Chapter 6 Summary

6.1 Ionic Compounds

Key Concepts

- The formation of ions involves the loss or gain of electrons. The ion(s) formed by an atom will depend on its atomic structure and number of valence electrons.
- Ionic compounds form when there is a transfer of electrons between atoms. An ionic bond is the attraction that holds positive ions and negative ions together.
- Most ionic compounds are composed of a metal and a non-metal. Ionic compounds have high melting points and tend to be soluble in water. Ionic compounds are good electrical conductors when melted or when dissolved in water.
- Road salt is commonly used to keep roads safe in the winter by reducing icy driving conditions. Nevertheless, because of its harmful effects on the environment, the frequency and amount of road salt used should be carefully considered.

6.2 Molecular Compounds

Key Concepts

- Most simple molecular compounds are composed of two or more atoms of different elements. These elements are usually two or more non-metals.
- The attraction between molecules is much weaker than the attraction between oppositely charged ions in an ionic crystal. This contributes to the differences in the properties of ionic compounds and some molecular compounds.
- Molecular compounds tend to have low melting points and low solubility in water, compared with ionic compounds. Many molecular compounds are also poor conductors of heat and electricity.
- Plastics are a large class of human-made molecular compounds. Their numerous uses include shopping bags and containers. There are, however, many environmental concerns associated with the use of plastics.

6.3 Modelling Compounds

Key Concepts

- Bohr-Rutherford models are two-dimensional models of compounds. A Bohr-Rutherford model shows the electron arrangement within each atom of a compound.
- Three-dimensional models can provide valuable information about compounds, including the spatial arrangement of the atoms or ions.
- Two types of three-dimensional models are ball-and-stick models and space-filling models. Ball-and-stick models show the overall shape of a molecule, and space-filling models emphasize the relative sizes of the atoms or ions.