

**CHEMISTRY FORM THREE TERM ONE 20... ..**

WK NO.	L/ NO	TOPIC/ SUBTOPIC	LESSON/SPECIFIC OBJECTIVES	TEACHING/LEARNING ACTIVITIES	MATERIALS / RESOURCES	REF	REMARKS
1	1	<b>GAS LAWS</b>  Boyle's law.	<u>By the end of the lesson, the learner should be able to:</u>  State Boyle's law. Explain Boyle's law using kinetic theory of matter.	Teacher demonstration – Use syringes / pumps to show variation of volume with pressure. Teacher asks probing questions leading to statement of the law. Discuss the cause of build-up-in pressure.	Chart Volume-pressure relationship.  Syringes.	<b>K.L.B. BK III</b> PP. 1-2  <b>Longhorn Book III</b> PP 1 -2	
	2	Boyle's law: - Equation and graphical representation.	Represent Boyle's law mathematically and graphically.	Q/A: relation between volume and pressure mathematically and graphically. Derive the relation $P_1V_1=P_2V_2$ , and sketch graphs to illustrate Boyle's law. Worked examples. Assignment.		<i>K.L.B. BK III</i> PP. 3-4  <i>Longhorn Book III</i> PP 3-5	
	3 & 4	Boyle's law: Numerical questions.	Solve further problems involving Boyle's law.	Supervised exercise: Volume in $\text{cm}^3$ , $\text{m}^3$ , litres, and pressure in Pa, mmHg, cmHg, atmospheres. Assignment.	Calculators.	<i>K.L.B. BK III</i> PP. 4-5 <i>Longhorn Book III</i> PP 6-8	
	5	Boyle's law: Interpretation of graphs.	Plot and intepret graphs involving pressure and volume of gases.	Completing tables and plotting graphs. Interpret the plotted graphs. Make deductions from the graphs.	Graph papers.	<i>K.L.B. BK III</i> PP. 4-5	

2	1	Charles' law.	<u>By the end of the lesson, the learner should be able to:</u> State Charles' law. Explain Charles' law using kinetic theory of matter.	Teacher demonstration:- To show expansion of air when heated and contraction when pressure is constant. Explain increase in volume when temperature is raised. Q/A: - relation between volume and temperature, leading to Charles' law.	Coloured water, Glass tube, Warm water, Cork and Flask.	<b>.K.L.B.</b> <b>BK III P. 6</b>  <i>Longhorn Book III PP 9-11</i>	
	2,3	Temperature in Degree Celsius and Kelvin.  Equation and graphs from Charles' law.	Convert temperature in degree Celsius to Kelvin and vice-versa.	Teacher explains inter-conversion of the units. Students complete a table of temperature in the two units.		<b>K.L.B.</b> <b>BK III P. 10</b>  <i>Longhorn Book III P 11</i>	
	3	Charles' law- equation and graphical representation.	Express Charles' law with equations.  Give a graphical representation of Charles' law.	Derive equations from volume and temperature relationship.  Exposition: - Teacher exposes a volume-temperature graph and extrapolates it to obtain the absolute temperature. The definition of absolute temperature is exposed.		<b>K.L.B. BK III</b> <b>PP. 6-7</b>  <i>Longhorn Book III P 10</i>	
	4	Numerical questions on Charles' Law.	Solve numerical problems based on Charles' Law.	Worked examples. Supervised exercise.  Assignment.	Calculators.	<b>K.L.B.</b> <b>BK III P. 12</b>  <i>Longhorn Book III PP 12-14</i>	
	5	Combined Gas Law.	Derive the Gas Law. Derive the combined gas law equation. Solve numerical problems using the equation.	Q/A: - Combining Boyle's and Charles' Laws. Worked examples.	Calculators.	<b>K.L.B.</b> <b>BK III P. 12</b>  <i>Longhorn Book III PP 14-16</i>	
3	1	Standard conditions, S.T.P. conditions and R.T.P. conditions.	State standard conditions of temperature and pressure of an ideal gas. State room temperature and pressure of a gas. Use standard conditions in problem solving.	Exposition of s.t.p. and r.t.p.  Problem solving.		<b>K.L.B.</b> <b>BK III P. 14</b>	

