

Year 12 Chemistry

WORKSHEET 2

Day 1

1. Electronegativity of elements increases across the period due to the
 - A. addition of new energy levels.
 - B. decrease in the nuclear charge.
 - C. increase in the shielding effect.
 - D. addition of electrons to the same energy level.
2. A discrete molecular solid has
 - A. electrostatic forces of attraction.
 - B. van der Waals forces of attraction.
 - C. 3-dimensional network of covalent bonds.
 - D. positive metal ions held by valence electrons.
3. Draw the **Lewis structure** of nitrogen trichloride (NCl_3) and determine its **electron group geometry**.

Day 2

4. A group of Year 12 students wanted to carry out an experiment to determine the polarity of water molecules.
 - i) Describe the experimental procedure students would use to determine the polarity of water molecules. (**Note:** The experimental procedure should include the use of a burette and a charged plastic ruler.)
 - ii) State an observation from this experiment.
 - iii) Provide a reason for the observation stated in part (ii) above.

Day 3

5. State a reason for the following properties of different solids mentioned below.

- i) Ionic solids, such as potassium chloride (KCl), conducts electricity in solution form.
- ii) Metallic solids, such as copper (Cu), is shinny and lustrous.
- iii) 3-dimensional solids, such as diamond, is very hard.

Day 4

- 6. The breaking down of the ionic lattice occurs in the presence of water as a solvent and is known as hydration. Draw a diagram showing the hydration of sodium chloride (NaCl) in water (H₂O).
- 7. Briefly explain the following statements:
 - (i) Graphite is a good conductor of electricity.
 - (ii) Isotopes of the same element show similar chemical properties.
 - (iii) The carbon tetrachloride (CCl₄) molecule is non-polar even though it contains polar bonds

Day 5

- 8. The empirical formula of ethene (C₂H₄) is CH₂. What do you understand by the term empirical formula?
- 9. Define oxidation in terms of electron transfer.
- 10. Find the oxidation number of Cr in Cr₂O₇²⁻ ion.