

## Exercise 0.61 – Ionic bonding

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**Q061-01** What happens when sodium and oxygen combine together?

- A. Each sodium atom gains one electron
  - B. Each sodium atom loses one electron
  - C. Each oxygen atom gains one electron
  - D. Each oxygen atom loses one electron
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**Q061-02** What is the formula of an ionic compound formed by element X (group II) and element Y (group VI)

- A.  $X_3Y$
  - B.  $X_2Y$
  - C.  $XY_2$
  - D.  $XY$
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**Q061-03** Element X (group II) and element Y (group VII). Which ions will be present in the compound formed when X and Y react together?

- A.  $X^+$  and  $Y^-$
  - B.  $X^{2+}$  and  $Y^-$
  - C.  $X^+$  and  $Y^{2-}$
  - D.  $X^{2+}$  and  $Y^-$
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**Q061-04** Which statement gives incorrect information about the formation of  $NaCl(s)$  from  $Na(s)$  and  $Cl_2(g)$ ?

- A. Na is oxidized and Cl reduced.
  - B. An ionic lattice forms.
  - C. Both the ionization of Na and electron attachment to Cl are exothermic processes.
  - D. When NaCl forms from its gaseous ions, energy is released.
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**Q061-05** The compound formed between magnesium and oxygen is primarily:

- A. Ionic with a formula  $MgO$
  - B. Ionic with a formula  $MgO_2$
  - C. Covalent with a formula  $MgO$
  - D. Covalent with a formula  $MgO$
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**Q061-06** Explain why aluminium fluoride conducts electricity in the liquid state, but not in the solid state.

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**Q061-07** Magnesium chloride and silicon chloride have very different properties. Give the formula and physical states of each chloride at room temperature. State the conditions under which, if at all, each chloride conducts electricity

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**Q061-08** The letters W, X, Y and Z represent four consecutive elements in the periodic table. The number of electrons in the highest occupied energy levels are: W:3, X:4, Y:5, Z:6  
Write the formula for an ionic compound formed from W and Y showing the charges

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**Q061-09** The oxides of magnesium and silicon have high melting points whereas the oxides of phosphorus ( $P_4O_6$ ) and sulphur ( $SO_2$ ) have low melting points. Explain the difference in melting points by referring to bonding and structure in each case.

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**Q061-10** State the bonding in the oxides of sodium, magnesium, silicon and phosphorus. What happens to the pH of pure water when these oxides are added to separate samples of the water. Give equations for any reactions that occur.

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