

**Year 10 CHEMISTRY (IGCSE) LONG TERM PLAN with CURRICULUM STANDARDS**

| Year 10 CHEM              | WEEK 1   | WEEK 2  | WEEK 3  | WEEK 4  | WEEK 5   | WEEK 6   | WEEK 7  | WEEK 8                       |
|---------------------------|--|---|---|---|--|--|---|------------------------------|
| T<br>E<br>R<br>M<br><br>1 | Y 10/CHE (6)   |   | Y 10/CHE (8)  |   | Y 10/CHE (4)   | Y 10/CHE (12)  |   |                              |
|                           |  | States of matter  | Elements, compounds and mixtures  |   | Atomic structure   | The periodic table   |   |                              |
|                           | Baseline test  | Compare the arrangement and movement of particles in solid, liquid and gases. Evaluate how the results of experiments involving the dilution of coloured solutions and diffusion of gases can be explained. Plot and interpret solubility curves. Investigate the solubility of a solid in water at a specific temperature.<br><a href="#">Assessment 1</a> | Classify a substance as an element, compound or mixture. Analyse paper chromatography as the separation of mixtures of soluble substances by running a solvent (mobile phase) through the mixture on the paper (the paper contains the stationary phase), which causes the substances to move at different rates over the paper. Describe the experimental techniques of separation of mixtures by different techniques like paper chromatography and distillation.<br><a href="#">Assessment 2</a> |   | Elaborate the structure of an atom in terms of the positions, relative masses and charges of sub-atomic particles. Describe the structure of an atom in terms of the positions, relative masses and relative charges of sub-atomic particles   | Deduce the electronic configurations of the first 20 elements from their positions in the Periodic Table. Identify an element as a metal or a non-metal according to its position in the Periodic Table. Relate the electronic configuration of a main group element to its position in the Periodic Table. Reason out why elements in the same group of the Periodic Table have similar chemical properties. Reason out why the noble gases (Group 0) do not readily react. Use patterns in the Periodic Table to interpret data and predict properties of elements. Draw the electron arrangements for He, Ne and Ar. Correlate the properties with outer shell electrons.<br><a href="#">Assessment 3</a> |   |                              |
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| T<br>E<br>R<br>M<br><br>1 | Y 10/CHE (8)   |   | Y 10/CHE (4)  | Y 10/CHE (4)  | Y 10/CHE (12)  |  |   |                              |
|                           | Ionic Bonding  |   | Covalent Bonding  | Metallic bonding  | Chemical formulae, equations and calculations  |  |   |                              |
|                           | Understand how ions are formed by electron loss or gain. Predict the formulae of ionic compounds ending with -ide and ate. Draw dot-and-cross diagrams to show the formation of ionic compounds by electron transfer, limited to combinations of elements from Groups 1, 2, 3 and 5, 6, 7 only outer electrons need be shown. Reason out why compounds with giant ionic lattices have high melting and boiling points. <a href="#">Assessment 4</a>  |   | Define that a covalent bond is formed between atoms by the sharing of a pair of electrons. Use dot-and-cross diagrams to represent covalent bonds in simple molecules like water, carbon dioxide.   | Know how to represent a metallic lattice by a 2D diagram. Predict the metallic bonding in terms of electrostatic attraction. Compare physical properties including conductivity and malleability.<br><a href="#">Assessment 5,6</a>   | Compare the word and balanced equations for familiar and unfamiliar reactions. Define one mole of a substance. Identify Avogadro's constant as $6.023 \times 10^{23}$ . Use the formula $n = m / Ar$ or $n = m / Mr$ . Calculate the moles of particles of a substance. Calculate reacting masses using experimental data and chemical equations. Differentiate between percentage yield and theoretical yield. Carry out experiments to find the formula of magnesium oxide. Differentiate between empirical formula and molecular formula. Use the formula $C = n / V$ to calculate the concentration in $g / dm^3$ . Use the formula $n = V / V_m$ to calculate the amount of gas. <a href="#">Assessment 7</a> |  |   | REVISION FOR FIRST TERM EXAM |
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| T<br>E<br>R<br>M<br><br>2 | Y 10/CHE (8)   |   | Y 10/CHE (8)  |   | Y 10/CHE (4)   | Y 10/CHE (4)   | Y 10/CHE (8)  |                              |
|                           | Group 1 and Group 7  |   | Gases in the atmosphere   |   | Reactivity series  | Extraction   | Acids, alkalis and titration  |                              |
|                           | Use knowledge of trends in Group 1 to predict the properties of other alkali metals. Predict the trend in reactivity in all the members in the group 1 and 7. Write the balanced symbol equation of hydrogen with halogens with state symbols and predict reaction of other hydrogen other halogens. <a href="#">Assessment 8</a>  |   | Compare the approximate percentages by volume of the four most abundant gases in dry air. State that carbon dioxide and methane are greenhouse gases and explain how they may contribute to climate change. Plan an investigation to determine the approximate percentage by volume of oxygen in air.   |   | Describe how metals can be arranged in a reactivity series based on their reactions with water dilute hydrochloric or sulfuric acid.   | Outline the method of separating metals from their ores. Define an alloy. Relate the uses of metals are related to their properties.<br><a href="#">Assessment 9,10</a>  | Carry out the identification of different types of acids and alkalis using different types of indicators. Establish the relationship between hydrogen ion concentration in a solution and the pH of the solution. Experiment the titration of hydrochloric acid with sodium hydroxide.<br><a href="#">Assessment 11</a> |                              |
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| T<br>E<br>R<br>M<br><br>2 | Y 10/CHE (12)  |   |   | Y 10/CHE (12)   |  |  |   |                              |
|                           | Acids, bases and salt preparations   |   |   | Chemical tests  |  |  |   |                              |
|                           | Identify the general rules which describe the solubility in water. Define acids and bases in terms of proton transfer, in aqueous solutions. Write balanced chemical equations for the reaction of acids with hydroxides, carbonates and oxides of the listed metals. Plan an experiment to prepare a pure, dry sample of a soluble salt, starting from an acid and alkali. Plan an experiment to prepare a pure, dry sample of an insoluble salt, starting from two soluble reactants. practical. Prepare a sample of pure, dry hydrated copper(II) sulfate crystals. <a href="#">Assessment 12</a> |   |   | Reasons out why flame test is a 'qualitative' method of analysis. Predict why ions must not give same positive result with two or more different ions. Carry out tests for the cations like $NH_4^+$ using sodium hydroxide solution and identifying the gas evolved $Cu^{2+}$ , $Fe^{2+}$ and $Fe^{3+}$ using sodium hydroxide solution. Carry out tests $Cl^-$ , $Br^-$ and $I^-$ using acidified silver nitrate solution $SO_4^{2-}$ using acidified barium chloride solution $CO_3^{2-}$ using hydrochloric acid. <a href="#">Assessment 13</a> |  |  | REVISION FOR FINAL EXAM   |                              |