3	2	Diffusion.	<i>By the end of the lesson, the learner should be able to:</i> Define diffusion. Describe experiments to show diffusion.	Group experiments. Diffusion of $\text{KMnO}_4$ crystals, concentrated ammonia solution.	$\text{KMnO}_4$ crystals, Litmus papers.	<b>K.L.B. BK III</b> PP. 14-15  <i>Longhorn Book III P 19</i>
	3	Rates of diffusion.	Compare rates of diffusion of ammonia gas and hydrogen chloride in air.	Teacher demonstration: - To deduce rate of diffusion of ammonia gas and hydrogen chloride. Q/A: - Students calculate ratio of rates of diffusion of the gases.		<b>K.L.B. BK III</b> PP. 18-19 <i>Longhorn Book III 21</i>
	4	Graham's Law.	State Graham's Law.  Represent Graham's Law mathematically.	Review the experimental results above. Compare the rates of diffusion with density of a gas leading to Graham's Law. Q/A: - Graham's Law using mathematical expressions. Worked examples.		<b>K.L.B. BK III</b> PP. 22-23  <i>Longhorn Book III PP 22-24</i>
	5	Graham's Law.	Carry out numerical tasks.	Solve problems involving RMM, equal volumes of the gases involved. Supervised practice. Assignment.	Calculators	<b>K.L.B. BK III</b> PP. 24-26  <i>Longhorn Book III PP 22-24</i>
4	1	<b>THE MOLE</b>  Mole, molar mass and R.A.M.	Define the term mole as a quantity of measurement. Relate the mole to R.A.M and molar mass.	Discuss various analogies that lead to the definition of the mole. Expose the meaning of R.A.M., Avogadro's constant and molar mass.	Chart- table of molar masses of elements.	<b>K.L.B. BK III</b> PP. 27-31 <i>Longhorn Book III PP 34-35</i>
	2	Number of moles in a substance.	Calculate number of moles in a given mass of a substance.	Worked examples. Supervised practice.		<b>K.L.B. BK III</b> P. 34 <i>Longhorn BK III PP 39-40</i>
	3 & 4	Relative molecular mass & Relative formula mass.	Define relative molecular mass. Calculate RMM of a compound.	Q/A: - Review formulae of compounds. Complete a table of compounds and their molecular / formula mass.	Calculators.	<b>K.L.B. BK III</b> PP. 34-35  <i>Longhorn Book III PP 44-60</i>

	5	Moles and Avogadro's number.	Calculate number of particles in a given number of moles.	Review standard form of numbers. Worked examples. Supervised exercise.	Calculators.	<b>K.L.B.BK III</b> PP. 3132 Longhorn Book III PP 30-31	
5	1 & 2	Empirical Formula.	<u>By the end of the lesson, the learner should be able to:</u> Define the term empirical formula of a compound. Determine empirical formula experimentally.	Group experiments: - Burning magnesium / copper in air to obtain mass of metal and mass of oxygen involved. Determine mole ratio, hence the empirical formula.		<b>K.L.B.BK III</b> PP. 41  Longhorn Book III PP 64-71	
	3	Empirical Formula.	Determine empirical formula of a compound given percentage composition by mass.	Worked examples. Supervised practice.  Assignment.		<b>K.L.B. BK III P. 43</b>  Longhorn Book III PP 66-71	
	4 & 5	Molecular formula.	Define molecular formula of a compound. Find molecular formula given percentage composition of a compound by mass.	Worked examples.  Supervised practice.	Calculators.	<b>K.L.B.BK III</b> P. 45  Longhorn Book III PP 73-75	
6	1	Concentration of a solution.	Define concentration of a solution. Find concentration of a solution in grams/litre and moles/litre.	Q/A: - Equivalent ratios, e.g. 4g dissolved in 500cm <sup>3</sup> and 8g in 1 litre. Worked examples on concentration of solutions.		<b>K.L.B. BK III</b> PP. 46-48  Longhorn Book III PP 76-81	
	2	Molarity of a solution.	Define molarity of a solution. Find molarity of a solution in M/dm <sup>3</sup>	Teacher explains that molarity of a solution is given in moles of the solute per litre. Worked examples. Supervised exercise.		<b>K.L.B. BK III</b> PP. 48-49  Longhorn Book III PP 76-81	
	3	Preparation of molar solutions.	Define molar solutions. Prepare molar solutions.	Q/A: - Description of preparation of molar solutions.	Volumetric flasks, teat droppers/wash bottle. Sodium hydrogen pellets. Weighing balance.	<b>K.L.B. BK III</b> PP. 50-51  Longhorn Book III PP 78-81	

	4	Calculators on molar solutions.	Solve numerical calculations on molar solutions. Problems on molar solutions.	Worked examples. Supervised exercise. Assignment.		<i>K.L.B. BK III P 51 Longhorn Book III PP 76-81</i>	
	5	Dilution of solutions.	Calculate molarity of a solution after dilution.	Group experiments. Calculations.		<i>K.L.B. BK III PP. 76-81</i>	
7	1	Stoichiometry of a chemical reaction.	To determine mole ratio of given reactions.	Group experiments: - Determine masses, hence moles of reacting $\text{CuSO}_4$ solution and iron metal.	$\text{CuSO}_4$ solution and iron metal.	<i>K.L.B. BK III P. 56 Longhorn Book III PP 87-92</i>	
	2	Stoichiometric equations.	To define a stoichiometric equation.	To write stoichiometric equations of the above reactions.		<i>K.L.B. BK III Longhorn Book III PP 14-16 PP. 88-93</i>	
	3,4	Stoichiometric equations of various reactions.	To investigate and determine Stoichiometric equations of various reactions.	Class experiments.  Problem solving.		<i>K.L.B. BK III P. 62</i>	
	5	<b>C.A.T.</b>					
8	1	<b>Volumetric Analysis.</b>  Apparatus used in titration experiments.	To use and read a pipette and a burette.	Discussion and practical use of the apparatus. <i>Emphasis is laid on need to sterilize the apparatus after use.</i>	Pipettes Burettes.	<i>K.L.B. BK III PP. 63-64 Longhorn Book III PP 104-8</i>	
	2	Titration process.	To define titration as a process. Define a titration end-point.	Review by Q/A: - -Indicators and colour changes. -Choice of indicators. -Balanced chemical equations. Discuss characteristics of a good titre, when an an-end point is attained.	Indicators Suitable acid and base.	<i>K.L.B. BK III PP. 64-67  Longhorn Book III PP 108-114</i>	
	3,4	Titration experiment (Neutralization reaction)	To carry out a titration experiment and obtain accurate results.	Class experiments: - To neutralize HCl with NaOH solution. Fill in a table of results. Find the average base used.		<i>K.L.B. BK III P. 66  Longhorn Book III PP 108-114</i>	
	5	Titration experiment (Neutralization reaction)	To carry out calculations from experimental results.	Step-by-step calculations.	Calculators.	<i>K.L.B. BK III P 66 Longhorn Book III PP 108-114</i>	

