

## Exercise 0.62 – Bonding and structure

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**Q062-01** Which compound has the greatest ionic character?

- A. MgS
  - B. HCl
  - C. CO<sub>2</sub>
  - D. CaO
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**Q062-02** Which compound is most likely to be ionic?

- A. GaAs
  - B. ScBr<sub>3</sub>
  - C. NO<sub>2</sub>
  - D. ClO<sub>2</sub>
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**Q062-03** Which statements are generally true about the melting points of substances?

I - Melting points are higher for compounds containing ions than for compounds containing molecules.

II - A compound with a low melting point is less volatile than a compound with a higher melting point.

III - The melting point of a compound is decreases by the presence of impurities.

- A. I only
  - B. I and III only
  - C. II and III only
  - D. I, II and III
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**Q062-04** What kind of ions have, in general, the strongest interaction with water molecules in aqueous solution?

- A. ions with large electric charge and larger diameter
  - B. ions with small electric charge and small diameter
  - C. ions with large electric charge and small diameter
  - D. ions with small electric charge and large diameter
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**Q062-05** Tin(II) chloride is a solid with a melting point of 246 °C; tin(IV) chloride is a liquid with a freezing point of - 33 °C. These properties can be explained by:

- A. the greater covalence of SnCl<sub>4</sub> compared with that of SnCl<sub>2</sub>.
  - B. the greater formula weight of SnCl<sub>4</sub> compared with that of SnCl<sub>2</sub>.
  - C. the greater degree of ionic character of SnCl<sub>4</sub> compared with that of SnCl<sub>2</sub>.
  - D. the greater number of ionic and molecular particles in SnCl<sub>4</sub> with SnCl<sub>2</sub>.
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**Q062-06** Which compound has the least covalent character?

- A. SiO<sub>2</sub>
  - B. Na<sub>2</sub>O
  - C. MgCl<sub>2</sub>
  - D. CsF
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**Q062-07** Which compound dissolves in water to form a solution that does not conduct electricity?

- A. HCl
  - B. NaCl
  - C. CH<sub>3</sub>CH<sub>2</sub>OH
  - D. CH<sub>3</sub>COOH
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**Q062-08** Which is the most volatile substance?

- A. Chlorine
  - B. Fluorine
  - C. Sodium chloride
  - D. Sodium fluoride
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**Q062-09** Which statement is true for most ionic compounds?

- A. They contain elements of similar electronegativity?
  - B. They conduct electricity in the solid state
  - C. They are coloured
  - D. They have high melting and boiling points
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**Q062-10** Aluminium and oxygen combine together to form a compound that has a high melting point and is a good conductor of electricity when molten. Write an equation to represent the formation of this compound and explain in terms of structure and bonding why it has these properties.

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