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| CHEMISTRY FORM THREE TERM ONE 2020 |
|  *WK****NO.*** | ***L/******NO*** | TOPIC/ ***SUBTOPIC*** | ***LESSON / SPECIFIC***OBJECTIVES | ***TEACHING / LEARNING***ACTIVITIES | MATERIALS ***/***RESOURCES | ***REF*** | REMARKS |
| 1 | 1 | GAS LAWSBoyle’s law. | *By the end of the lesson, the learner should be able to:*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. | ***K.L.B. BK III****PP. 1-2****Longhorn Book III****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 P1V1=P2V2, and sketch graphs to illustrate Boyle’s law.Worked examples.Assignment. |  | *K.L.B. BK III*PP. 3-4*Longhorn Book III**PP 3-5* |  |
| 3 & 4 | Boyle’s law: Numerical questions. | Solve further problems involving Boyle’s law. | Supervised exercise: Volume in cm³, m³, litres, and pressure in Pa, mmHg, cmHg, atmospheres.Assignment.  | Calculators. | *K.L.B. BK III**PP. 4-5**Longhorn Book III 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. | *K.L.B.**BK III**PP. 4-5* |  |
| 2 | 1 | Charles’ law. | *By the end of the lesson, the learner should be able to:*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. | ***.K.L.B.******BK III*** *P. 6**Longhorn Book III PP 9-11* |  |
| 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. |  | ***K.L.B.******BK III*** *P. 10**Longhorn Book III P 11* |  |
| 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. |  | ***K.L.B. BK III****PP. 6-7**Longhorn Book III P 10* |  |
| 4 | Numerical questions on Charles’ Law. | Solve numerical problems based on Charles’ Law. | Worked examples.Supervised exercise.Assignment. | Calculators. | ***K.L.B.******BK III*** *P. 12**Longhorn Book III PP 12-14* |  |
| 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. | ***K.L.B.******BK III*** *P. 12**Longhorn Book III PP 14-16* |  |
| 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. |  | ***K.L.B.******BK III*** *P. 14* |  |
| 3 | 2 | Diffusion. | *By the end of the lesson, the learner should be able to:*Define diffusion. Describe experiments to show diffusion. | Group experiments.Diffusion of KMnO4 crystals, concentrated ammonia solution. | KMnO4 crystals,Litmus papers. | ***K.L.B. BK III****PP. 14-15**Longhorn Book III P 19* |  |
| 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. |  | ***K.L.B.******BK III****PP. 18-19**Longhorn Book III 21* |  |
| 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. |  | ***K.L.B. BK III****PP. 22-23**Longhorn Book III PP 22-24* |  |
| 5 | Graham’s Law. | Carry out numerical tasks. | Solve problems involving RMM, equal volumes of the gases involved.Supervised practice.Assignment. | Calculators  | ***K.L.B. BK III****PP. 24-26**Longhorn Book III PP 22-24* |  |
| 4 | 1 | THE MOLEMole, 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. | ***K.L.B. BK III****PP. 27-31**Longhorn* *Book III* *PP 34-35* |  |
| 2 | Number of moles in a substance. | Calculate number of moles in a given mass of a substance. | Worked examples.Supervised practice. |  | ***K.L.B .BK III****P. 34* *Longhorn* *BK III* *PP 39-40* |  |
| 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. | ***K.L.B.BK III****PP. 34-35**Longhorn Book III PP 44-60* |  |
| 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. | ***K.L.B.BK III****PP. 3132**Longhorn* *Book III* *PP 30-31* |  |
| 5 | 1 & 2 | Empirical Formula. | *By the end of the lesson, the learner should be able to:*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. |  | ***K.L.B.BK III****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. |  | ***K.L.B.******BK III*** *P. 43**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.  | ***K.L.B.BK III****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 500cm³ and 8g in 1 litre.Worked examples on concentration of solutions. |  | ***K.L.B. BK III****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/dm³ | Teacher explains that molarity of a solution is given in moles of the solute per litre.Worked examples.Supervised exercise. |  | *K.L.B. BK III* *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. | *K.L.B. BK III* *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.  |  | *K.L.B. BK III* *P 51**Longhorn Book III PP 76-81* |  |
| 5 | Dilution of solutions. | Calculate molarity of a solution after dilution. | Group experiments.Calculations. |  | *K.L.B. BK III* *PP. 76-81* |  |
| 7 | 1 | Stoichiometry of a chemical reaction. | To determine mole ratio of given reactions. | Group experiments: - Determine masses, hence moles of reacting CuSO4 solution and iron metal. | CuSO4 solution and iron metal. | *K.L.B. BK III* *P. 56**Longhorn Book III PP 87-92* |  |
