**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)

Compiled by Schools Net Kenya (SNK) in partnership with Jospa Publishers | P.O. Box 3029 – 00200 Nairobi |

Coordinated by KENPRO, Macjo Arcade, 4th Floor, Suite 15E, Off Magadi Road, Ongata Rongai |Tel: +254202319748 |

E-mail: infosnkenya@gmail.com | Website: [www.schoolsnetkenya.com/](http://www.schoolsnetkenya.com/)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **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 involvingthe gas laws | KLB BK 3 Pg 1-14Explore Chem BK 3Pg 6-12 |  |
|  | 3&4 | Charles lawCombined 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 involvingthe gas laws | Longhorn BK 3CMS 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 | BeakersBromineKMnO4CuSO4Water | 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 20of explore BK 3 | Explore Chem BK 3Pg 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 sizese.g. 1”, 2”, 6”BeamBalance  | KLB BK 3 Pg 25-32Explore Chem BK 3Pg 21-24 |  |
|  | 5 | Determination ofFormular (empiricalformula) | **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 | CrucibleSource of heatMgOCuO | KLB BK 3 Pg 35-39Explore Chem BK 3Pg 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 resultsand 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 solutionConcentration anddilution | **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 flasksWash bottles | KLB BK 3 Pg 46-53Explore Chem BK 3Pg 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 | BurettePipetteConical flaskComplete standsWhite tilesIndicators  | KLB BK 3 Pg 63-78Explore Chem BK 3Pg 68-78 |  |
|  | 4&5 | Molar Gas VolumeMolar gas volume andatomicity of gases | **By the end of the lesson, the learner** **should be able to:-**Define molar gas volume and atomicityof gases | - Note taking- Class discussion | Questions involvingcalculations | KLB BK 3 Pg 79-85 |  |
| 6 | 1&2 | Avogadros andGay-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 involvingAvogadros and gay-Lussacs law | KLB BK 3 Pg 78-85Principles of ChemBK 3 Pg  |  |
|  | 3,4&5 | Organic ChemistryAlkanes, Features of homologous SeriesGeneral 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 92-100Principles of ChemBK 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 101-102Principles of ChemBK 3 Pg  |  |
|  | 2&3 | Preparation of Methane and EthaneGases | **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 ethanoateRound bottomed flaskTroughBeehiveSheve/stand | KLB BK 3 Pg 103-106 |  |
|  | 4&5 | Chemical properties ofAlkanes.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 ethanoateRound bottomed flaskTroughBeehiveStand | 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 ofdifferent isomers of butene and pentene | KLB BK 3 Pg 110-111 |  |
|  | 5 | Preparation of EthenePhysical 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 H2SO4EthanolHeat sourceSandRound 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 gasSource of heat  | KLB BK 3 Pg 112-114 |  |
|  | 3,4&5 | Test for unsaturationUse 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 gasH+/KMnO4Bromine waterTest tubes | KLB BK 3 Pg 114-115u |  |
| 11 | 1&2 | AlkynesNomenclature | **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 122-124Explore Chem BK 3Pg 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 124-125Explore Chem BK 3Pg 92-98 |  |
|  | 5 | Preparation of ethynePhysical 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 SandMugFlat bottomed flask | KLB BK 3 Pg 125-127Explore Chem BK 3Pg 98-105 |  |
| 12 | 1&2 | Chemical properties of alkynesUses 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, TroughBeehive standFlat bottomed flaskWater, Dropping funnel | KLB BK 3 Pg 127-130Explore Chem BK 3Pg 113-114 |  |
|  | 3,4&5 | Organic chemistry IIIntroductionAlkanols | **By the end of the lesson, the learner** **should be able to:-**Write the general formular and namealkanols up to those with 10 carbonatoms | Class discussion |  |  |  |
| 13 | 1&2 | Alkanols | **By the end of the lesson, the learner** **should be able to:-**Prepare alkanols from hydrolysis ofAlkenes | - Note taking- Discussion | Charts of alkanols/Structures | KLB BK 4 Pg 65Longhorn 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 211Longhorn BK 4 Pg 263 |  |
|  | 5 | Physical properties ofAlkanols | **By the end of the lesson, the learner** **should be able to:-**List and explain the trends observed inPhysical properties of alkanols | - Note taking- Discussion | Chart showing physicalproperties of alkanols | KLB BK 4 Pg 214CSC BK 4Pg 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)
4. Chemistry Made Simple Students Book 3 (CMS BK 3)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **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 ofAlkanolsUses 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 213-219Longhorn BK 4 Pg 278CMS Pg 213 |  |
