**CHEMISTRY SCHEMES OF WORK**

**FORM THREE 2016**

**TERM I**

**REFERENCES:**

1. KLB Secondary Chemistry Form 3 Students Book (2nd Edition) KLB BK 3
2. Comprehensive Secondary Chemistry BK 3 (CSC BK 3)
3. Comprehensive Secondary Chemistry BK 4 (CSC BK 4)
4. Chemistry Made Simple Students Book 3 (CMS BK 3)

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| **WK** | **LSN** | **TOPIC/S-TOPIC** | **OBJECTIVES** | **L/ACTIVITIES** | **L/T AIDS** | **REFERENCE** | **REMARKS** |
| 1 | 1-5 **1** | **SCHOOL OPENING** | | | | |  |
| 2 | 1&2 | Gas laws  - Introduction  - Boyles law | **By the end of the lesson, the learner**  **should be able to:-**  State Boyles law and carry out  calculations involving the gas laws | - Notes taking  - Discussion | Calculations involving  the gas laws | KLB BK 3 Pg 1-14  Explore Chem BK 3  Pg 6-12 |  |
|  | 3&4 | Charles law  Combined gas law | **By the end of the lesson, the learner**  **should be able to:-**  - State Charles law  - Carry out calculation involving the  gas  - Use combined gas law in calculations | - Notes taking  - Discussion  - Demonstration and  observation  - Exercises to enhance  understanding | Calculations involving  the gas laws | Longhorn BK 3  CMS BK 3 |  |
|  | 5 | Grahams law of  diffusion | **By the end of the lesson, the learner**  **should be able to:-**  - State grahams law of diffusion  - Explain diffusion in liquids and gases  in terms of kinetic energy | - Class experiment  - Taking notes  - Question answer  method | Beakers  Bromine  KMnO4  CuSO4  Water | KLB BK 3 Pg 14-21 |  |
| 3 | 1&2 | Grahams law of  diffusion | **By the end of the lesson, the learner**  **should be able to:-**  - Solve problems involving diffusion  - Relate the rate of diffusion to  molecular mass of a gas | - Class discussion  - Solving calculations  involving grahams law | Questions on pg 20  of explore BK 3 | Explore Chem BK 3  Pg 19-20 |  |
|  | 3&4 | The Mole | **By the end of the lesson, the learner**  **should be able to:-**  - Define the mole  - Relate the mole to RAM  - Convert mass into moles & vice versa | - Solving questions  involving number of  moles  - Experimental counting  by counting | Nails of different sizes  e.g. 1”, 2”, 6”  Beam  Balance | KLB BK 3 Pg 25-32  Explore Chem BK 3  Pg 21-24 |  |
|  | 5 | Determination of  Formular (empirical  formula) | **By the end of the lesson, the learner**  **should be able to:-**  - Determine the empirical formula of  compounds from experimental results  and given data | - Experiment to  determine the  composition of MgO,  CuO quantitatively  - Notes taking | Crucible  Source of heat  MgO  CuO | KLB BK 3 Pg 35-39  Explore Chem BK 3  Pg 30-37 |  |
| 4 | 1&2 | Molecular Formular | **By the end of the lesson, the learner**  **should be able to:-**  Determine the molecular formular of  compounds from experimental results  and given data | - Calculation to  determine the  molecular formulae  - Notes taking | Class discussion | KLB BK 3 Pg 39-46 |  |
|  | 3,4  &5 | Molar solutions.  Molarity of a solution  Concentration and  dilution | **By the end of the lesson, the learner**  **should be able to:-**  - Explain the terms concentration,  molarity and dilution of a solution  - Define and prepare molar solutions | - Class experiment Q/A  method  - Class discussion | Volumetric flasks  Wash bottles | KLB BK 3 Pg 46-53  Explore Chem BK 3  Pg 50-53 |  |
| 5 | 1,2  &5 | Stoichiometry of  Chemical reactions | **By the end of the lesson, the learner**  **should be able to:-**  Write correct full formulae and ionic equations of reactions with state  symbols and use them in calculations  of reacting quantities | - Experiments on titration  - Note taking  - Q/A method  - Class discussion | Burette  Pipette  Conical flask  Complete stands  White tiles  Indicators | KLB BK 3 Pg 63-78  Explore Chem BK 3  Pg 68-78 |  |
|  | 4&5 | Molar Gas Volume  Molar gas volume and  atomicity of gases | **By the end of the lesson, the learner**  **should be able to:-**  Define molar gas volume and atomicity  of gases | - Note taking  - Class discussion | Questions involving  calculations | KLB BK 3 Pg 79-85 |  |
| 6 | 1&2 | Avogadros and  Gay-lussacs laws | **By the end of the lesson, the learner**  **should be able to:-**  - State Avogadros law  - State Gay lussacs law  - Carry out related calculations | *© Education Plus Agencies*  - Class discussion  - Q/A method | Calculations involving  Avogadros and gay-  Lussacs law | KLB BK 3 Pg 78-85  Principles of Chem  BK 3 Pg |  |
|  | 3,4  &5 | Organic Chemistry  Alkanes, Features of homologous Series  General formula,  Occurrence and  Nomenclature | **By the end of the lesson, the learner**  **should be able to:-**  - Define hydrocarbon  - Name and draw structures of simple  Alkanes  - State the features of a homologous  series | - Taking notes  - Examining models of  Alkanes  - Q/A method  - Class discussion | Models representing  simple alkanes  structures | KLB BK 3 Pg 92-100  Principles of Chem  BK 3 Pg |  |
| 7 | 1 | Isomerism in alkanes | **By the end of the lesson, the learner**  **should be able to:-**  - Draw and name isomers of simple  Hydrocarbons containing not more  than five carbon atoms  - Define isomerism | - Class discussion  - Drawing structures of  different isomers  - Note taking | Models representing  structures of alkanes | KLB BK 3  Pg 101-102  Principles of Chem  BK 3 Pg |  |