| 2 | Stoichiometric equations. | To define a stoichiometric equation. | To write stoichiometric equations of the above reactions. |  | *K.L.B. BK III* *Longhorn Book III PP 14-16**PP. 88-93* |  |
| 3,4 | Stoichiometric equations of various reactions. | To investigate and determine Stoichiometric equations of various reactions. | Class experiments.Problem solving. |  | *K.L.B. BK III* *P. 62* |  |
| 5 | **C.A.T.** |  |  |  |  |
| 8 | 1 | **Volumetric Analysis**.Apparatus used in titration experiments. | To use and read a pipette and a burette. | Discussion and practical use of the apparatus.*Emphasis is laid on need to sterilize the apparatus after use.* | PipettesBurettes.  | *K.L.B. BK III* *PP. 63-64**Longhorn* *Book III* *PP 104-8* |  |
| 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. | IndicatorsSuitable acid and base. | *K.L.B.**BK III* *PP. 64-67**Longhorn* *Book III* *PP 108-114* |  |
| 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. |  | *K.L.B. BK III* *P. 66**Longhorn Book III PP 108-114* |  |
| 5 | Titration experiment(Neutralization reaction) | To carry out calculations from experimental results. | Step-by-step calculations. | Calculators.  | *K.L.B. BK III* *P 66**Longhorn Book III PP 108-114* |  |
| 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. |  | *K.L.B. BK III* *P. 73* |  |
| 2 | Standardization of HCl. | To define standardization of HCl. | Class experiments. | Dilute HCl, Na2CO3 solutions. | *K.L.B. BK III* *PP. 74-75* |  |
| 3 | Concentration of HCl. | To calculate concentration of HCl from experimental results. | Calculations & supervised practice. |  | *K.L.B. BK III* *PP. 74-75* |  |
| 4 & 5 | Redox Titration Reactions. | To standardize a solution with an iron (II) salt. | Experiment and calculations. | Potassium Magnate(VII) | *K.L.B. BK III* *PP. 74-75**Longhorn* *Book III* *PP 114-115* |  |
| 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. | AmmoniumIron (II)Sulphate crystals.Dilute sulphuric (VI) acid. | *K.L.B. BK III* *P. 76* |  |
| 2 | Formula mass of ammonium iron (II) sulphate. | To find formula mass of ammonium iron (II) sulphate. | Calculations from experimental results. |  | *K.L.B. BK III* *PP. 76 -77* |  |
| 3 | Formula mass of a given salt. | To solve numerical problems involving water of crystallization. | Problem solving from sample results. |  | *K.L.B. BK III* *P.77* |  |
| 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. |  | *K.L.B. BK III* *PP. 78 -80**Longhorn BK III PP 126-128* |  |
| 5 | Mass and volume of gases. | To determine mass and volume of gases. | Teacher demonstration: - Determining mass of known volumes of oxygen / CO2. | Lubricated syringesOxygen/CO2. | *K.L.B. BK III* *P. 81**Longhorn BK III* *PP 126-127* |  |
| 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. |  | *K.L.B. BK III* *79 – 80**Longhorn* *Book III**PP 126-127* |  |
| 2 | Combining volumes of gases. | To compare combining volumes of two reacting gases. | Teacher demonstration: - Determining volumes of reacting gases; hence deduce volume rations. |  | *K.L.B BK III* *P. 82* |  |
| 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. |  | *K.L.B. BK III* *P. 85**Longhorn* *Book III**PP 129-131* |  |
| 5 | ***END OF TERM ASSESSMENT TEST*** |

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| *FORM THREE CHEMISTRY TERM TWO YEAR 2020* |
| 1 | 1 | **ORGANIC CHEMISTRY (I**) 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 IIIP. 92*Longhorn* *Book III**P 135* |  |
| 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*PP. 93-94* *Longhorn* *Book III**PP 135-6* |  |
| 3 | Naming Alkanes. | To identify various alkanes.To define a homologous series. | Discussion and exposition of new concepts. |  | K.L.B. BK III*PP. 94-98**Longhorn* *Book III**PP 136-139* |  |
| 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*PP. 97-99**Longhorn Book III**PP 137-9* |  |
| 5 | Isomerism in alkanes. | To draw and name isomers of simple hydrocarbons. | Discussion and exposition of new concepts. | Models. | K.L.B. BK III*PP. 101-102 Longhorn Book III**PP 141-2* |  |
| 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*P. 103**Longhorn* *Book III**PP 146* |  |
| 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*P. 105**Longhorn* *Book III**PP 148-9* |  |
