

Name: _____ Date: _____

Electrifying Chemical Bonding Quiz for Grade 12

Go beyond electron counting to identify lattice structures and electronegativity trends across cesium iodide and crystalline lattices.

1. Which of the following substances relies on a 'sea of delocalized electrons' to maintain its structural integrity and high thermal conductivity?

- A. Crystalline Quartz (SiO_2)
- B. Solid Aluminum (Al)
- C. Potassium Bromide (KBr)
- D. Solid Iodine (I_2)

2. Ionic bonds are generally formed between atoms with significantly different electronegativity values.

- A. True
- B. False

3. In the molecule Phosphorus Trichloride (PCl_3), the bonding between the phosphorus and chlorine atoms is characterized as _____.

- A. Ionic
- B. Metallic
- C. Covalent
- D. Intermolecular Force

4. Which characteristic is most typical of a compound held together by ionic bonds, such as Lithium Fluoride?

- A. Low melting point
- B. Gaseous state at room temperature
- C. High brittleness
- D. Electrical conductivity as a solid

5. A triple bond involves the sharing of four electrons between two atoms.

- A. True
- B. False

6. Which of these molecules contains at least one multiple covalent bond?

- A. Ammonia (NH_3)
- B. Ethene (C_2H_4)
- C. Fluorine (F_2)
- D. Water (H_2O)

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7. Atoms engage in chemical bonding primarily to attain a lower potential energy state and a stable _____.

- A. Proton count
- B. Isotope ratio
- C. Electron configuration
- D. Atomic mass

8. Which of the following is a direct result of the high electrostatic lattice energy in Cesium Chloride?

- A. High melting point
- B. Low boiling point
- C. High vapor pressure
- D. Malleability

9. Covalent bonds are responsible for the high electrical conductivity found in solid Silver.

- A. True
- B. False

10. The structural arrangement of ions in a repeating pattern within an ionic compound is known as a crystal _____.

- A. Lattice
- B. Molecules
- C. Cloud
- D. Orbit