|  | 2&3 | Preparation of  Methane and Ethane  Gases | **By the end of the lesson, the learner**  **should be able to:-**  - Describe how methane and ethane are  Prepared in the laboratory  - State the physical properties of alkanes | - Class experiment  - Note taking | Sodium ethanoate  Round bottomed flask  Trough  Beehive  Sheve/stand | KLB BK 3  Pg 103-106 |  |
|  | 4&5 | Chemical properties of  Alkanes.  Uses of alkanes | **By the end of the lesson, the learner**  **should be able to:-**  - Explain the chemical properties of  Alkanes  - State uses of alkanes | - Note taking  - Q/A method  - Class discussion | Sodium ethanoate  Round bottomed flask  Trough  Beehive  Stand | KLB BK 3  Pg 105-106 |  |
| 8 | 1-5 | **HALF TERM** | | | | |  |
| 9 | 1&2 | Alkenes | **By the end of the lesson, the learner**  **should be able to:-**  Name and draw structures of simple  Alkenes up to six carbon atoms | - Note taking  - Class discussion | Models representing structures of alkenes | KLB BK 3  Pg 107-110 |  |
|  | 3&4 | Isomerism in alkenes | **By the end of the lesson, the learner**  **should be able to:-**  - Draw and name isomers of butene  and pentene  - Physical properties/chemical  Properties of isomers | - Note taking  - Q/A method | Structures/models of  different isomers of  butene and pentene | KLB BK 3  Pg 110-111 |  |
|  | 5 | Preparation of Ethene  Physical properties of  alkenes | **By the end of the lesson, the learner**  **should be able to:-**  - Describe how ethane is prepared in  the laboratory.  - State the physical properties of alkenes | - Class experiment  - Note taking  - Observation | Concentrated H2SO4  Ethanol  Heat source  Sand  Round bottomed flask | KLB BK 3  Pg 111-112 |  |
| 10 | 1&2 | Chemical properties of  Alkenes | **By the end of the lesson, the learner**  **should be able to:-**  Explain the chemical properties of  alkenes e.g. combustion, addition rxts | - Class experiment  - Note taking  - Class discussion | Ethene gas  Source of heat | KLB BK 3  Pg 112-114 |  |
|  | 3,4  &5 | Test for unsaturation  Use of alkenes | **By the end of the lesson, the learner**  **should be able to:-**  - Explain the observations when alkenes  are bubbled through H+/KMnO4 or  Bromine water  - State uses of alkenes | - Class experiment  - Observation  - Note taking  - Class discussion | Ethene gas  H+/KMnO4  Bromine water  Test tubes | KLB BK 3  Pg 114-115u |  |
| 11 | 1&2 | Alkynes  Nomenclature | **By the end of the lesson, the learner**  **should be able to:-**  Name and draw structures of simple  alkynes of up to six carbon atoms | - Note taking  - Class discussion | A chart showing  structures of alkynes  Models of alkynes | KLB BK 3  Pg 122-124  Explore Chem BK 3  Pg 91-92 |  |
|  | 3&4 | Isomerism in alkynes | **By the end of the lesson, the learner**  **should be able to:-**  - Draw and name isomers of bytyne  - Physical and chemical properties of  Isomers | - Note taking  - Class discussion | Models of different  Isomers of butyne | KLB BK 3  Pg 124-125  Explore Chem BK 3  Pg 92-98 |  |
|  | 5 | Preparation of ethyne  Physical properties | **By the end of the lesson, the learner**  **should be able to:-**  - Describe how ethyne is prepared in  the laboratory  - State the physical properties of alkynes | - Class experiment  - Note taking  - Class discussion | Calcium carbide  Sand  Mug  Flat bottomed flask | KLB BK 3  Pg 125-127  Explore Chem BK 3  Pg 98-105 |  |
| 12 | 1&2 | Chemical properties of alkynes  Uses of alkynes | **By the end of the lesson, the learner**  **should be able to:-**  - Explain the chemical properties of  Alkynes e.g. combustion, addition  Reaction  - State uses of alkynes | - Note taking  - Q/A method | Calcium carbide  Sand, Trough  Beehive stand  Flat bottomed flask  Water,  Dropping funnel | KLB BK 3  Pg 127-130  Explore Chem BK 3  Pg 113-114 |  |
|  | 3,4  &5 | Organic chemistry II  Introduction  Alkanols | **By the end of the lesson, the learner**  **should be able to:-**  Write the general formular and name  alkanols up to those with 10 carbon  atoms | Class discussion |  |  |  |
| 13 | 1&2 | Alkanols | **By the end of the lesson, the learner**  **should be able to:-**  Prepare alkanols from hydrolysis of  Alkenes | - Note taking  - Discussion | Charts of alkanols/  Structures | KLB BK 4 Pg 65  Longhorn BK 4  Pg 257 |  |
|  | 3&4 | Preparation of ethanol | **By the end of the lesson, the learner**  **should be able to:-**  Prepare ethanol from carbohydrates | - Class experiment  - Note taking  - Class discussion | Glocuse, beaker, yeast,  Polythene bag,  Distillation apparatus | KLB BK 4 Pg 211  Longhorn BK 4  Pg 263 |  |
|  | 5 | Physical properties of  Alkanols | **By the end of the lesson, the learner**  **should be able to:-**  List and explain the trends observed in  Physical properties of alkanols | - Note taking  - Discussion | Chart showing physical  properties of alkanols | KLB BK 4 Pg 214  CSC BK 4  Pg 182-188 |  |
| 14 |  | **EXAMINATIONS** | | | | |  |
| 15 |  | **REVISION OF EXAMS** | | Class discussin | Exam papers  Chalk board |  |  |

