Ne
- E) Al^{3+} and B^{3+}

14) Which of the following statements are *true* concerning ionic bonding?

- A) Ionic bonding occurs between a metal, which has a high affinity for electrons, and a nonmetal, which loses electrons relatively easy.
- B) CaCl_2 forms because Ca^{2+} is always a more stable species than the calcium atom alone.
- C) Compounds with ionic bonds tend to have low melting points.
- D) The electronegativity difference between the bonding atoms of ionic compounds is small since the electrons are not shared but rather held together by electrostatic forces.
- E) All of the above statements are false.

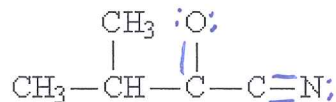
15) When electrons in a molecule are not found between a pair of atoms but move throughout the molecule, this is called

- A) ionic bonding
- B) covalent bonding
- C) polar covalent bonding
- D) delocalization of the electrons
- E) a dipole moment

16) In the Lewis structure for elemental nitrogen there is (are)

- A) a single bond between the nitrogens
- B) a double bond between the nitrogens
- C) a triple bond between the nitrogens
- D) three unpaired electrons
- E) none of the above

17) Complete the Lewis structure for the molecule:



This molecule has _____ single bonds and _____ multiple bonds.

- A) 4, 2
- B) 6, 3
- C) 11, 5
- D) 11, 2
- E) 13, 0

18) Which of the following compounds contains only one unshared pair of valence electrons?

- A) NH_3
- B) H_2O
- C) CH_4
- D) NaCl
- E) BF_3

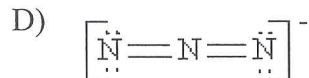
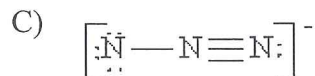
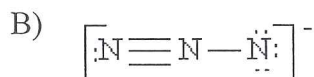
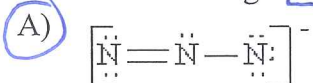
19) In the Lewis structure for SF_6 , the central sulfur atom shares _____ electrons.

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

20) How many resonance structures can be drawn for the molecule O_3 ?

- A) 1
- B) 2
- C) 3
- D) 4
- E) 5

21) Which of the following is not a valid resonance structure for N_3^- ?



- E) all are correct

22) How many of the following molecules possess dipole moments?

BH_3 , CH_4 , PCl_5 , H_2O , HF , H_2

- A) 1
- B) 2
- C) 3
- D) 4
- E) 5

23) Which of the following molecules (or ions) has a dipole moment?

- A) CO_2
- B) CO_3^{2-}
- C) NH_4^+
- D) PF_3
- E) two of them

24) Which of the following types of molecules always has a dipole moment?

- A) Linear molecules with two identical bonds.
- B) Tetrahedral molecules (four identical bonds equally spaced).
- C) Trigonal pyramid molecules (three identical bonds).
- D) Trigonal planar molecules (three identical bonds equally spaced).
- E) None has a dipole moment.

25) How many of the following molecules or ions are linear?

NH_3 OF_2 HCN CO_2 NO_2

- A) 0
- B) 1
- C) 2
- D) 3
- E) 4

26) The bond angles about the carbon atom in the formaldehyde molecule, $\text{H}_2\text{C}=\text{O}$, are about:

- A) 120°
- B) 60°
- C) 109°
- D) 180°
- E) 90°

27) NO_3^-

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

28) Which ion is larger in each pair? i) O^{2-} or S^{2-} ii) Fe^{2+} or Fe^{3+} iii) S^{2-} or K^+

- A) S^{2-} , Fe^{2+} , S^{2-}
- B) S^{2-} , Fe^{3+} , S^{2-}
- C) O^{2-} , Fe^{3+} , K^+
- D) S^{2-} , Fe^{2+} , K^+
- E) O^{2-} , Fe^{2+} , S^{2-}

GO VIKINGS!!