| 3 | Chemical properties of alkanes. | Describe chemical properties of alkanes. | Discussion Examples of balanced equations. |  | K.L.B. BK III*P. 107**Longhorn* *Book III**PP 148-9* |  |
| 4 | Substitution reactions involving alkanes.Uses of alkanes. | To describe substitution reactions involving alkanes.To list down uses of alkanes. | DiscussionTeacher elucidates uses of alkanes.  |  | K.L.B. BK III*P. 108**Longhorn* *Book III**PP 149-50* |  |
| 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*PP 153-4* |  |
| 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*PP. 110-113**Longhorn* *Book III**PP 154-6* |  |
| 2 | Alkene isomerism. | Differentiate between branching and positional isomerism. | Discussion and drawing of molecular structures. |  | K.L.B. BK III*P. 113**Longhorn* *Book III**PP 158-60* |  |
| 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*P 162* |  |
| 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*PP. 116-117**Longhorn Book III**PP 126-129**165-6* |  |
| 5 | Chemical properties of ethene. | To explain halogenation and hydrogenation reactions. | Discussion and drawing structures.  |  | *KLB BK III**PP. 118-119**Longhorn* *Book III**PP 166-8* |  |
| 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. H2SO4, acidified potassium chromate.Expose hydrolysis process. |  | K.L.B. BK III*PP. 120-121**Longhorn* *Book III**PP 166-8* |  |
| 2 | Uses of alkenes &Topic review. | To list down uses of alkenes. | Teacher elucidates uses of alkenes.Assignment. |  | K.L.B. BK III*P. 121 Longhorn Book* *PP 170-1* |  |
| 4 | 3,4  | Alkynes.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. |  | K.L.B. BK III*P. 122-123**Longhorn* *Book III**PP 126-129 171-5* |  |
| 5 | Isomerism in alkynes. | To draw structure showing positional and branching isomerism. | Discussion and drawing structures. |  | K.L.B. BK III*PP. 124-125**Longhorn* *Book III**PP 176-8* |  |
| 5 | 1 | Physical properties of ethyne. | To list down physical properties of ethyne. | Teacher demonstration: Preparation of ethyne.Deduce properties of other alkynes. |  | K.L.B. BK III*PP. 125-126**Longhorn* *Book III**PP 197-80* |  |
| 2 | Chemical properties of ethyne. | To describe combustion, halogenation and hydrogenation processes. | Discussion and writing of equations. |  | K.L.B. BK III*PP. 127-129**Longhorn Book III**PP 180-184* |  |
|  | 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*P.130**Longhorn Book III**PP 180-84* |  |
| 4 | NITROGEN & ITS COMPOUNDS.Isolation of nitrogen from air. | Describe isolation of nitrogen from air. | Teacher demonstration, explanations and equations. | Aspirator, copper turnings, gas jar, combustion tube, trogh. | K.L.B. BK III*PP. 134-135**Longhorn Book* *P 186* |  |
| 5 | Industrial production of nitrogen. | Describe industrial production of nitrogen. | Discussion and description.Drawing schematic diagram for the process. |  | K.L.B. BK III*PP.135-136**Longhorn Book* *PP 188-9*  |  |
| 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*P. 137**Longhorn* *Book III**P 190-1* |  |
| 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*P. 138**Longhorn* *Book III**PP 191-2* |  |
| 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*PP. 139-141**Longhorn* *Book III**PP 195-6* |  |
| 5 | **C.A.T.** |  |  |  |  |
| 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*P. 141**Longhorn* *Book III**PP 191-2* |  |
| 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*P. 142**Longhorn* *Book III**PP 200-1*  |  |
| 3 | Properties of the gas. | To list down physical properties of nitrogen (II) oxideTo describe chemical properties of nitrogen (11) 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*P. 143**Longhorn* *Book III**PP 192-200* |  |
| 4 | Nitrogen (1V) oxideLab 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*PP. 144-145* |  |
| 5 | Properties of Nitrogen (IV) oxide. | To list down physical properties of nitrogen (IV) oxideTo describe chemical properties of nitrogen (IV) oxideTo state uses of nitrogen (1V) oxide. | Deduce physical properties from the table of observations.To describe chemical properties from the table of observations.Discuss uses of nitrogen (1V) oxide. |  | K.L.B. BK III*PP. 144-147**Longhorn* *Book III**P 204* |  |
| 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)2, NH4Cl Solutions, CaO, litmus papers..M THREE CHEMISTRY TERM TWO 20.... | K.L.B. BK III*PP. 147-148* |  |
| 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*P. 150* |  |
| 3 | Solubility of ammonia. | To describe an experiment to determine solubility of ammonia. | Teacher demonstration.Discussion. |  | K.L.B. BK III*P. 150* |  |