**CHEMISTRY SCHEMES OF WORK**

**FORM THREE 2016**

**TERM II**

**REFERENCES:**

1. KLB Secondary Chemistry Form 3 Students Book (2nd Edition) KLB BK 3
2. Comprehensive Secondary Chemistry BK 3 (CSC BK 3)
3. Comprehensive Secondary Chemistry BK 4 (CSC BK 4)
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| **WK** | **LSN** | **TOPIC/S-TOPIC** | **OBJECTIVES** | **L/ACTIVITIES** | **L/T AIDS** | **REFERENCE** | **REMARKS** |
| 1 | 1-5 | **SCHOOL RE-OPENS**  **REVISION OF END OF TERM ONE EXAMS** | | | | |  |
| 2 | 1,2  &3 | Chemical properties of  Alkanols  Uses of alkanols | **By the end of the lesson, the learner**  **should be able to:-**  - State how alkanols react with Na,  H2SO4 and alkanoic acids  - State various ues of alkanoic acids | - Discussion  - Notes taking | Ethanol, Sodium metal,  H2SO4, Ethanoic acid,  Means of heating air | KLB BK 4  Pg 213-219  Longhorn BK 4  Pg 278  CMS Pg 213 |  |
|  | 4&5 | Alkanoic acids  Naming and drawing  structures of alkanoic  acids | **By the end of the lesson, the learner**  **should be able to:-**  - Write the general formula (R COOH)  Of alkanoic acids  - Name and draw formulae for 1st ten  Alkanoic acids | Drawing and naming  alkanoic molecules | Chart on structures of  alkanoic acids | KLB BK 4  Pg 219-222  CSC BK 4  Pg 191-192 |  |
| 3 | 1&2 | Properties of alkanoic  acid (continuation)  Uses of alkanoic acids | **By the end of the lesson, the learner**  **should be able to:-**  Explain both physical and chemical  Properties | - Discussion on uses of  Alkanoic acids  - Writing relevant  Chemical equations | Chart on uses of  Alkanoic acids  Ethanoic acid | KLB BK 4  CSC BK 4  Pg 196-197 |  |
|  | 3&4 | Detergents soaps  (Soapy detergents) | **By the end of the lesson, the learner**  **should be able to:-**  - Define soap  - Describe the preparation of soap by  Hydrolysis of fats by alkalis  - Explain how soaps clean | Carry out experiment on  Preparation of soaps  Record observations  Discussion based on observations | 4M sodium hydroxide  Sodium chloride  Castor oil  Distilled water  Bar soap  Animal fats | KLB BK 4  Pg 227-235  Longhorn BK 4  Pg 302  CMS BK4 Pg 221 |  |
|  | 5 | Soapless detergents | **By the end of the lesson, the learner**  **should be able to:-**  - Describe the preparation of soapless  detergents  - Describe properties of detergents | Carry out experiment on  preparation of soapless  detergents  Observations  Discussion | Soaps | KLB BK 4  Pg 235-238 |  |
| 4 | 1&2 | Uses of detergents  Effects of hard water  on detergents | **By the end of the lesson, the learner**  **should be able to:-**  - State and explain uses of detergents  - Explain the effects of hard water on  detergents | Explain uses of detergents  Carry out experiments to  show effects of hard  water on soaps and soap  less detergents, Discussion | Soaps, soapless  detergents, tap water,  distilled water, warm  water, beaker | KLB BK 4 Pg 235  CSC BK 4 Pg 200 |  |
|  | 3&4 | Polymers | **By the end of the lesson, the learner**  **should be able to:-**  - Define monomers and polymers  - Name various monomers and  Polymers they form  - Explain how condensation and  addition polymerization occurs | - Defining terms  - Naming monomers  - Discussion | Charts on structures of  Natural polymers | KLB BK 4  Pg 238-340  Longhorn BK 4  Pg 318 |  |
