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|  | ***SCHEME OF WORK FORM ONE CHEMISTRY TERM ONE 2023*** | | | | | |  |
| ***WK***  ***NO.*** | ***L/***  ***NO.*** | *TOPIC/*  ***SUBTOPIC*** | ***LESSON***  ***OBJECTIVES*** | ***TEACHING / LEARNING***  ***ACTIVITIES*** | ***MATERIALS***  ***&***  ***RESOURCES*** | ***REFERENCES*** | ***REMARKS*** |
| **1-2** |  | ***ADMISSION OF FORM ONE STUDENTS*** | | | | |  |
| ***3*** | 1 | **INTRODUCTION TO CHEMISTRY**  Basic science concepts. | **By the end of the lesson, the learner should be able to**:  Relate basic science concepts taught at primary level to Chemistry. | Brainstorming to review basic science concepts;  Probing questions;  Discussion. |  | *K.L.B.*  *BOOK I*  *PP 1-3* |  |
| 2 | Basic aspects of Chemistry. | Basic aspects of Chemistry. | Questioning;  Discussion;  Exposition of new concepts. | *Mixtures,*  *Conductors & non conductors,*  *Drugs.* | *K.L.B.*  *BOOK I*  *PP 4-5* |  |
| 3,4 | Definition of Chemistry &  Role of Chemistry in the society.  Lab safety rules. | Define Chemistry.  Identify role of Chemistry in the society.  Identify careers related to Chemistry.  Recognise lab safety rules. | Open discussion;  Probing questions. | *List of lab safety rules.* | *K.L.B.*  *BOOK I*  *PP 5-6,16* |  |
| 4 | 1 | Apparatus used in Chemistry. | Identify apparatus used in Chemistry. | Observing real apparatus;  Drawing apparatus. | *Common lab apparatus.* | *K.L.B.*  *BOOK I*  *PP 6-9* |  |
| 2 | Apparatus used in Chemistry.  (contd) | Identify apparatus used in Chemistry. | Observing drawn apparatus;  Drawing apparatus. | *Common lab apparatus.* | *K.L.B.*  *BOOK I*  *PP 6-9* |  |
| 3,4 | Measuring volume. | Use some apparatus to measure volume. | Guided practical activities;  Filling in tables of values. | *Specific apparatus for measuring volume.* | *K.L.B.*  *BOOK I*  *PP 6-9* |  |
| 5 | 1 | Measuring mass. | Use some apparatus to measure mass. | Measuring mass in kg, grams and mg. | *Electronic, beam, ripple pan balances.* | *K.L.B.*  *BOOK I*  *PP 6-9* |  |
| 2 | Measuring time. | Use a stopwatch to measure time lapses. | Measuring time intervals in minutes, sec and ms. | *Stop watches.* | *K.L.B.*  *BOOK I*  *PP 6-9* |  |
| 3 | Measuring temperature. | Use some apparatus to measure temperature. | Measuring temperature with an ordinary thermometer;  Measuring temperature after given time intervals. | *Thermometers.* | *K.L.B.*  *BOOK I*  *PP 6-9* |  |
| 4 | TEST | |  |  |  |  |
| 6 |  | MID TERM |  |  |  |  |  |
| 7 | 1 | Parts of a Bunsen burner. | Identify parts of a Bunsen burner.  State functions of parts of a Bunsen burner. | Questioning on sources of heat;  Exposition of new concepts. | *Bunsen burner.* | *K.L.B.*  *BOOK I*  *PP 10--11* |  |
| 2 | Bunsen burner flames.  - luminous flame. | State properties of a luminous flame. | Closing air hole of the burner;  Observing aluminous flame;  Drawing a luminous flame. | *Bunsen burner.* | *K.L.B.*  *BOOK I*  *PP 11-12* |  |
| 3,4 | Bunsen burner flames.  - non-luminous flame. | Differentiate between a luminous and non-luminous flame.  Identify zones of a non-luminous flame. | Opening air hole of the burner;  Observing luminous flame;  Drawing a non-luminous flame. | *Bunsen burner.* | *K.L.B.*  *BOOK I*  *PP 11-12* |  |