9	1	Basicity of an acid.	To define basicity of an acid.	Complete a table of number of replaceable hydrogen ions of an acid; hence define basicity of an acid. Write corresponding ionic equations.		<i>K.L.B. BK III P. 73</i>	
	2	Standardization of HCl.	To define standardization of HCl.	Class experiments.	Dilute HCl, Na <sub>2</sub> CO <sub>3</sub> solutions.	<i>K.L.B. BK III PP. 74-75</i>	
	3	Concentration of HCl.	To calculate concentration of HCl from experimental results.	Calculations & supervised practice.		<i>K.L.B. BK III PP. 74-75</i>	
	4 & 5	Redox Titration Reactions.	To standardize a solution with an iron (II) salt.	Experiment and calculations.	Potassium Magnate (VII)	<i>K.L.B. BK III PP. 74-75  Longhorn Book III PP 114-115</i>	
10	1	Water of crystallization.	To determine amount of water of crystallization in ammonium iron sulphate crystals.	Teacher exposes the formula of water of crystallization. Class experiment. Filling in a table of results.	Ammonium Iron (II) Sulphate crystals. Dilute sulphuric (VI) acid.	<i>K.L.B. BK III P. 76</i>	
	2	Formula mass of ammonium iron (II) sulphate.	To find formula mass of ammonium iron (II) sulphate.	Calculations from experimental results.		<i>K.L.B. BK III PP. 76 -77</i>	
	3	Formula mass of a given salt.	To solve numerical problems involving water of crystallization.	Problem solving from sample results.		<i>K.L.B. BK III P.77</i>	
	4	Atomicity of gases.	To define atomicity of gases.	Review by Q/A atoms and molecules; hence the definition. Discuss a table of gases and their atomicity.		<i>K.L.B. BK III PP. 78 -80 Longhorn BK III PP 126-128</i>	

	5	Mass and volume of gases.	To determine mass and volume of gases.	Teacher demonstration: - Determining mass of known volumes of oxygen / CO <sub>2</sub> .	Lubricated syringes Oxygen/ CO <sub>2</sub> .	<i>K.L.B. BK III P. 81 Longhorn BK III PP 126-127</i>	
11	1	Molar gas volume.	To define molar gas volume.	Use the above results to describe volume of one mole of a gas. Discuss molar gas volume at R.T.P and S.T.P conditions.		<i>K.L.B. BK III 79 – 80 Longhorn Book III PP 126-127</i>	
	2	Combining volumes of gases.	To compare combining volumes of two reacting gases.	Teacher demonstration: - Determining volumes of reacting gases; hence deduce volume ratios.		<i>K.L.B BK III P. 82</i>	
	3 & 4	Gay Lussac's Law.	To state Gay Lussac's Law. To compare Gay Lussac's Law with Avogadro's Law. To solve numericals using Gay Lussac's Law.	Teacher exposes the law; and compares it with Gay Lussac's Law. Worked examples. Supervised practice.		<i>K.L.B. BK III P. 85  Longhorn Book III PP 129-131</i>	
	5	<b>END OF TERM ASSESSMENT TEST</b>					

*FORM THREE CHEMISTRY TERM TWO YEAR 20.....*

1	1	<b>ORGANIC CHEMISTRY (I)</b> Hydrocarbons.	To define organic Chemistry. To define a hydrocarbon. To identify groups of hydrocarbons. To describe the carbon atom.	Discuss composition of the carbon atom; hence deduce number of valence electrons. Exposition of new terms.		K.L.B. BK III <i>P. 92</i> <i>Longhorn Book III</i> <i>P 135</i>	
	2	Alkanes.	To identify various alkanes. To list sources of alkanes. To state uses of different fractions of crude oil. To define cracking of alkanes.	Expose various alkanes. Discuss the biomass digester, fractional distillation of crude oil and uses of the fractions. Discuss the cracking process.	Chart of biomass digester.	K.L.B. BK III <i>PP. 93-94</i>  <i>Longhorn Book III</i> <i>PP 135-6</i>	
	3	Naming Alkanes.	To identify various alkanes. To define a homologous series.	Discussion and exposition of new concepts.		K.L.B. BK III <i>PP. 94-98</i> <i>Longhorn Book III</i> <i>PP 136-139</i>	
	4	Members of Alkane series.	To name members of alkane series and identify their characteristics. To draw the structures of alkane series.	Discussion and exposition of new concepts.	Chart-structure of alkanes.	K.L.B. BK III <i>PP. 97-99</i>  <i>Longhorn Book III</i> <i>PP 137-9</i>	
	5	Isomerism in alkanes.	To draw and name isomers of simple hydrocarbons.	Discussion and exposition of new concepts.	Models.	K.L.B. BK III <i>PP. 101-102</i> <i>Longhorn Book III</i> <i>PP 141-2</i>	
2	1	Laboratory preparation of a given alkane.	To describe laboratory preparation of a given alkane. To state physical properties of the gases prepared.	Teacher demonstration. Discussion.	Sodium ethanoate, sodalime, Pestle and mortar.	K.L.B. BK III <i>P. 103</i>  <i>Longhorn Book III</i> <i>PP 146</i>	



