Ionic Bonds Quiz Answer Key PDF

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Which of the following is a characteristic of ionic compounds?

A. Low melting points
B. High melting points ✓
C. Poor electrical conductivity in solution
D. Covalent bonding

What is the charge on a sulfate ion (SO_4^{2-})?

A. -1
B. -2 ✓
C. +1
D. +2

What happens to the electrons in an ionic bond?

A. They are shared equally
B. They are shared unequally
C. They are transferred from one atom to another ✓
D. They remain unchanged

Which type of elements typically form cations in ionic bonds?

A. Non-metals
B. Metalloids
C. Metals ✓
D. Noble gases

What is an ionic bond?

A. A bond formed by sharing electrons
B. A bond formed by transferring electrons ✓
C. A bond formed by sharing protons
D. A bond formed by transferring protons

What is the primary driving force for the formation of ionic bonds?

A. Increase in potential energy
B. Decrease in kinetic energy
C. Attainment of a stable electron configuration ✓
D. Increase in entropy

Which of the following compounds contain polyatomic ions?

A. NaCl
B. KNO_3 ✓
C. $CaCO_3$ ✓
D. H_2O

Which elements are likely to form anions in ionic bonds?

A. Oxygen ✓
B. Sodium
C. Chlorine ✓
D. Magnesium

What factors contribute to the strength of an ionic bond?

A. Lattice energy ✓
B. Electronegativity difference ✓
C. Atomic size ✓
D. Number of protons

In which states do ionic compounds conduct electricity?

A. Solid state
B. Liquid state ✓

C. Aqueous solution ✓

D. Gaseous state

Explain why ionic compounds tend to have high melting and boiling points.

Ionic compounds have high melting and boiling points due to the strong electrostatic forces between the oppositely charged ions in their lattice structure, which require a significant amount of energy to overcome.

Describe the process of electron transfer in the formation of an ionic bond between sodium and chlorine.

Sodium donates one electron to chlorine, resulting in the formation of a sodium cation (Na^+) and a chloride an ion (Cl^-). This electron transfer creates an ionic bond due to the attraction between the oppositely charged ions.

What is lattice energy, and how does it relate to the stability of ionic compounds?

Lattice energy is the energy required to separate one mole of an ionic solid into its gaseous ions. It is a measure of the strength of the ionic bonds; higher lattice energy indicates a more stable ionic compound.

Compare and contrast ionic bonds and covalent bonds in terms of electron movement and types of elements involved.

Ionic bonds involve the transfer of electrons from metals to non-metals, resulting in the formation of ions. Covalent bonds involve the sharing of electrons between non-metals.

Why do ionic compounds conduct electricity in aqueous solutions but not in solid form?

In aqueous solutions, the ions in ionic compounds are free to move, allowing them to conduct electricity. In solid form, the ions are fixed in place within the lattice structure and cannot move freely.

Discuss the role of electronegativity in the formation of ionic bonds.

Electronegativity differences between atoms lead to electron transfer in ionic bonds. A large difference in electronegativity between a metal and a non-metal results in the formation of an ionic

bond as electrons are transferred from the less electronegative atom to the more electronegative atom.

Which of the following compounds is an example of an ionic compound?

A. H_2O
B. CO_2
C. NaCl ✓
D. CH_4

Which of the following best describes the structure of ionic compounds?

A. Amorphous solids
B. Crystaline solids ✓
C. Gaseous at room temperature
D. Liquid at room temperature

Which of the following are properties of ionic compounds?

A. High melting points ✓
B. Conduct electricity when dissolved in water ✓
C. brittle ✓
D. Low solubility in water

Which of the following statements about ionic bonds are true?

A. They involve the sharing of electrons.
B. They form between metals and non-metals. ✓
C. They result in the formation of ions. ✓
D. They have low lattice energy.