Worksheet 1.2: Ionic Bonding & Giant Ionic Lattices ChemistrySheets

Specification: GCSE Chemistry (AQA 5.2.1.1 & 5.2.2.1 / Edexcel SC5 & SC6 / OCR Gateway C3.1a)

Core Concepts: Ionic bonds form between metals and non-metals by electron transfer. This creates oppositely charged ions which are held together by strong electrostatic forces in a giant ionic lattice structure.

Section A: Formation of Ions & Ionic Bonds

1. Figure 1 illustrates the formation of an ionic bond between a sodium atom and a chlorine atom.

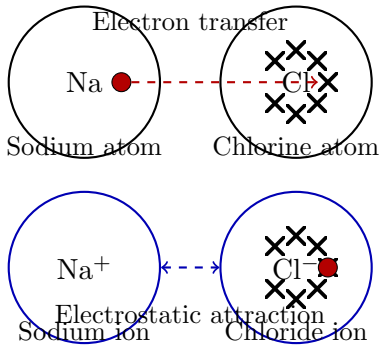

Figure 1: Formation of an ionic bond between sodium and chlorine.

2. Complete the following sentences about ionic bonding:

a) Atoms achieve a stable _____ by losing or gaining electrons to have the electron configuration of a _____.

b) Metals tend to _____ electrons to form _____ ions, also known as _____.

c) Non-metals tend to _____ electrons to form _____ ions, also known as _____.

d) The strong _____ of attraction between oppositely charged ions form an _____ bond.

Section B: Explaining Ionic Properties

1. Explain how a metal atom forms an ion.

2. Explain how a non-metal atom forms an ion.

3. Describe the nature of the electrostatic forces in an ionic bond.

4. Explain why ionic compounds typically have high melting and boiling points.

Section C: Giant Ionic Lattices & Conductivity

1. Figure 2 shows a 2D representation of a giant ionic lattice.

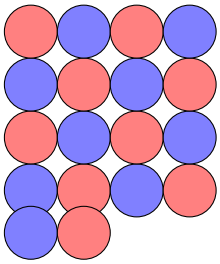

Figure 2: A 2D representation of a giant ionic lattice.

Describe the arrangement of ions in a giant ionic lattice.

2. Explain why solid ionic compounds do not conduct electricity, but molten or dissolved ionic compounds do. (6 marks)