2	2	Trend in physical properties of alkanes.	To describe the trend in physical properties of alkanes.	Study a table of comparative properties of alkanes. Make deductions from the table.		K.L.B. BK III <i>P. 105</i>  <i>Longhorn Book III PP 148-9</i>	
	3	Chemical properties of alkanes.	Describe chemical properties of alkanes.	Discussion Examples of balanced equations.		K.L.B. BK III <i>P. 107</i> <i>Longhorn Book III PP 148-9</i>	
	4	Substitution reactions involving alkanes.  Uses of alkanes.	To describe substitution reactions involving alkanes.  To list down uses of alkanes.	Discussion  Teacher elucidates uses of alkanes.		K.L.B. BK III <i>P. 108</i>  <i>Longhorn Book III PP 149-50</i>	
	5	Alkenes.  Molecular formulae of alkenes.	To write molecular formulae of alkenes.	Examine table of members of alkenes. To identify members of alkene series.		K.L.B. BK III <i>PP 153-4</i>	
3	1	Naming alkenes.	To name various alkenes.	Q/Q: Nomenclature in alkenes. Compare alkenes; hence deduce names of various alkenes.		K.L.B. BK III <i>PP. 110-113</i> <i>Longhorn Book III PP 154-6</i>	
	2	Alkene isomerism.	Differentiate between branching and positional isomerism.	Discussion and drawing of molecular structures.		K.L.B. BK III <i>P. 113</i> <i>Longhorn Book III PP 158-60</i>	
	3	Preparing ethene in the lab.	To describe lab preparation of ethene.	Teacher demonstration: - Carry out tests on ethene as students note down the observations in a table.		K.L.B. BK III <i>P 162</i>	
	4	Physical properties of ethene.	To describe physical properties of ethene and other alkenes.	To discuss physical properties of ethene and other alkenes.		K.L.B. BK III <i>PP. 116-117</i> <i>Longhorn Book III PP 126-129 165-6</i>	

	5	Chemical properties of ethene.	To explain halogenation and hydrogenation reactions.	Discussion and drawing structures.		<i>KLB BK III PP. 118-119 Longhorn Book III PP 166-8</i>	
4	1	Alkenes and oxidizing agents.	To describe reactions of alkenes with oxidizing agents.	Review the double bonds in alkenes. Review reduction process, oxidizing agent. Discuss reactions of alkenes with conc. H <sub>2</sub> SO <sub>4</sub> , acidified potassium chromate. Expose hydrolysis process.		<i>K.L.B. BK III PP. 120-121  Longhorn Book III PP 166-8</i>	
	2	Uses of alkenes & Topic review.	To list down uses of alkenes.	Teacher elucidates uses of alkenes.  Assignment.		<i>K.L.B. BK III P. 121 Longhorn Book PP 170-1</i>	
4	3,4	<b>Alkynes.</b>  Nomenclature.	To identify various alkynes. To name and draw structures of alkynes.	Discuss a table of members of alkynes. Review naming of alkanes and alkene and compare this with naming of alkynes.		<i>K.L.B. BK III P. 122-123 Longhorn Book III PP 126-129 171-5</i>	
	5	Isomerism in alkynes.	To draw structure showing positional and branching isomerism.	Discussion and drawing structures.		<i>K.L.B. BK III PP. 124-125 Longhorn Book III PP 176-8</i>	
5	1	Physical properties of ethyne.	To list down physical properties of ethyne.	Teacher demonstration: Preparation of ethyne. Deduce properties of other alkynes.		<i>K.L.B. BK III PP. 125-126 Longhorn Book III PP 197-80</i>	
	2	Chemical properties of ethyne.	To describe combustion, halogenation and hydrogenation processes.	Discussion and writing of equations.		<i>K.L.B. BK III PP. 127-129 Longhorn Book III PP 180-184</i>	

	3	Tests for alkynes. Uses of alkynes.	To describe tests for alkynes and state uses of alkynes.	Discussion and explanations.  Assignment.		K.L.B. BK III <i>P.130</i>  <i>Longhorn Book III</i> <i>PP 180-84</i>	
	4	<b>NITROGEN &amp; ITS COMPOUNDS.</b>  Isolation of nitrogen from air.	Describe isolation of nitrogen from air.	Teacher demonstration, explanations and equations.	Aspirator, copper turnings, gas jar, combustion tube, trough.	K.L.B. BK III <i>PP. 134-135</i>  <i>Longhorn Book P 186</i>	
	5	Industrial production of nitrogen.	Describe industrial production of nitrogen.	Discussion and description. Drawing schematic diagram for the process.		K.L.B. BK III <i>PP.135-136</i>  <i>Longhorn Book PP 188-9</i>	
6	1	Lab. preparation of nitrogen.	Describe lab preparation of nitrogen.	Teacher demonstration: Students' record observations made from tests on the gas. Writing equations of reactions.	Ammonium chloride, sodium nitrate	K.L.B. BK III <i>P. 137</i>  <i>Longhorn Book III</i> <i>P 190-1</i>	
	2	Physical and chemical properties of nitrogen.  Uses of nitrogen.	State physical and chemical properties of nitrogen.  List down uses of nitrogen.	Discussion and writing equations.		K.L.B. BK III <i>P. 138</i>  <i>Longhorn Book III</i> <i>PP 191-2</i>	
6	3,4	Nitrogen (I) oxide. Lab preparation.	To describe Nitrogen (I) oxide.	Teacher demonstration: - Carry out tests on the gas. Students record observations in a table. Guided discussion.	Ammonium nitrate.	K.L.B. BK III <i>PP. 139-141</i>  <i>Longhorn Book III</i> <i>PP 195-6</i>	
	5	<b>C.A.T.</b>					

