

## CHEMICAL BONDING

- Which one of the following pairs atoms is most likely to form an ionic bond?
  - Na and F
  - C and F
  - N and F
  - O and F
- Aluminium is in Group III. Its oxide when form a bonding with  ${}_8\text{O}$  will have the formula...
  - AlO
  - AlO<sub>2</sub>
  - Al<sub>2</sub>O<sub>3</sub>
  - Al<sub>3</sub>O<sub>2</sub>
- Which of the following statements about sodium chloride is incorrect?
  - it has a high melting point
  - it conducts electricity at room temperature
  - it is soluble in water
  - it is brittle
- In which one of the following does the central atom not possess an 'octet' in its outer shell?  
( ${}_5\text{B}$ ,  ${}_1\text{H}$ ,  ${}_6\text{C}$ ,  ${}_7\text{N}$ ,  ${}_8\text{O}$ ,  ${}_{16}\text{S}$ )
  - BH<sub>3</sub>
  - CH<sub>4</sub>
  - NH<sub>3</sub>
  - H<sub>2</sub>O
- Which pair of elements is most to form a molecular compound with each other?
  - aluminum,oxygen
  - magnesium,iodine
  - sulfur, fluorine
  - potassium, lithium
  - barium,bromine
- Which of the following bonds would be best categorized as covalent?
  - H-S
  - Al-S
  - N-F
  - I only
  - II only
  - III only
  - I and III
  - I, II, and III

7. The substance below BEST characterized that able to conduct electricity in the liquid state only would be:

- a.  $\text{CH}_4$
- b.  $\text{NH}_3$
- c.  $\text{CO}_2$
- d.  $\text{F}_2$
- e. C(diamond)

8. Which of the following BEST describes the bonding found within solid  $\text{Al}_2\text{O}_3$ ?

- a. Strong covalent bonds between atoms with similar electronegativities
- b. Covalently bound atoms arranged in small individual molecules.
- c. Electrostatic attractions between + and - charged ions
- d. Positively charged ions covalently bound with many mobile electrons
- e. None of these

9. The type of compound that is most likely to contain a covalent bond is \_\_\_\_\_.

- a. one that is composed of a metal and a nonmetal
- b. a solid metal
- c. one that is composed of only nonmetals
- d. held together by the electrostatic forces between oppositely charged ions
- e. There is no general rule to predict covalency in bonds.

10. As the number of covalent bonds between two atoms increases, the distance between the atoms \_\_\_\_\_ and the strength of the bond between them \_\_\_\_\_.

- A) increases, increases
- B) decreases, decreases
- C) increases, decreases
- D) decreases, increases
- E) is unpredictable

11. The Lewis structure of  $\text{PF}_3$  shows that the central phosphorus atom has \_\_\_\_\_ nonbonding and \_\_\_\_\_ bonding electron pairs. ( $_{15}\text{P}$ ,  $_{9}\text{F}$ )

- A) 2, 2
- B) 1, 3
- C) 3, 1
- D) 1, 2
- E) 3, 3

12. Which of the following compounds would you expect to be ionic?

- A)  $\text{H}_2\text{O}$
- B)  $\text{CO}_2$
- C)  $\text{SrCl}_2$
- D)  $\text{SO}_2$
- E)  $\text{H}_2\text{S}$

13. What is the formula of the compound formed between strontium ions and nitrogen ions?

( $_{38}\text{Sr}$ ,  $_{7}\text{N}$ )

- A)  $\text{SrN}$
- B)  $\text{Sr}_3\text{N}_2$
- C)  $\text{Sr}_2\text{N}_3$
- D)  $\text{SrN}_2$
- E)  $\text{SrN}_3$

14. Magnesium reacts with a certain element to form a compound with the general formula  $\text{MgX}$ . What would the most likely formula be for the compound formed between Lithium and element X? ( $_{12}\text{Mg}$ ,  $_{3}\text{Li}$ )

- A)  $\text{Li}_2\text{X}$
- B)  $\text{LiX}_2$
- C)  $\text{Li}_2\text{X}_3$
- D)  $\text{Li}_2\text{X}_2$
- E)  $\text{LiX}$

15. The bond that holds two fluorine atoms together in an  $\text{F}_2$  molecule would be classified as nonpolar covalent because \_\_\_\_\_.

- a. both atoms are different and the difference in electronegativity is large.
- b. both atoms are different and the difference in electronegativity is zero.
- c. both atoms are the same and the difference in electronegativity is large.
- d. both atoms are the same and the difference in electronegativity is zero.