|  | 5 | Natural polymers | **By the end of the lesson, the learner**  **should be able to:-**  List some natural polymers and state  their uses | - Listing examples of  Natural polymers  - Drawing structures of  cellulose, natural rubber  vulcanized rubber | Charts showing natural  polymers, charts on  uses of natural  polymers | KLB BK 4  Pg 240-243  CSC BK 4  Pg 201-202 |  |
| 5 | 1&2 | Synthetic polymers  and fibres and their  uses | **By the end of the lesson, the learner**  **should be able to:-**  - List some synthetic polymers & fibres  - Describe the preparation and  Properties of synthetic polymers  - State the uses of synthetic polymers | - Carry out experiments  - Record observations  - Writing relevant  Chemical equations  - Describing properties  Of synthetic fibres | 2M NaOH, Ethanol  solution of hexane-1,6-  diol acid, solution of  hexane-1,6-diamine,  pair of tongs, test tubes | KLB BK 4  CSC BK 4  Pg 203-211 |  |
|  | 3 | Structure of polymers | **By the end of the lesson, the learner**  **should be able to:-**  Identify the structure of a polymer  given the monomer | - Discussion  - Drawing | Chart on structures of polymers & monomers | KLB BK 4  CSC BK 4  Pg 204-205 |  |
|  | 4&5 | Advantages and  Disadvantages of  Synthetic material over  Natural polymers | **By the end of the lesson, the learner**  **should be able to:-**  State the advantages and disadvantages  of synthetic materials compared to  those of natural origin in terms of their  structures and properties | - Discussion  - Listing the advantages  and disadvantages  of synthetic against  polymers | 2M NaOH, Ethanol  solution of hexane-1,6-  diol acid, pair of tongs | KLB BK 4  CSC BK 4  Pg 203-211 |  |
| 6 | 1,2  &3 | Nitrogen and its  Compounds.  Laboratory preparation  of nitrogen gas  Physical and Chemical  Properties of nitrogen  gas | **By the end of the lesson, the learner**  **should be able to:-**  - Describe laboratory and industrial  isolation of nitrogen from the air  - Describe laboratory preparation of  nitrogen gas  - State the physical and chemical  properties of nitrogen gas | - Experiments  - Preparation of nitrogen  gas  - Discussion on  observation recorded  - Describe properties of  Nitrogen gas | - Aspirator  - Combustion tube  - Gas jar  - Copper  - NH4Cl(aq)  - NaNO3(aq) | KLB BK 3  Pg 134-139  Explore Chem BK 3  Pg 113-114 |  |
|  | 4&5 | Oxides of Nitrogen  Nitrogen (I) Oxide | **By the end of the lesson, the learner**  **should be able to:-**  - Describe the laboratory preparation of  N2O  - State the physical properties of N2O  gas | - Experiment on  preparation of N2O gas  - Observations  - Discussion | NH4Cl  NH4NO3  Heat  Gas jar  Water | KLB BK 3  Pg 139-141  CSC BK 3 |  |
| 7 | 1,2  &3 | Chemical properties of  N2O gas  Uses of N2O gas | **By the end of the lesson, the learner**  **should be able to:-**  - Describe the chemical properties of  N2O gas  - State the uses of N2O gas | - Class discussion  - Notes taking | NH4Cl, NH4NO3, Heat  Round bottomed flask  Beehive stand  Warm water  Gas jar | KLB BK 3  Pg 141 |  |