7	1	Properties and uses of Nitrogen (I) oxide.	To list down physical properties of nitrogen (I) oxide. To describe chemical properties of nitrogen (I) oxide. To list down uses of nitrogen (I) oxide.	Q/A: Deductions from tests carried out. Discussion of chemical properties and writing of equations.  Teacher elucidates uses of nitrogen (1) oxide.		K.L.B. BK III <i>P. 141</i> <i>Longhorn Book III</i> <i>PP 191-2</i>	
	2	Nitrogen (II) oxide. Lab preparation.	To describe lab preparation of nitrogen (II) oxide.	Class experiment: Preparation and carrying out tests on the gas. Observations recorded in a table.	Dil nitric acid, copper turnings.	K.L.B. BK III <i>P. 142</i> <i>Longhorn Book III</i> <i>PP 200-1</i>	
	3	Properties of the gas.	To list down physical properties of nitrogen (II) oxide To describe chemical properties of nitrogen (II) oxide	Q/A: Deductions from tests carried out. Discussion of chemical properties and writing of equations. Carry out a confirmatory test for the presence of the gas.		K.L.B. BK III <i>P. 143</i>  <i>Longhorn Book III</i> <i>PP 192-200</i>	
	4	Nitrogen (IV) oxide Lab preparation.	To describe nitrogen (IV) oxide lab preparation.	Teacher demonstration: - Preparation of the gas and corresponding equation. Tests on the gas and make observations.	Conc. nitric acid, copper turnings.	K.L.B. BK III <i>PP. 144-145</i>	
	5	Properties of Nitrogen (IV) oxide.	To list down physical properties of nitrogen (IV) oxide To describe chemical properties of nitrogen (IV) oxide To state uses of nitrogen (IV) oxide.	Deduce physical properties from the table of observations. To describe chemical properties from the table of observations. Discuss uses of nitrogen (IV) oxide.		K.L.B. BK III <i>PP. 144-147</i>  <i>Longhorn Book III</i> <i>P 204</i>	
8	1	Ammonia.  Lab preparation of ammonia.	To describe lab preparation of ammonia	Q/A: Structure of ammonia. Group experiments: Preparation of ammonia. Tests on the gas.	Ca(OH) <sub>2</sub> , NH <sub>4</sub> Cl Solutions, CaO, litmus papers.	K.L.B. BK III <i>PP. 147-148</i>	

8	2	Properties of ammonia.	To list down physical properties of ammonia.	Deduce physical properties from the observations above. Discuss chemical properties from the observations above. Write down chemical equations.		K.L.B. BK III <i>P. 150</i>	
	3	Solubility of ammonia.	To describe an experiment to determine solubility of ammonia.	Teacher demonstration.  Discussion.		K.L.B. BK III <i>P. 150</i>	
	4 & 5	Reaction of ammonia with metal ions.	To prepare aqueous solution of ammonia.  To carry out tests of aqueous ammonia on metal ions.	Teacher demonstration: - Preparation of aqueous solution of ammonia.  Class experiments: - Students record observations when drops of aqueous ammonia are added, then in excess.	2 cm <sup>3</sup> Solutions containing various metal ions.	K.L.B. BK III <i>PP. 152-153</i>	
9	1	Ionic equations of above reactions.	To write ionic equations of above reactions.	Discuss precipitation of metal hydroxides by aqueous ammonia. Confirmatory tests for various concentrations.		K.L.B. BK III <i>P.154</i>  <i>Longhorn BK III</i> <i>P 223</i>	
	2	Burning ammonia in the air.	To describe burning ammonia in the air.	Teacher demonstration Discussion Chemical equations of reactions.	Conc. Ammonium solution Hot platinum rod Oxygen.	K.L.B. BK III <i>P. 158</i> <i>Longhorn Book III</i> <i>PP 219</i>	
	3	Reaction of ammonia with copper (II) Oxide.	To name products formed when ammonia reacts with hot CuCl <sub>2</sub> solid. To explain reducing properties of ammonia.	Teacher demonstration and discussion. Write down equations for the reactions.	Granular CuCl <sub>2</sub> Combustion tube, Dry ammonia U-tube Gas jar.	K.L.B. BK III <i>P. 158</i>	
9	4	Haber process.	Identify raw materials for Haber process and how they are obtained in large scale. Discuss the Haber process. Represent Haber process in a schematic diagram.	Discussion and explanations.	Chart-schematic diagram.	K.L.B. BK III <i>PP. 159-160</i> <i>225-226</i>	

