

CHEMICAL BONDING

1. Which one of the following pairs of atoms is most likely to form an ionic bond?
 - a. Na and F
 - b. C and F
 - c. N and F
 - d. O and F
2. Aluminium is in Group III. Its oxide when forms a bonding with $_{8}O$ will have the formula...
 - a. AlO
 - b. AlO_2
 - c. Al_2O_3
 - d. Al_3O_2
3. Which of the following statements about sodium chloride is incorrect?
 - a. it has a high melting point
 - b. it conducts electricity at room temperature
 - c. it is soluble in water
 - d. it is brittle
4. In which one of the following does the central atom not possess an 'octet' in its outer shell?
($_{5}B$, $_{1}H$, $_{6}C$, $_{7}N$, $_{8}O$, $_{16}S$)
 - a. BH_3
 - b. CH_4
 - c. NH_3
 - d. H_2O
5. Which pair of elements is most likely to form a molecular compound with each other?
 - a. aluminum, oxygen
 - b. magnesium, iodine
 - c. sulfur, fluorine
 - d. potassium, lithium
 - e. barium, bromine
6. Which of the following bonds would be best categorized as covalent?
 - I. H-S
 - II. Al-S
 - III. N-F
 - a. I only
 - b. II only
 - c. III only
 - d. I and III
 - e. I, II, and III

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

- a. CH₄
- b. NH₃
- c. CO₂
- d. F₂
- e. C(diamond)

8. Which of the following BEST describes the bonding found within solid Al₂O₃?

- 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 PF₃ shows that the central phosphorus atom has _____ nonbonding and _____ bonding electron pairs. (1₅P, 9F)

- 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) H₂O
- B) CO₂
- C) SrCl₂
- D) SO₂
- E) H₂S

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

($_{38}^{88}\text{Sr}$, $_{7}^{14}\text{N}$)

- A) SrN
- B) Sr_3N_2
- C) Sr_2N_3
- D) SrN_2
- E) SrN_3

14. Magnesium reacts with a certain element to form a compound with the general formula MgX . What would the most likely formula be for the compound formed between Lithium and element X? ($_{12}^{24}\text{Mg}$, $_{3}^{7}\text{Li}$)

- A) Li_2X
- B) LiX_2
- C) Li_2X_3
- D) Li_2X_2
- E) LiX

15. The bond that holds two fluorine atoms together in an 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.