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|  | 4&5 | Nitrogen (II) Oxide  Preparation and  Physical properties | **By the end of the lesson, the learner**  **should be able to:-**  - Describe the laboratory preparation of  NO gas  - State the physical properties of  Nitrogen (II) oxide gas | - Experiment to prepare  NO gas  - Recording observations  - Discussion based on  observations made | - Dil. Nitric acid  - Copper turnings  - Dropping funnel  - Gas jar  - Beehive stand  - Conical flask | KLB BK 3  Pg 142-143  Explore Chem BK 3  Pg 120-121 |  |
| 8 | 1 | Chemical properties of  Nitrogen (II) Oxide gas  Uses of NO gas | **By the end of the lesson, the learner**  **should be able to:-**  - Describe the chemical properties of  NO gas  - State the uses of NO gas | Carry out experiment to  study the chemical  properties of NO gas  Discussion | NO gas  Mg, Cu, Cl2  Candle  Burning splint | KLB BK 3  Pg 143-144  CSC BK 3  Pg 140-141 |  |
|  | 2&3 | Nitrogen (IV) Oxide  Laboratory preparation | **By the end of the lesson, the learner**  **should be able to:-**  - Describe the laboratory preparation  of NO2 gas  - State the physical properties of NO2  gas | Experiment on  Preparation of NO2 gas  Discussion | - Conc. Nitric acid  - Copper turnings  - Dropping funnel  - Gas jar  - Conical flask | KLB BK 3  Pg 144-145  CMS BK 3  Pg 141-142 |  |
|  | 4&5 | Properties of Nitrogen  (IV) Oxide gas  Uses of Nitrogen  (IV) Oxide gas | **By the end of the lesson, the learner**  **should be able to:-**  - Explain the chemical properties of  NO2 gas  - State the uses of NO2 gas | - Carry out experiment  to study the chemical  properties  - Recording  - Discussion | Dry NO2(g)  Mg, H2O, NaOH  Candles  Burning splint  Source of heat | KLB BK 3  Pg 146-147  CMS BK 3  Pg 142-143 |  |
| 9 | 1&2 | Ammonia  Laboratory preparation  Physical properties | **By the end of the lesson, the learner**  **should be able to:-**  - Describe laboratory preparation of  Ammonia gas and its aqueous  - State physical properties of NH3(g) | - Carry out experiment  On preparation of  Ammonia gas  - NH4Cl, Ca(OH)2  - Litmus paper, Gas jar | - NH4Cl, Ca(OH)2  - Litmus paper, Gas jar  - Round bottomed flask  - Drying  - Water | KLB BK 3  Pg 147-151  CMS BK 3  Pg 143-146 |  |
|  | 3,4  &5 | Chemical properties of  Ammonia/aqueous  Ammonia | **By the end of the lesson, the learner**  **should be able to:-**  Explain the chemical properties of  Ammonia gas and aqueous ammonia  solution e.g. reaction of aqueous NH3  with cations, reaction with air, reaction  with CuO | - Experiment to study the  Chemical properties of  NH3 gas and aqueous  Ammonia solution  - Observations  - Discussions | Metal ions in solution  Ca2+, Mg2+, Al3+, Zn2+,  Fe2+, Fe3+, Pb2+, Cu2+,  NH4OH.  Test tubes  Dropper  Aqueous ammonia | KLB BK 3  Pg 152-159  CMS BK 3  Pg 147-152 |  |
| 10 | 1&2 | Large scale manufacture  of ammonia  (Haber process) | **By the end of the lesson, the learner**  **should be able to:-**  Describe the Haber process | - Class discussion  - Notes taking | Flow chart showing  stages on the large  scale manufacture of  ammonia | KLB BK 3  Pg 159-161  CMS BK 3  Pg 152-155 |  |