	5	Uses of ammonia.	To list down uses of ammonia. To list down nitrogenous fertilizers.	Teacher elucidates uses of ammonia and nitrogenous fertilizers.		K.L.B. BK III <i>P. 161</i>  <i>Longhorn Book III PP 126-226</i>	
10	1	Nitric acid. Lab preparation.	To describe lab preparation of nitric acid.	Teacher demonstration. Write equations of reaction. Discussion.	Retort stand Conc. H <sub>2</sub> SO <sub>4</sub> KNO <sub>3</sub>	K.L.B. BK III <i>P. 163</i>	
	2	Nitric acid Industrial manufacture.	To describe industrial manufacture of nitric acid.	Discussion and writing equations.	Chart Schematic diagram.	K.L.B. BK III <i>P. 164</i>	
	3 & 4	Reaction of dilute Nitric acid with metals.	To describe reaction of dilute nitric acid with metals. To write equations of reactions of dilute nitric acid with metals.	Class experiment:- making observations and recording them in a table. Discuss the observations. Write down equations for the reactions.	Magnesium Zinc Copper	K.L.B. BK III <i>PP. 165-166</i>  <i>Longhorn Book III PP 166-8</i>	
	5	Nitric acid and carbonates.	To describe action of nitric acid on carbonates and hydrogen carbonates.	Group experiments: - Action of Nitric acid on hydrogen carbonates.	Solutions of Na <sub>2</sub> CO <sub>3</sub> NaHCO <sub>3</sub> ZnCO <sub>3</sub> CuCO <sub>3</sub>	K.L.B. BK III <i>P. 167</i>  <i>Longhorn Book III 229-30</i>	
11	1	Reaction of dil. nitric acid with hydrogen carbonates.	Write equations for reaction of dil. nitric acid with hydrogen carbonates.	Discussion and corresponding equations.		K.L.B. BK III <i>P. 167</i>	
	2	Dilute nitric acid and metal hydroxides and oxides.	Predict results of reacting dilute nitric acid with metal hydroxides and oxides.	Group experiments & writing equations for the reactions.	Metal hydroxides.	K.L.B. BK III <i>P. 168</i>  <i>Longhorn Book III PP 238-240</i>	

	3 & 4	Reaction of nitric acid as an oxidizing agent.	Describe reactions of nitric acid as an oxidizing agent.	Class experiments: - Explain observations made.	Nitric acid acidified iron sulphate, sulphur, and copper metal.	K.L.B. BK III <i>PP. 169-170</i>  <i>Longhorn Book III PP 239 -240</i>	
	5	Uses of nitric acid & nitrates.	To state uses of nitrates. To describe preparation of nitrates.	Discussion Equations for the reactions for preparation of nitrates.		K.L.B. BK III <i>P. 171</i>  <i>Longhorn Book III PP 240</i>	
12	1	Action of heat on nitrates.	To describe action of heat on nitrates.	Class experiments. Observe the results before and after heating.	Solutions of $\text{NaNO}_3$ , $\text{Zn}(\text{NO}_3)_2$ , $\text{Cu}(\text{NO}_3)_2$ and $\text{Al}(\text{NO}_3)_3$ .	K.L.B. BK III <i>P. 171</i>  <i>Longhorn Book III PP 126-129</i>	
	2	Action of heat on nitrates.	To write equations of decomposition of nitrates on heating.	Discuss above observations. Write relevant equations.		K.L.B. BK III <i>P 172</i>	
	3,4	Test for nitrates.	To carry out tests on nitrates.	Class experiments. Make observations and deductions. Discuss the brown ring test for nitrates.		K.L.B. BK III <i>PP 173-174</i>  <i>Longhorn Book III PP 243</i>	
	5	Nitrogen compounds and the environment.	To explain the pollution of nitrogen compounds in the environment. To state ways of reducing environmental pollution by nitrogen compounds.	Brief guided discussion.		K.L.B. BK III <i>PP. 173-174</i>  <i>Longhorn Book III PP 244-6</i>	
<i>END OF SECOND TERM - ASSESSMENT TEST</i>							

*FORM THREE CHEMISTRY TERM THREE YEAR 20 .....*

1	1	<b>SULPHUR AND ITS COMPOUNDS</b> Extraction of sulphur.	To describe extraction of sulphur by Frasch process.	Illustrate and discuss extraction of sulphur.	Chart-the Frasch process.	K.L.B. BK III <i>PP.180-181</i> <i>Longhorn Book III</i> <i>PP 126-129</i>	
	2	Allotropes of sulphur.	To identify allotropes of sulphur. To describe preparation of allotropes of sulphur.	Discussion and exposition of new concepts.		K.L.B. BK III <i>PP. 182-183</i> <i>Longhorn Book</i> <i>PP 126-129</i>	
	3	Physical properties of sulphur.  Heating of sulphur.	To list physical properties of sulphur.  To describe effects of heat on sulphur.	Class experiment: Solubility of sulphur in water, benzene, e.t.c.,  Class experiments: Heating sulphur gently then strongly. Discuss the observations.		K.L.B. BK III <i>P.184</i>  <i>Longhorn I Book III</i> <i>PP 253-255</i>	
	4 & 5	Chemical properties of sulphur.	To investigate and describe chemical properties of sulphur.	Group experiments. Discuss observations. Write corresponding equations.		K.L.B.BK III <i>PP.188-190</i>  <i>Longhorn Book III</i> <i>PP 256-8</i>	
2	1	Uses of sulphur.  Sulphur dioxide.	State uses of sulphur.  Describe lab. preparation of sulphur dioxide.	Teacher elucidates uses of sulphur. Teacher demonstration:- Preparation of sulphur dioxide in a fume chamber/in the open. Carrying out tests on the gas.		K.L.B.BK III <i>PP 191- 192</i>  <i>Longhorn Book</i> <i>P 258</i>	
	2	Physical properties of sulphur dioxide.	To list down physical properties of sulphur dioxide.	Discuss the above tests.		K.L.B.BK III <i>PP 193</i>  <i>Longhorn Book III</i> <i>PP 262-3</i>	