| 8 | 1,2 | Heating effects of Bunsen flames. | Describe the heating effects of luminous and non-luminous flames. | Heating water using luminous and non-luminous flames;  Burning wooden splints, paper over the flames;  Discussion. | *Bunsen flames, wooden splints,*  *Wire gauze, beakers.* | *K.L.B.*  *BOOK I*  *PP 13-15* |  |
| 3,4 | Heating effect of a non-luminous flame. | Identify the hottest part of a non-luminous flame. | Guided practical activities;  Discussion based on observations made. | *wooden splints,*  *non-luminous flame, manilla papers.* | *K.L.B.*  *BOOK I*  *PP 14-15* |  |
| 9 | 1,2 | CLASSIFICATION OF SUBSTANCES  Solid-solid mixture. | Carry out simple experiments to separate a solid-solid mixture. | Class experiments;  Making solid-solid mixtures.  separating solid-solid mixtures. | **Solid-solid mixture, e.g. Sodium chloride-iodine mixture.** | *K.L.B.*  *BOOK I*  *PP 19-20* |  |
| 3,4 | Making solid-liquid mixtures. | Mix solids with known volume of liquids. | Class experiments;  Making solid-liquid mixtures. | **Test tubes, sugar, salt, potassium nitrate, propanone, oxalic acids, etc.** | *K.L.B.*  *BOOK I*  *PP 19-20* |  |
| 10 | 1,2 | Separating solid-liquid mixtures. | Carry out simple experiments to separate a solid-liquid mixture. | Separating solid-liquid mixtures. | **Test tubes, sugar, salt, potassium nitrate, propanone, oxalic acids, etc.** | *K.L.B.*  *BOOK I*  *PP 19-20* |  |
| 3,4 | Soluble solid-liquid mixture & insoluble solid-liquid mixture | Carry out decantation and filtration. | Class experiments; separating solid-liquid mixtures. | **Water-sand mixture, salt solution, filter papers, funnel, beakers.** | *K.L.B.*  *BOOK I*  *PP 22-24* |  |

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| 11 | 1 | Crystallization. | Obtain crystals from a solution. | Class experiments; growing crystals.  Brief discussion. | *Waterbath, conc copper*  *(II) sulphate solution, evaporating dish.* | *K.L.B.*  *BOOK I*  *PP 22-24* |  |
| 2 | Simple distillation. | Carry out simple distillation.  State applications of simple distillation. | Class experiments;  Obtaining a solvent from a solution.  Brief discussion. | *Liebig sondenser, salt solution, round-bottomed flask, conical flask.* | *K.L.B.*  *BOOK I*  *P 18* |  |
| 3,4 | Liquid-liquid mixture  -immiscible liquids. | Describe an experiment o separate miscible liquids. | Questioning;  Exposition. | *Water, ethanol, pipettes, droppers, separating funnel.* | *K.L.B.*  *BOOK I*  *PP28-29* |  |
| 12 | 1,2 | Fractional distillation. | Carry out fractional distillation. | Class experiments; separating liquid-liquid mixtures.  Discussion. | *Water, ethanol, fractionating column, liebig condenser, round-bottomed flask, conical flask.* | *K.L.B.*  *BOOK I*  *PP. 28-29* |  |
| 3,4 | Applications of fractional distillation. | Describe applications of fractional distillation. | Questioning & discussion on extraction of;  -oils from nuts,  -dyes from plants,  -herbal medicine from plants. | *Miscible liquids.* | *K.L.B.*  *BOOK I*  *PP. 30-32* |  |
| 13&14 |  | END TERM EXAMS |  |  |  |  |  |
| *CHEMISTRY FORM ONE TERM TWO YEAR 2023* | | | | | | | |
| 1 | 1,2 | Separating coloured substances. | Describe chromatography as a method of separating coloured substances. | Obtain pigments from green leaves.  Guided activities. | *Pestles, mortars.* | *K.L.B.*  *BOOK I*  *PP. 33-34* |  |