|  | 3 | Uses of ammonia | **By the end of the lesson, the learner**  **should be able to:-**  State the uses of ammonia | - Class discussion | Chart showing uses of  ammonia | KLB BK 3  Pg 159-161  CMS BK 3 Pg 155 |  |
|  | 4&5 | Nitric (V) Acid  Laboratory preparation | **By the end of the lesson, the learner**  **should be able to:-**  - Describe the laboratory preparation of  Nitric acid  - State the physical properties of HNO3 | - Experiment on  preparation of HNO3  - Observation  - Discussion | Retort stand, coldwater  KNO3, Conc H2SO4,  Stand in clamp, glass  stopper | KLB BK 3  Pg 162-164  CMS BK 3  Pg 1157-158 |  |
| 11 | 1 | Industrial manufacture  of nitric acid | **By the end of the lesson, the learner**  **should be able to:-**  Describe the large scale manufacture of  Nitric acid | Discussion on large scale  manufacture of nitric  acid | Flowchart showing  steps of manufacture  of nitric (IV) acid | KLB BK 3  Pg 164-165  CMS BK 3  Pg 158-159 |  |
|  | 2&3 | Properties of dilute  Nitric acid (review) | **By the end of the lesson, the learner**  **should be able to:-**  Describe and explain the reactions of  dilute nitric acid with metals, carbonates,  hydroxides and oxides | - Experiment to study  properties of dilute  nitric acid  - Recording  - Discussion | Dil. nitric acid, Mg rib-  Bon, Na2CO3(s),  KHCO3, NaOH, CaO | KLB BK 3  Pg 165-169 |  |
|  | 4&5 | Properties of conc.  Nitric acid | **By the end of the lesson, the learner**  **should be able to:-**  Describe and explain the reactions of  Conc. Nitric acid e.g. as an oxidizing  agent in iron (II) solution, sulphate,  copper metal. | - Experiment to study the  chemical properties of  conc. nitric acid  - Recording  - Discussion | Conc. HNO3  H+/FeSO4 solution  Sulphur  Copper turnings  Spatula  Boiling tube | KLB BK 3  Pg 169-171  CMS BK 3  Pg 160-161 |  |
| 12 | 1&2 | Nitrate  Action of heat on  Nitrates (review) | **By the end of the lesson, the learner**  **should be able to:-**  Identify the products form when  different nitrates are heated | - Heating various nitrates  - Recording observations  - Discussion based on  observations | KNO3, NaNO3,  Ca(NO3)2, Cu(NO3)2,  AgNO3, heat source,  Test tubes | KLB BK 3  Pg 171-172  CMS BK 3  Pg 162-163 |  |
|  | 3,4  &5 | Test for Nitrates | **By the end of the lesson, the learner**  **should be able to:-**  Carry out a test on nitrates | Carry out various tests  for nitrates  Recording and discussing  observations | HNO3,NaNO3,Ca(NO3)2  KNO3 soluton, dil.  H2SO4, FeSO4 solution,  test tubes, dropper, | KLB BK 3  Pg 172-174  CMS BK 3  Pg 165-166 |  |
| 13 | 1&2 | Nitrogen containing  Fertilizers.  Examples  Amount of nitrogen in  Various fertilizers | **By the end of the lesson, the learner**  **should be able to:-**  - Give some examples of nitrogenous  Fertilizers.  - Calculate the percentage of nitrogen  In nitrogen containing fertilizer e.g.  - Ammonium sulphate  - Ammonium nitrate  - Ammonium phosphate | - Listing examples of  Nitrogenous fertilizers.  - Calculating amount of  Nitrogen in nitrogenous  Fertilizers. | Samples of nitrogenous  fertilizers  NH4NO3  (NH4)3PO4  (NH4)2SO4 | KLB BK 3  Pg 161-162 |  |
|  | 3,4  &5 | **REVISION FOR EXAMS** | | | | |  |
| 14 |  | **EXAMINATIONS** | | | | |  |