| 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 cm³ Solutions containing various metal ions. | K.L.B.BK III*PP. 152-153* |  |
| 9 | 1 | Ionic equations of above reactions. | To write iIonic equations of above reactions. | Discuss precipitation of metal hydroxides by aqueous ammonia.Confirmatory tests for various concentrations. |  | K.L.B. BK III*P.154**Longhorn BK III**P 223* |  |
| 2 | Burning ammonia in the air. | To describe burning ammonia in the air.  | Teacher demonstrationDiscussion Chemical equations of reactions. | Conc. Ammonium solutionHot platinum rod Oxygen. | K.L.B.BK III*P. 158**Longhorn* *Book III**PP 219* |  |
| 3 | Reaction of ammonia with copper (II) Oxide. | To name products formed when ammonia reacts with hot CuCl2 solid.To explain reducing properties of ammonia. | Teacher demonstration and discussion.Write down equations for the reactions. | Granular CuCl2Combustion tube,Dry ammoniaU-tube Gas jar. | K.L.B.BK III*P. 158* |  |
| 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*PP. 159-160**225-226* |  |
| 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*P. 161**Longhorn* *Book III**PP 126 -226* |  |
| 10 | 1 | Nitric acid.Lab preparation.  | To describe lab preparation of nitric acid. | Teacher demonstration.Write equations of reaction.Discussion. | Retort standConc. H2SO4KNO3 | K.L.B. BK III*P. 163* |  |
| 2 | Nitric acidIndustrial manufacture. | To describe industrial manufacture of nitric acid. | Discussion and writing equations. | ChartSchematic diagram. | K.L.B. BK III*P. 164* |  |
| 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 ZincCopper | K.L.B. BK III*PP. 165-166**Longhorn* *Book III**PP 166-8* |  |
| 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 Na2CO3NaHCO3ZnCO3CuCO3 | K.L.B. BK III*P. 167**Longhorn* *Book III**229-30* |  |
| 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*P. 167* |  |
| 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*P. 168**Longhorn* *Book III**PP 238-240* |  |
|  | 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*PP. 169-170**Longhorn Book III**PP 239 -240* |  |
| 5 | Uses of nitric acid &nitrates.  | To state uses of nitrates.To describe preparation of nitrates. | DiscussionEquations for the reactions for preparation of nitrates. |  | K.L.B. BK III*P. 171* *Longhorn Book III**PP 240* |  |
| 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 NaNO3, Zn(NO3)2, Cu(NO3)2 and Al(NO3)3. | *K.L.B. BK III* *P. 171**Longhorn Book III**PP 126-129* |  |
| 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*P 172* |  |
| 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*PP 173-174**Longhorn* *Book III**PP 243* |  |
| 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*PP. 173-174**Longhorn* *Book III**PP 244-6* |  |
|  |  *END OF SECOND TERM - ASSESSMENT TEST*  |

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| *FORM THREE CHEMISTRY TERM THREE YEAR 2020* |
| 1 | 1 | **SULPHUR AND ITS COMPOUNDS**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*PP.180-181* *Longhorn* *Book III**PP 126-129* |  |
| 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*PP. 182-183**Longhorn Book* *PP 126-129* |  |
| 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*P.184* *Longhorn I**Book III**PP 253-255* |  |
| 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*PP.188-190**Longhorn* *Book III**PP 256-8* |  |
| 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*PP 191- 192**Longhorn Book* *P 258* |  |
| 2 | Physical properties of sulphur dioxide. | To list down physical properties of sulphur dioxide. | Discuss the above tests. |  | K.L.B.BK III*PP 193**Longhorn* *Book III**PP 262-3* |  |
| 2 | 3 | Acidic properties of SO2. | To carry out experiments to determine acidic properties of SO2. | Teacher demonstration to verify acidic properties of sulphur dioxide.Write equations. |  | K.L.B.BK III*P. 193**Longhorn* *Book III**PP 262-3* |  |
| 4 & 5 | Reducing action of SO2. | To verify reducing action of SO2. | Class experiments: make observations and draw conclusions.Write balanced corresponding equations. | Experimental worksheets. | K.L.B.BK III*P. 195* |  |
| 3 | 1 | Bleaching properties of SO2. | To carry out experiments to determine bleaching properties of SO2.  | Discuss the observations made above.Write corresponding equations. |  | K.L.B .BK III*P. 194**Longhorn* *Book III**PP 263-4* |  |