| 3,4 | Paper chromatography. | Carry out paper chromatography.  Interpret paper chromatograms. | Paper chromatography tests.  Questioning on concentric and ascending chromatograms. | *Pestles, motars,*  *Green leaves, propanone, filter paper.*  *Sample chromatograms.* | *K.L.B.*  *BOOK I*  *PP. 33-34* |  |
| 2 | 1 | Effects of heating pure naphthalene. | Record temperature of a substance at intervals of heating. | Standard experiments; recording temperature after equal time intervals. | *Pure naphthalene, stop watches.* | *K.L.B.*  *BOOK I*  *PP 35-36* |  |
| 2 | Melting point of pure naphthalene. | Determine the melting point of pure naphthalene. | Drawing a heating / cooling curve from the results above. |  | *K.L.B.*  *BOOK I*  *PP 35-36* |  |
| 3,4 | Heating and cooling curves of a pure substance. | Sketch heating and cooling curves.  Interpret heating and cooling curves. | Q/A on states of matter;  Draw curves from given values;  Discussion. | *Graph papers.* | *K.L.B.*  *BOOK I*  *PP 36-37* |  |
| 3 | 1 | Heating impure naphthalene. | Explain effect of an impurity on temperature of a substance when heated steadily. | Standard experiments; recording temperature after equal time intervals. | Pure naphthalene, stop watches. | *K.L.B.*  *BOOK I*  *PP 35-36* |  |
| 2 | Heating curve of impure naphthalene. | Sketch a heating curve for impure naphthalene. | Draw curves from given values;  Discussion. | *Pure naphthalene, camphor, stop watches.* | *K.L.B.*  *BOOK I*  *PP 40-41* |  |
| 3,4 | Heating pure water to boiling point. | Determine boiling point of pure water.  Sketch heating and cooling curves for water. | Standard experiments; recording temperature after equal time intervals. | *Pure water, stop watches, graph papers.* | *K.L.B.*  *BOOK I*  *PP 42-43* |  |
| 4 | 1 | Heating salty water to boiling point. | Determine the B.P. of salty water. | Standard experiments; recording temperature after equal time intervals. | *Pure water, sodium chloride, stop watches.* | *K.L.B.*  *BOOK I*  *PP 42-43* |  |
| 2 | Effect of an impurity on the boiling point of water. | State the effect of an impurity on the boiling point of water. | Sketch heating curve;  Discussion. | *Graph papers.* | *K.L.B.*  *BOOK I*  *PP 41-42* |  |
| 3 | The kinetic theory of matter. | Explain physical changes of state in terms of kinetic theory of matter. | Exposition of kinetic theory of matter.  Brief discussion.  Topic review questions.  Assignment. | *Kinetic theory model.* | *K.L.B.*  *BOOK I*  *PP 39-40* |  |
| 4 | C.A.T. | |  |  |  |  |
| 5 | 1 | TEMPORARY AND PERMANENT CHANGES  Reversible processes. | Identify colour changes when some solids are heated. | Heat solid wax, zinc oxide, solid iodine;  Observe colour changes. | *Solid wax, zinc oxide, solid iodine.* | *K.L.B.*  *BOOK I*  *P. 44* |  |
| 2 | Physical change | Define a physical change.  State characteristics of a physical change. | Q/A and discussion based on above observations. |  |  |  |
| 3,4 | Permanent chemical change. | Investigate permanent chemical change.  State characteristics of a chemical change. | Heating hydrated copper (II) sulphate, copper (II) nitrate.  Observing colour changes;  Probing questions;  Discussion. | *Hydrated copper (II) sulphate, copper (II) nitrate.* | *K.L.B.*  *BOOK I*  *PP. 44-45* |  |
| 6 |  | MID TERM |  |  |  |  |  |
| 7 | 1 | Elements. | Define an element, atom, molecule.  Give examples of elements. | Exposition;  Brief discussion. | *List of first*  *20 elements.* | *K.L.B.*  *BOOK I*  *P. 48* |  |