**CHEMISTRY SCHEMES OF WORK**

**FORM THREE 2016**

**TERM III**

**REFERENCES:**

1. KLB Secondary Chemistry Form 3 Students Book (2nd Edition) KLB BK 3
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| **WK** | **LSN** | **TOPIC/S-TOPIC** | **OBJECTIVES** | **L/ACTIVITIES** | **L/T AIDS** | **REFERENCE** | **REMARKS** |
| 1 |  | **SCHOOL RE-OPENS** | | | | |  |
|  | 1,2  &3 | Pollution effect of  Nitrogen compounds  In the environment | **By the end of the lesson, the learner**  **should be able to:-**  - Explain the pollution effects of  Nitrogen.  - Formation of acid rain  - Nitrate ion from fertilizers in water  masses  - Nitrate ions in drinking water | - Field trip  - Record observations  - Discussion based on the  Observations | Note books, sample  pictures showing  substances affected by  nitrogen compounds | KLB BK 3  Pg 174-175  CMS BK 3  Pg 167-168 |  |
|  | 4&5 | Nitrogen containing  Fertilizers.  Examples  Amount of nitrogen in  Various fertilizers | **By the end of the lesson, the learner**  **should be able to:-**  - Give some examples of nitrogenous  Fertilizers.  - Calculate the percentage of nitrogen  In nitrogen containing fertilizer e.g.  - Ammonium sulphate  - Ammonium nitrate  - Ammonium phosphate | - Listing examples of  Nitrogenous fertilizers.  - Calculating amount of  Nitrogen in nitrogenous  Fertilizers. | Samples of nitrogenous  fertilizers  NH4NO3  (NH4)3PO4  (NH4)2SO4 | KLB BK 3  Pg 161-162 | 13 |
| 2 | 1,2  &3 | Pollution effect of  Nitrogen compounds  In the environment | **By the end of the lesson, the learner**  **should be able to:-**  - Explain the pollution effects of  Nitrogen.  - Formation of acid rain  - Nitrate ion from fertilizers in water  masses  - Nitrate ions in drinking water | - Field trip  - Record observations  - Discussion based on the  Observations | Note books, sample  pictures showing  substances affected by  nitrogen compounds | KLB BK 3  Pg 174-175  CMS BK 3  Pg 167-168 |  |
|  | 4&5 | Reducing  Environmental  Pollution by Nitrogen  Compounds | **By the end of the lesson, the learner**  **should be able to:-**  Explain the methods and ways of  reducing environmental pollution by  nitrogen compounds e.g. recycling gases ,  sewage treatment, adding lime to lakes | - Field trip  - Record discussion of  Observations | Note books | KLB BK 3  Pg 175 |  |
| 3 | 1&2 | Sulphur and its  Compounds  Occurrence of sulphur  Extraction of sulphur | **By the end of the lesson, the learner**  **should be able to:-**  - State the forms in which sulphur occur  - Explain the Frasch process | - Stating the forms in  which sulphur occur  - Discussing the Frasch  process | A chart showing a  diagram of frasch  process | KLB BK 3  Pg 180-181  CMS BK 3  Pg 175-176 |  |
|  | 3&4 | Allotropes of sulphur  Rhombic sulphur  Monoclinic sulphur  Amorphous sulphur | - Define the term allotropy  - State the allotrope of sulphur  - Differentiate the allotropes in terms of  structure and thermal stability | - Carry out an experiment  On preparation of the  various allotropes of  sulphur  - Recording & discussions | - Sulphur powder  - Evaporating dish  - Boiling tube  - Bunsen burner  - Crucible | KLB BK 3  Pg 182-183  CMS BK 3  Pg 177-179 |  |
|  | 5 | Properties of sulphur | **By the end of the lesson, the learner**  **should be able to:-**  - State solubility of sulphur in both  water and organic solvent  - Explain the changes that occur when  sulphur is heated | - Carry out an experiment  to study the physical  properties of sulphur  - Recording and  discussing the  observations | - Sulphur powder  - Water  - Beaker  - Bunsen burner | KLB BK 3  Pg 184-186  CMS BK 3  Pg 180-181 |  |
| 4 | 1&2 | Chemical properties | **By the end of the lesson, the learner**  **should be able to:-**  - Explain the chemical properties of  sulphur.  - Write the relevant chemical equations  for the reactions. | - Carry out an experiment  to study the chemical  properties of sulphur  - Recording and  discussing the  observations | - Sulphur powder  - Oxygen  - Iron powder  - Copper  - Concentrated acids | KLB BK 3  Pg 187-190  CMS BK 3  Pg 182 |  |
|  | 3&4 | Compounds of Sulphur  Sulphur (IV) Oxide | **By the end of the lesson, the learner**  **should be able to:-**  - Describe the preparation of SO2 gas  - State the physical properties of SO2 (g) | - Carry out an experiment  on preparation of SO2g  - Recording and  discussing the  observations | - Conc. H2SO4  - Copper turnings  - Gas jar  - Aspirator | KLB BK 3  Pg 194 |  |
|  | 5 | Chemical properties of  Sulphur (IV) Oxide | **By the end of the lesson, the learner**  **should be able to:-**  Carry out test using litmus paper and  write equations fro neutralization  reaction | - Carryout litmus paper  test  - Writing of chemical  equations | - Moist litmus paper  - Sulphur(IV)oxide gas  - Blue or red flower  Petals | KLB BK 3  Pg 187-190  CMS BK 3  Pg 183-185 |  |
| 5 | 1&2 | Chemical properties of  Sulphur (IV) Oxide | **By the end of the lesson, the learner**  **should be able to:-**  - Explain reducing properties of SO2  and write ionic equations for the  reactions  - Explain oxidizing properties and  write balanced equations for the  reactions | - Carry out tests on  reducing and oxidizing  properties of SO2  - Recording and  discussing the  observations | - Test tubes  - Potassium dichromate  - Dil. Sulphur (VI) acid  - Sulphur(III)oxide gas  - Burning splint  - Magnesium ribbon | KLB BK 3  Pg 195-199 |  |