| 2 | Oxidizing action of SO2. | To explain Oxidizing action of SO2. | Q/A: review redox reactions.Teacher demonstration: - Lowering magnesium into a jar of SO2; effect of SO2 on hydrogen sulphide.Discuss observations.Write equations for the reactions. | Burning magnesium.Hydrogen sulphide. | K.L.B.BK III*PP. 198-199**Longhorn* *Book III**PP 266-7* |  |
| 3 | Sulphate and sulphite ions.Uses of SO2. | To carry out tests for Sulphate and sulphite ions. State uses of SO2. | Class experiments.Make deductions from the observations made.Write (ionic) equations for the reactions.Teacher elucidates uses of SO2. | Sodium sulphateBarium chlorideBarium nitrate. | K.L.B.BK III *P. 200**Longhorn* *Book III**PP 268-9* |  |
| 4 & 5 | Sulphuric acid.Contact process of manufacture. | To identify raw materials for manufacture of sulphuric acid.To describe the contact process.  | Discussion using schematicflow charts.Writing equations. | Chart-schematicFlow charts. | K.L.B. BK III*PP.201-203**Longhorn* *Book III**PP 275-6* |  |
| 4 | 1 | Properties of conc. H2SO4. | Investigate properties of conc. H2SO4. | Class / group expts on worksheets.Enter results in a table. |  | K.L.B.BK III*PP 203-204**Longhorn* *Book III**PP 274-5* |  |
| 2 | Properties of conc. H2SO4. | Describe properties of conc. H2SO4. | Discuss above observations.Write relevant equations. |  | K.L.B.BK III*P. 204* |  |
| 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 *P. 205**Longhorn* *Book III**PP 274-5* |  |
| 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 H2SO4 with metals. | Discussion and explanations.Group expts. – reaction of metals with dilute H2SO4, make observations and relevant deductions; writing corresponding equations. | Magnesium, zinc, copper metals. | K.L.B.BK III *P. 206**Longhorn* *Book III**PP 276-8* |  |
| 5 | 1 | Dilute H2SO4, carbonates and hydrogen carbonates. | To investigate reaction of dilute H2SO4 with carbonates and hydrogen carbonates. | Class expts. Making tabulated observations. |  | K.L.B.BK III *P. 208**Longhorn* *Book III**PP 279-80* |  |
| 2 | Dilute H2SO4, carbonates and hydrogen carbonates. | To describe reaction of dilute H2SO4 with carbonates and hydrogen carbonates. | Discussion, writing relevant equations. |  | K.L.B.BK III *P. 208* |  |
| 3 | Dilute H2SO4, and metal oxides and hydroxides. | To investigate reaction of dilute H2SO4 with metal oxides and hydroxides.  | Class expts. Observing colour changes. | Oxides of magnesium, zinc, copper.NaOH Solution. | K.L.B.BK III *P. 210**Longhorn* *Book III**PP 287-8* |  |
| 4,5 | Dilute H2SO4 and metal oxides & hydroxides. | To explain reactions of dilute H2SO4 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**Longhorn* *Book III**PP 289-90* |  |
| 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.**Longhorn* *Book III**PP 291-2* |  |
| 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**Longhorn Book* *PP 293-5* |  |
| 7 | 1 | TEST |  |  |  |  |
| 2 | CHLORINE & ITS COMPOUNDSLab. 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**Longhorn* *Book III**PP 298-9* |  |
| 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.**Longhorn* *Book III**P 301* |  |
| 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**Longhorn* *Book III**PP 301-2* |  |
| 51 | 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**Longhorn* *Book III**PP 303-5* |  |
| 8 |
| 2,3 | - Oxidizing properties of chlorine. | To investigate and explain reaction of chlorine with reducing a gents. | Group experiments.Discuss and explain observations made.Write corresponding chemical equations. | Expt. Worksheets. | K.L.B. BK III*PP. 226 -227**Longhorn Book* *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**Longhorn Book III**PP 313-4* |  |
| 51 | 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* *Longhorn Book III**PP 318-319* |  |
| 9 |
| 2 | Uses of chlorine gas. | To state uses of chlorine. | Teacher elucidates uses of chlorine. |  | K.L.B.BK III*P. 231**Longhorn Book III**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 H2SO4 | K.L.B.BK III*P. 232**Longhorn* *Book III**PP 323-4* |  |
| 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**Longhorn* *Book III**PP 327-331* |  |
| 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**Longhorn Book III**P 330* |  |
| 4 | Uses of hydrochloric acid. | To state uses of hydrochloric acid. | Brief discussion. |  | K.L.B. BK III*P. 237**Longhorn Book III**P 331-3* |  |
| 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.**Longhorn Book III**PP 334-8* |  |
|  |  | SUMMATIVE ASSESSMENT TEST |  |