

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_2
 - Al_2O_3
 - Al_3O_2
- 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_3
 - CH_4
 - NH_3
 - H_2O
- 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. CH_4
- b. NH_3
- c. CO_2
- d. F_2
- e. C(diamond)

8. Which of the following BEST describes the bonding found within solid Al_2O_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 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) H_2O
- B) CO_2
- C) SrCl_2
- D) SO_2
- E) H_2S

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

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

- 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? ($_{12}\text{Mg}$, $_{3}\text{Li}$)

- 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.