2	3	Acidic properties of SO <sub>2</sub> .	To carry out experiments to determine acidic properties of SO <sub>2</sub> .	Teacher demonstration to verify acidic properties of sulphur dioxide. Write equations.		K.L.B.BK III <i>P. 193</i>  <i>Longhorn Book III PP 262-3</i>	
	4 & 5	Reducing action of SO <sub>2</sub> .	To verify reducing action of SO <sub>2</sub> .	Class experiments: make observations and draw conclusions. Write balanced corresponding equations.	Experimental worksheets.	K.L.B.BK III <i>P. 195</i>	
3	1	Bleaching properties of SO <sub>2</sub> .	To carry out experiments to determine bleaching properties of SO <sub>2</sub> .	Discuss the observations made above. Write corresponding equations.		K.L.B .BK III <i>P. 194</i>  <i>Longhorn Book III PP 263-4</i>	
	2	Oxidizing action of SO <sub>2</sub> .	To explain Oxidizing action of SO <sub>2</sub> .	Q/A: review redox reactions. Teacher demonstration: - Lowering magnesium into a jar of SO <sub>2</sub> ; effect of SO <sub>2</sub> on hydrogen sulphide. Discuss observations. Write equations for the reactions.	Burning magnesium. Hydrogen sulphide.	K.L.B. BK III <i>PP. 198-199</i> <i>Longhorn Book III PP 266-7</i>	
	3	Sulphate and sulphite ions.  Uses of SO <sub>2</sub> .	To carry out tests for Sulphate and sulphite ions.  State uses of SO <sub>2</sub> .	Class experiments. Make deductions from the observations made. Write (ionic) equations for the reactions. Teacher elucidates uses of SO <sub>2</sub> .	Sodium sulphate Barium chloride Barium nitrate.	K.L.B. BK III <i>P. 200</i>  <i>Longhorn Book III PP 268-9</i>	
	4 & 5	Sulphuric acid.  Contact process of manufacture.	To identify raw materials for manufacture of sulphuric acid. To describe the contact process.	Discussion using schematic flow charts.  Writing equations.	Chart-schematic Flow charts.	K.L.B. BK III <i>PP.201-203</i>  <i>Longhorn Book III PP 275-6</i>	

4	1	Properties of conc. $\text{H}_2\text{SO}_4$ .	Investigate properties of conc. $\text{H}_2\text{SO}_4$ .	Class / group expts on worksheets. Enter results in a table.		K.L.B.BK III <i>PP 203-204</i>  <i>Longhorn Book III PP 274-5</i>	
	2	Properties of conc. $\text{H}_2\text{SO}_4$ .	Describe properties of conc. $\text{H}_2\text{SO}_4$ .	Discuss above observations. Write relevant equations.		K.L.B. BK III <i>P. 204</i>	
	3	Physical properties of sulphuric acid.	To dilute conc. sulphuric acid. State physical properties of sulphuric acid.	Teacher demonstration – diluting conc. sulphuric acid. Discuss use of conc. sulphuric acid as a drying and dehydrating agent.	Conc. sulphuric acid.	K.L.B. BK III <i>P. 205</i>  <i>Longhorn Book III PP 274-5</i>	
	4,5	Chemical properties of Sulphuric acid.	To write equations to show that conc. sulphuric acid is a drying and dehydrating agent. To describe reactions of dilute $\text{H}_2\text{SO}_4$ with metals.	Discussion and explanations. Group expts. – reaction of metals with dilute $\text{H}_2\text{SO}_4$ , make observations and relevant deductions; writing corresponding equations.	Magnesium, zinc, copper metals.	K.L.B. BK III <i>P. 206</i>  <i>Longhorn Book III PP 276-8</i>	
5	1	Dilute $\text{H}_2\text{SO}_4$ , carbonates and hydrogen carbonates.	To investigate reaction of dilute $\text{H}_2\text{SO}_4$ with carbonates and hydrogen carbonates.	Class expts. Making tabulated observations.		K.L.B. BK III <i>P. 208</i>  <i>Longhorn Book III PP 279-80</i>	
	2	Dilute $\text{H}_2\text{SO}_4$ , carbonates and hydrogen carbonates.	To describe reaction of dilute $\text{H}_2\text{SO}_4$ with carbonates and hydrogen carbonates.	Discussion, writing relevant equations.		K.L.B. BK III <i>P. 208</i>	
	3	Dilute $\text{H}_2\text{SO}_4$ , and metal oxides and hydroxides.	To investigate reaction of dilute $\text{H}_2\text{SO}_4$ with metal oxides and hydroxides.	Class expts. Observing colour changes.	Oxides of magnesium, zinc, copper. NaOH Solution.	K.L.B. BK III <i>P. 210</i>  <i>Longhorn Book III PP 287-8</i>	