| 2 | Compounds. | Define a compound.  Give examples of compounds. | Exposition;  Brief discussion. |  | *K.L.B.*  *BOOK I*  *PP 48- 49* |  |
| 3,4 | Chemical symbols. | Identify chemical symbols for various elements. | Exposition;  Brief discussion. | *List of first*  *20 elements.* | *K.L.B.*  *BOOK I*  *PP. 49-50* |  |
| 8 | 1 | Chemical equations. | Write down word equations for chemical reactions. | Probing questions;  Guided discovery;  Brief discussion. |  | *K.L.B.*  *BOOK I*  *P. 51* |  |
| 2 | ACIDS, BASES AND INDICATORS  Classification of substances as acidic, neutral or basic. | Discuss broad classification of substances as acids bases or neutral. | Probing questions;  Exposition;  Discussion. |  | *K.L.B.*  *BOOK I*  *P. 54* |  |
| 3,4 | Simple acid-base indicators. | Define an acid-base indicator.  Prepare acid-base indicator from flower extracts. | Group experiments;  Obtain flower extracts; Observe colour changes of extracts in given solutions.  Classify substances. | *Red / blue flowers, pestle, mortar, propanone, teat pipette.* | *K.L.B.*  *BOOK I*  *PP. 54--56* |  |
| 9 | 1 | Commercial indicators. | Identify common commercial indicators.  Classify substances as acidic or basic using commercial indicators. | Exposition;  Observe effects of substances on indicators.  Record colour changes and make inferences. | *Phenolphthalene, litmus papers, methyl orange, HCl. NaoH, lemon juice, soap, toothpaste, calcium hydroxide,etc.* | *K.L.B.*  *BOOK I*  *PP. 56--57* |  |
| 2 | Universal indicators and pH. | Determine strength of acids / bases using universal indicators and pH scale. | Exposition,  Find pH values of various substances. | *Phenolphthalene, litmus papers, methyl orange, HCl. NaoH,lemon juice, soap, toothpaste, calcium hydroxide.* | *K.L.B.*  *BOOK I*  *PP. 58--59* |  |
| 3,4 | Reaction of acids with metals. | Describe reactions of acids with metals. | T/demonstration; reaction of dilute acids with metals.  Discuss based on observation made.  Make solutions. | *Dil HCl,*  *zinc dranules,*  *magnesium.* | *K.L.B.*  *BOOK I*  *PP. 58-59* |  |
| 10 | 1 | Chemical equations for acid – base reaction. | Write down equations for acid – base reactions. | Guided discovery. | *Dil HCl, zinc granules, magnesium,* | *K.L.B.*  *BOOK I*  *PP. 59-61* |  |
| 2 | Reaction of acids with carbonates and hydrogen carbonates. | Describe reaction of acids with carbonates and hydrogen carbonates. | Standard experiments; observe colour changes;  Discuss results.  Write chemical equations. | *Carbonates of calcium, copper, sodium.* | *K.L.B.*  *BOOK I*  *PP. 62-63* |  |
| 3,4 | Reaction of acids with hydrogen carbonates. | Describe reaction of acids with hydrogen carbonates. | Standard experiments; observe colour changes;  Discuss results.  Write chemical equations. | Hydrogen carbonates. | *K.L.B.*  *BOOK I*  *PP. 62-63* |  |

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| 11 | 1,2 | Reaction of acids with bases. | Define a neutralization reaction. | Class experiments; adding an acid to a base.  Discussion. | *Metal oxides and acids.* | *K.L.B.*  *BOOK I*  *PP. 63-65* |  |
| 3,4 | Reaction of acids with bases. | Describe reaction of acids with bases. | Discuss properties of acids and bases.  Write chemical equations. | *Metal oxides and acids.* | *K.L.B.*  *BOOK I*  *PP. 63-65* |  |