|  | 2&3 | Test for sulphate and  Sulphide ions  Uses of sulphur (IV)  Oxide | **By the end of the lesson, the learner**  **should be able to:-**  - Explain the test of sulphate and  Sulphite ions  - State the uses of sulphur (IV) Oxide | - Carry out tests on  Sulphates and sulphites  - Recording and  discussing the  observations  - Stating the uses of SO2 | - Sodium sulphate  - Barium chloride  - Dilute HCl  - Test tubes | KLB BK 3  Pg 199-201 |  |
|  | 4&5 | Sulphuric (IV) acid  Large scale manufacture  (Contact Process) | **By the end of the lesson, the learner**  **should be able to:-**  - Explain the steps involved in contact  Process  - State the materials needed in contact  Process | - Discussion of steps  - Notes taking | Flowchart showing  summary of main steps  in contact process | KLB BK 3  Pg 201-203  CMS BK 3  Pg 195-196 |  |
| 6 | 1,2  &3 | Properties of sulphuric  Acid | **By the end of the lesson, the learner**  **should be able to:-**  - State the physical properties of H2SO4  - Explain the chemical properties of  concentrated H2SO4  - Explain the chemical properties of  dilute H2SO4 | - Carry out an experiment  to study the chemical  properties of H2SO4  - Recording and  discussing the  observations | - Conc. H2SO4  - Dil. H2SO4,  - CuSO4 crystals  - Copper foil  - Zinc granules  - Spatula, metal oxides  - Sodium hydroxide | KLB BK 3  Pg 203-210 |  |
|  | 4&5 | Hydrogen sulphide  (H2S) | **By the end of the lesson, the learner**  **should be able to:-**  - Describe the preparation of H2S gas  - State the physical properties of H2  Dil. H2SO4 | - Carry out an experiment  to study the chemical  properties of H2SO4  - Recording and  discussing the  observations | - Conc. H2SO4  - Dil. H2SO4,  - CuSO4 crystals  - Copper foil  - Zinc granules  - Spatula, metal oxides  - Sodium hydroxide | KLB BK 3  Pg 210-211 |  |
| 7 | 1&2 | Chemical properties of  H2S gas | **By the end of the lesson, the learner**  **should be able to:-**  - Explain the chemical properties of  Hydrogen sulphide  - Write the relevant chemical equations | - Discussion based on  Chemical properties of  H2S  - Writing the balanced  Chemical equations | A chart showing the properties of H2S gas | KLB BK 3  Pg 211-213  CMS BK 3  Pg 199-200 |  |
|  | 3&4 | Test for hydrogen  Sulphide gas  Environmental pollution  of compounds of sulphur  Control of pollution by  Sulphur compounds | **By the end of the lesson, the learner**  **should be able to:-**  - Describe the chemical tests of H2S gas  - State the environmental effects of  Sulphur compounds.  - State the methods of pollution control | - Carry out experiments  on tests of H2S gas  - Recording and  discussing the  observations  - Discussion on environ-  mental effects of sulphur  compounds | - Lead (II) acetate  paper  - A chart showing  ways of controlling  pollution by sulphur  compounds | KLB BK 3  Pg 213-214  CMS BK 3  Pg 200-201 |  |
|  | 5 | Chloride and its  Compounds  Preparation of Cl2  Physical properties | **By the end of the lesson, the learner**  **should be able to:-**  - Describe the preparation of chlorine  - State the physical properties of Cl2 | - Carry out class  experiment  - Recording and  discussing the  observations  - Taking notes | - Manganese (IV) Oxide  - Concentrated H2SO4  - Heat source  - Concentrated HCL | KLB BK 3  Pg 219-221  CMS BK 3  Pg 208-210 |  |
| 8 | 1,2  &3 | Chemical properties of  Chlorine | **By the end of the lesson, the learner**  **should be able to:-**  - State and explain chemical properties  of chlorine  - Write relevant balanced chemical  equations | - Carry out an experiment  to study the chemical  properties of chlorine  - Recording and  discussing the  observations | - Water  - Chlorine | KLB BK 3  Pg 221-229  CMS BK 3  Pg 211-213 |  |
|  | 4&5 | Hydrogen chloride  Preparation  Physical properties | **By the end of the lesson, the learner**  **should be able to:-**  Explain the physical properties of  Hydrogen chloride gas | Performing an experiment  on preparation of HCl gas  Discussion of physical  Properties of HCl gas | Round bottomed flask,  Gas, conical flask,  Clamp, conc. H2SO4,  Sodium chloride | KLB BK 3  Pg 232-234 |  |
| 9 | 1&2 | Chemical properties | **By the end of the lesson, the learner**  **should be able to:-**  - Prepare aqueous hydrogen chloride  - State and explain the chemical  Properties of HCl | - Carry out an experiment  to study HCl  - Recording and  discussing the  observations | Mg metal  Na2CO3  Ca(OH)2  NaOH | Longhorn sec chem.  BK 3 Pg 330  KLB BK 3  Pg 236-237 |  |
|  | 3,4  &5 | Uses of Hydrogen  Chloride gas  Industrial manufacture  of hydrochloric acid  Uses of hydrochloric  acid  Pollution by chlorine  Gas | **By the end of the lesson, the learner**  **should be able to:-**  - State the uses of hydrogen chloride  gas  - Describe the industrial manufacture  of HCl acid  - Explain the environmental pollution  Caused by chlorine and its compounds | Drawing of set up of the  Preparation of  hydrochloric acid | - Charts  - Diagrams | Longhorn sec chem.  BK 3 Pg 332-336  KLB BK 3  Pg 237-240 |  |