	4,5	Dilute H <sub>2</sub> SO <sub>4</sub> and metal oxides & hydroxides.	To explain reactions of dilute H <sub>2</sub> SO <sub>4</sub> with metal oxides and hydroxides.	Discussion, writing relevant chemical equations.		K.L.B. BK III P. 211	
6	1,2	Hydrogen sulphide.  Preparation of the gas. Reaction of the gas with oxygen.	To describe preparation of hydrogen sulphide. To state properties of the gas.	Theoretical / descriptive approach. Writing corresponding equations. Discuss physical properties of the gas and reaction of the gas with oxygen.		K.L.B. BK III P. 210  <i>Longhorn Book III PP 289-90</i>	
	3,4	Reaction of the gas with water.  Reducing properties of the gas.	To write equations for reaction of the gas with water.  To demonstrate reducing properties of the gas.	Writing chemical equations for the reactions.		K.L.B. BK III P. 212.  <i>Longhorn Book III PP 291-2</i>	
	5	Sulphur and its effects on the environment.	To explain environmental pollution caused by sulphur and its compounds.	Discussion and explanation.		K.L.B. BK III P. 214 <i>Longhorn Book PP 293-5</i>	
7	1	<b>TEST</b>					
	2	<b>CHLORINE &amp; ITS COMPOUNDS</b>  Lab. preparation of chlorine gas.	Describe laboratory preparation of chlorine gas.	Teacher demonstration – gas prep. tests on the gas.	Conc. HCl, Manganese (IV) oxide.	K.L.B.BK III P. 219 <i>Longhorn Book III PP 298-9</i>	
	3	Physical properties of chlorine.	State physical properties of chlorine.	Q/A: Relate the properties to the method of collection of the gas. Write equations for the reaction leading to formation of chlorine.		K.L.B.BK III P. 220. <i>Longhorn Book III P 301</i>	

7	4	Chemical properties of chlorine – reaction with water.	To investigate and explain reaction of chlorine with water.	Teacher demonstration: Writing chemical equations.	Moist blue litmus papers.	K.L.B.BK III P. 222 <i>Longhorn Book III</i> PP 301-2	
	5	Chemical properties of chlorine - Reaction with metals - Reaction with non-metals.	To investigate and explain reaction of chlorine with metals / non-metals.	Teacher demonstration: Discussion.  Writing chemical equations.		K.L.B.BK III PP. 224 -225 <i>Longhorn Book III</i> PP 303-5	
8	1						
	2,3	- Oxidizing properties of chlorine.	To investigate and explain reaction of chlorine with reducing agents.	Group experiments. Discuss and explain observations made. Write corresponding chemical equations.	Expt. Worksheets.	K.L.B. BK III PP. 226 -227  <i>Longhorn Book</i> PP 307-8	
	4	Chlorine and alkalis.	To investigate and explain reaction of chlorine with alkalis.	Teacher demonstration: Bubbling chlorine with dilute cold / hot NaOH solution. Make observations and account for them.	Cold / hot NaOH solutions.	K.L.B.BK III P. 228  <i>Longhorn Book III</i> PP 313-4	
9	5	Test for chlorides.	To carry out tests for chlorides.	Class expts. Discuss observations, results. Write chemical equations for the reactions.	Expt. Worksheets. Zinc chloride, litmus paper, conc. Sulphuric acid.	K.L.B.BK III P. 230  <i>Longhorn Book III</i> PP 318-319	
	1						
	2	Uses of chlorine gas.	To state uses of chlorine.	Teacher elucidates uses of chlorine.		K.L.B.BK III P. 231 <i>Longhorn Book III</i> PP 320	

	3,4	Hydrogen chloride gas. Lab. prep.  Physical properties.	To describe Lab. prep of hydrogen chloride gas. To investigate and state physical properties of hydrogen chloride gas.	Teacher demonstration.  Carry out tests on the gas and deduce the properties of the gas.	Sodium chloride crystals, conc H <sub>2</sub> SO <sub>4</sub>	K.L.B.BK III P. 232  <i>Longhorn Book III PP 323-4</i>	
	5	Aqueous hydrogen chloride.	To prepare aqueous hydrogen chloride.	Class experiment leading to deduction of chemical properties of hydrogen chloride gas.	Distilled water.	K.L.B.BK III P. 234	
10	1,2	Further chemical properties of hydrogen chloride gas.	To determine chemical properties of hydrogen chloride gas. To carry out confirmatory test for hydrogen chloride gas.	Class experiment leading to deduction of further chemical properties of hydrogen chloride gas / confirmatory test for hydrogen chloride gas.	Ammonia solution.	K.L.B. BK III PP. 235 -223 <i>Longhorn Book III PP 327-331</i>	
	3	Large-scale production of hydrochloric acid.	Identify raw materials for manufacture of hydrochloric acid in large scale. Describe the manufacturing process.	Discussion and giving relevant equations.		K.L.B.BK III P. 237 <i>Longhorn Book III P 330</i>	
	4	Uses of hydrochloric acid.	To state uses of hydrochloric acid.	Brief discussion.		K.L.B. BK III P. 237 <i>Longhorn Book III P 331-3</i>	
	5	Effects of hydrochloric acid on the environment.	To explain effects of hydrochloric acid on the environment.	Discussion and explanation.  Assignment.		K.L.B. BK III P 238. <i>Longhorn Book III PP 334-8</i>	
<b>SUMMATIVE ASSESSMENT TEST</b>							