| 12 | 1 | Effects and uses of acids and bases. | Explain effects of acids / bases on the environment.  State uses of acids / bases. | Open discussion;  Q/A and exposition of uses of acids / bases. |  | *K.L.B.*  *BOOK I*  *P. 66* |  |
| 2 | AIR AND COMBUSTION  Composition of air. | State the composition of air by volume. | Probing questions;  Brief discussion. |  | *K.L.B.*  *BOOK I*  *PP. 68-71* |  |
| 3,4 | Air and combustion. | Describe an experiment to show percentage of air that supports burning. | Teacher demonstrations;  Discussion;  Worked examples. | *Sodium hydroxide solution, candle, gas jar, trough, copper turnings, hard glass tube, glass syringes.* | *K.L.B.*  *BOOK I*  *PP. 68-71* |  |
| 13&14 |  | END TERM EXAM |  |  |  |  |  |
| *CHEMISTRY FORM ONE TERM THREE YEAR 2023* | | | | | | | |
| 1 | 1 | Active part of air. | Determine percentage of active part of air using copper. | Teacher demonstrations;  Discussion;  Worked examples. | Copper turnings, glass wool, syringes, plastic tubing. | *K.L.B.*  *BOOK I*  *PP. 68-71* |  |
|  | 2 | Rusting. | Identify conditions necessary for rusting. | Group experiments;  Discussion. | *Iron* | *K.L.B.*  *BOOK I*  *PP 76-77* |  |
| 3,4 | Percentage of air used up during rusting. | Describe an experiment to show percentage of air used up during rusting. | Teacher demonstration;  Questioning;  Discussion. | *Iron nails, troughs.* | *K.L.B.*  *BOOK I*  *P. 72* |  |
| 2 | 1 | Preventing rusting. | State methods of preventing rusting. | Questioning;  Discussion. |  |  |  |
| 2 | Smouldering of phosphorus. | Describe an experiment to show percentage of air used up when phosphorus smoulders. | Teacher demonstration;  Discussion. | *White phosphorus, trough.* | *K.L.B.*  *BOOK I*  *PP. 72-73* |  |
| 3,4 | Presence of carbon (IV) oxide and water in the air. | Describe an experiment to show presence of carbon (IV) oxide and water in the air. | Teacher demonstration;  Probing questions on colour changes;  Discussion. | *Aspirator, lime water, u-tube, anhydrous calcium chloride.* | *K.L.B.*  *BOOK I*  *PP. 73-74* |  |
| 3 | 1 | Fractional distillation of liquid air. | Describe fractional distillation of liquid air. | Q/A to review fractional distillation;  Discuss flow diagram. | *Flowchart.* | *K.L.B.*  *BOOK I*  *PP 75-76* |  |
| 2 | Lab preparation of oxygen. | Describe lab preparation of oxygen. | Descriptive approach. |  | *K.L.B.*  *BOOK I*  *PP. 73-74* |  |
| 3,4 | Lab preparation of oxygen. | Prepare oxygen in the lab.  State physical properties of oxygen. | Teacher demonstration / group expts;  Questioning;  Discussion. | *Sodium peroxide, manganese (IV) oxide, potassium permanganate.* | *K.L.B.*  *BOOK I*  *PP. 78-79* |  |
| 4 | 1 | Burning metals in air (oxygen) | State how metals burn in air. | Teacher demonstration;  Questioning;  Discussion;  Write quations. | *Sodium, calcium,*  *deflagrating spoon, oxygen.* | *K.L.B.*  *BOOK I*  *PP. 78-79* |  |
| 2 | Burning metals in air (oxygen) | State how metals burn in air. | Teacher demonstration;  Questioning;  Discussion.  Write equations. | *Sodium, calcium,*  *magnesium,*  *iron, copper.* | *K.L.B.*  *BOOK I*  *PP. 80-81* |  |
| 3,4 | Products of burning metals in air. | Identify products of burning metals in air. | Group experiments;  Testing for products;  Write chemical equations. | *Weighing balance.* | *K.L.B.*  *BOOK I*  *PP. 82-83,*  *P. 85* |  |
| 5 | 1 | Reactivity series. | Recall the reactivity series for some metals. | Questioning;  Discussion. | Chart- *reactivity series for metals.* | *K.L.B.*  *BOOK I*  *P. 83* |  |
