**11 CHEMISTRY- TERM 2**

| **TOPIC / TIMING (Weeks)** | **QCAA OBJECTIVES** | **LEARNING GOALS and SUCCESS CRITERIA** | **Notebook Page** |
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| **Bonding and properties**  **Week 1 (3 lessons)** | **Unit 1 Topic 2**  **Objectives 1, 2, 3, 4, 5, 7** | **SC 56:** I can recognise that the properties of ionic compounds, including high melting point, brittleness, and ability to conduct electricity when liquid or an aqueous solution, can be explained by modelling ionic bonding as ions arranged in a crystalline lattice structure with strong electrostatic forces of attraction between oppositely charged ions  **SC 57:** I can understand that the type of bonding within ionic, metallic and covalent substances explains their physical properties, including melting and boiling point, thermal and electrical conductivity, strength and hardness  **SC 58:** I can understand that hydrocarbons, including alkanes (saturated), alkenes (unsaturated) and benzene, have different chemical properties that are determined by the nature of the bonding within the molecules  **SC59:**I can I can analyse and interpret given data to evaluate the properties, structure and bonding of ionic, covalent and metallic compounds  **LG 13: Students can describe and identify the type of bonding present in simple ionic, metallic, and covalent substances.** |  |
| **Fuels Wk 2 (3 lsns)** | **Unit 1 Topic 3**  **Objectives** 6, 7 | **SC 60:** I can compare fuels, including fossil fuels and biofuels, in terms of their energy output.  **SC 61**: I can evaluate the suitability of fuels for their purpose and evaluate the nature of the products of combustion.  **LG 14: Students can compare fuels in terms of their energy output and evaluate their suitability for various purposes.** |  |
|  |  | **RESEARCH INVESTIGATION (Weeks 3, 4, 5, 6, 7)**  **Intermolecular forces and Reactions with acids will also be done during these weeks** |  |
| **Intermolecular forces**  **Week 5 (3 lessons)** | **Unit 2 Topic 1**  **Objectives 1, 2, 3, 4, 5, 7** | **SC 62:** I can apply the valence shell electron pair repulsion (VSEPR) theory to predict, draw and explain the shapes of molecules  **Mandatory Practical : Construct 3D models of linear, bent, trigonal planar, tetrahedral and pyramidal molecules**  **SC 63:** I can use molecular shape, understanding of symmetry, and comparison of the electronegativity of elements to explain and predict the polarity of molecules  **SC 64:** I can predict the intermolecular forces present in a covalent molecular substance  **SC 65:** I can explain the relationship between observable properties, including vapour pressure, melting point, boiling point and solubility, and the nature and strength of intermolecular forces, including dispersion forces, dipole–dipole attractions and hydrogen bonding within molecular covalent substances  **LG15: Students can understand VSEPR theory and explain the effect of IMF’s** |  |
| **Reactions with Acids Week 7 (3 lessons)** | **Unit 2: Topic 2 Objectives: 2,3,7** | **SC 66:** I can understand and apply the reactions of acids with bases, metals and carbonates to determine reactants and products  **Mandatory Practical : Construct 3D models of linear, bent, trigonal planar, tetrahedral and pyramidal molecules**  **SC 67:** I can construct and use appropriate representations, including ionic formulas, chemical formulas and chemical equations, to symbolise the reactions of acids and bases; and ionic equations to represent the reacting species and products in these reactions  **LG 16: Students can understand, apply and construct representations involving the reaction of acids with bases, metals and carbonates** |  |
| **pH**  **Week 8**  **(3 lessons)** | **Unit 2: Topic 2 Objectives: 6, 7** | **SC68**: I can recall that pH is dependent on the concentration of hydrogen ions in solution  **SC69**: I can use the pH scale to compare the levels of acidity or alkalinity of aqueous solutions  **SC70**: I can use the Arrhenius model to explain the behaviour of strong and weak acids and bases in aqueous solutions  **Mandatory practical: Investigate the properties of strong and weak acids.**  **LG17: Students can understand the meaning of pH and investigate the properties of strong and weak acids.** |  |
| **Aqueous solns and Molarity**  **Weeks 9, 10 (5 lessons)** | **Unit 2 Topic 2**  **Objectives** 1, 2, 3, 4 | **SC71:** I can understand that the unique properties of water, including boiling point, density in solid and liquid phases, surface tension and ability to act as a solvent can be explained by its molecular shape and hydrogen bonding between molecules.  **SC72:** I can distinguish between the terms *solute*, *solvent*, *solution* and *concentration*  **SC73:** I can distinguish between unsaturated, saturated and supersaturated solutions  **SC74:** I can recall and use in calculations that concentration can be represented in a variety of ways including by the number of moles of the solute per litre of solution (mol L-1) and the mass of the solute per litre of solution (g L-1) or parts per million (ppm)  **LG18: Students can use appropriate mathematical representations to solve and make predictions (including using the mole concept and the relationship between the number of moles of solute, concentration and volume of a solution) to calculate unknown values** |  |