| 2 | Burning non-metals in air (oxygen) | State how non-metals burn in air. | Teacher demonstration;  Observing type of flames. |  | *K.L.B.*  *BOOK I*  *PP. 84-85* |  |
| 3 | Burning non-metals in air (oxygen) | Identify products of burning non-metals in air. | Teacher demonstration;  Questioning;  Discussion.  Write equations. | *Carbon, sulphur, phosphorus.* | *K.L.B.*  *BOOK I*  *PP. 84-85* |  |
| 4 | C.A.T. | |  |  |  |  |
| 6 | 1 | Competition for oxygen. | Describe redox reactions.  Write equations for redox reactions. | Q/A to review redox reactions;  Teacher demonstrations;  Discussion.  Write equations. | *Metals and metal oxides.* | *K.L.B.*  *BOOK I*  *PP. 86-87* |  |
| 2 | Competition for oxygen. | Describe redox reactions.  Write equations for redox reactions.  State applications of redox reactions. | Q/A to review redox reactions;  Teacher demonstrations;  Discussion.  Write equations. | *Metals and metal oxides.* | *K.L.B.*  *BOOK I*  *PP. 86-87* |  |
| 3,4 | Reactivity series based on redox reactions,  Uses of oxygen.  Environmental pollution. | Recall the reactivity series.  State uses of oxygen.  Discuss environmental pollution. | Q/A to review redox reactions;  Open discussion. |  | *K.L.B.*  *BOOK I*  *PP. 88-89* |  |
| 7 | 1 | WATER AND HYDROGEN  Burning candle wax in air. | Test for the products of burning candle wax in air. | Teacher demonstrations;  Discussion. | *Candles, lime water.* | *K.L.B.*  *BOOK I*  *PP. 91-92* |  |
| 2 | Reaction of cold water with metals. | Identify products of reaction of cold water with metals. | Teacher demonstrations;  Discussion;  Write equations. | *Calcium, sodium grain.* | *K.L.B.*  *BOOK I*  *PP. 92-94* |  |
| 3,4 | Reaction of steam with metals. | Identify products of reaction of steam with metals.  Recall the reactivity series of metals based on reaction with water. | Teacher demonstrations;  Test for evolved gas;  Discussion;  Write equations.  Review reactivity series. | *Magnesium ribbon, sand, iron / steel wool.* | *K.L.B.*  *BOOK I*  *PP. 94-96* |  |
| 8 | 1 | Hydrogen.  - lab preparation. | Describe laboratory preparation of hydrogen. | Teacher demonstrations;  Discussion. | *Zinc granules,*  *dil HCl,*  *conc. sulphuric acid.* | *K.L.B.*  *BOOK I*  *P. 97* |  |
| 2 | Hydrogen.  - physical properties. | State physical properties of hydrogen. | Probing questions and discussion. | *Zinc granules,*  *dil HCl,*  *conc. sulphuric acid, litmus papers.* | *K.L.B.*  *BOOK I*  *PP. 97-98* |  |
| 3,4 | Hydrogen as a reducing agent. | Describe an experiment to show reducing properties of hydrogen. | Teacher demonstration;  Discussion;  Write equations. | *Copper (II) oxide, anhydrous Copper (II) sulphate., dry hydrogen.* | *K.L.B.*  *BOOK I*  *PP. 99-101* |  |
| 9 | 1 | Burning hydrogen in air. | Identify products of burning hydrogen in air. | Teacher demonstration;  Discussion. | *Anhydrous calcium chloride,*  *hydrogen, U tube, ice cold water.* | *K.L.B.*  *BOOK I*  *PP. 101-102* |  |
| 2 | Uses of hydrogen. | State uses of hydrogen. | Probing questions;  Open discussion. |  | *K.L.B.*  *BOOK I*  *PP. 102-103* |  |
| 3,4 | Water & hydrogen. | Answer exam – type questions. | Topic review;  Review assignments. |  | *K.L.B.*  *BOOK I*  *PP. 91-103*  *Revision papers.* |  |
| 10 | *END OF TERM THREE EXAMINATIONS* | | | | | |  |