|  | 4&5 | Alkanoic acidsNaming and drawingstructures of alkanoicacids | **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 219-222CSC BK 4Pg 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 chemicalProperties | - Discussion on uses of Alkanoic acids- Writing relevant  Chemical equations | Chart on uses of Alkanoic acidsEthanoic acid | KLB BK 4 CSC BK 4Pg 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 onPreparation of soapsRecord observationsDiscussion based on observations | 4M sodium hydroxideSodium chlorideCastor oilDistilled waterBar soapAnimal fats | KLB BK 4 Pg 227-235Longhorn BK 4 Pg 302CMS 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 onpreparation of soaplessdetergentsObservationsDiscussion | Soaps | KLB BK 4 Pg 235-238 |  |
| 4 | 1&2 | Uses of detergentsEffects of hard wateron 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 detergentsCarry out experiments toshow effects of hardwater on soaps and soapless detergents, Discussion | Soaps, soapless detergents, tap water,distilled water, warmwater, beaker | KLB BK 4 Pg 235CSC 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 238-340Longhorn BK 4 Pg 318 |  |
|  | 5 | Natural polymers | **By the end of the lesson, the learner** **should be able to:-**List some natural polymers and statetheir uses | - Listing examples of Natural polymers- Drawing structures of cellulose, natural rubber vulcanized rubber | Charts showing naturalpolymers, charts on uses of natural polymers | KLB BK 4 Pg 240-243CSC BK 4 Pg 201-202 |  |
| 5 | 1&2 | Synthetic polymersand 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 polymergiven 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 overNatural 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 theirstructures 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 itsCompounds.Laboratory preparationof nitrogen gasPhysical and ChemicalProperties of nitrogengas | **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 134-139Explore Chem BK 3Pg 113-114 |  |
|  | 4&5 | Oxides of NitrogenNitrogen (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 | NH4ClNH4NO3HeatGas jarWater  | KLB BK 3 Pg 139-141CSC BK 3 |  |
| 7 | 1,2&3 | Chemical properties ofN2O gasUses 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, HeatRound bottomed flaskBeehive standWarm waterGas jar | KLB BK 3 Pg 141 |  |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | 4&5 | Nitrogen (II) OxidePreparation 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 142-143Explore Chem BK 3Pg 120-121 |  |
| 8 | 1 | Chemical properties ofNitrogen (II) Oxide gasUses 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 chemicalproperties of NO gasDiscussion | NO gasMg, Cu, Cl2CandleBurning splint | KLB BK 3Pg 143-144CSC BK 3Pg 140-141 |  |
|  | 2&3 | Nitrogen (IV) OxideLaboratory 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 gasDiscussion | - Conc. Nitric acid- Copper turnings- Dropping funnel- Gas jar- Conical flask | KLB BK 3Pg 144-145CMS BK 3Pg 141-142 |  |
|  | 4&5 | Properties of Nitrogen(IV) Oxide gasUses 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, NaOHCandlesBurning splintSource of heat | KLB BK 3Pg 146-147CMS BK 3Pg 142-143 |  |
| 9 | 1&2 | AmmoniaLaboratory preparationPhysical 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 3Pg 147-151CMS BK 3Pg 143-146 |  |
|  | 3,4&5 | Chemical properties ofAmmonia/aqueousAmmonia  | **By the end of the lesson, the learner** **should be able to:-**Explain the chemical properties of Ammonia gas and aqueous ammoniasolution e.g. reaction of aqueous NH3with cations, reaction with air, reactionwith CuO | - Experiment to study the Chemical properties of NH3 gas and aqueous  Ammonia solution- Observations- Discussions | Metal ions in solutionCa2+, Mg2+, Al3+, Zn2+,Fe2+, Fe3+, Pb2+, Cu2+,NH4OH.Test tubesDropperAqueous ammonia | KLB BK 3Pg 152-159CMS BK 3Pg 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 showingstages on the largescale manufacture ofammonia | KLB BK 3Pg 159-161CMS BK 3Pg 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 ofammonia | KLB BK 3Pg 159-161CMS BK 3 Pg 155 |  |
|  | 4&5 | Nitric (V) AcidLaboratory 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, coldwaterKNO3, Conc H2SO4,Stand in clamp, glassstopper | KLB BK 3Pg 162-164CMS BK 3Pg 1157-158 |  |
| 11 | 1 | Industrial manufactureof nitric acid  | **By the end of the lesson, the learner** **should be able to:-**Describe the large scale manufacture ofNitric acid | Discussion on large scalemanufacture of nitricacid  | Flowchart showing steps of manufacture of nitric (IV) acid | KLB BK 3Pg 164-165CMS BK 3Pg 158-159 |  |
|  | 2&3 | Properties of diluteNitric 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 3Pg 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. HNO3H+/FeSO4 solutionSulphurCopper turningsSpatulaBoiling tube | KLB BK 3Pg 169-171CMS BK 3Pg 160-161 |  |
| 12 | 1&2 | NitrateAction 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 3Pg 171-172CMS BK 3Pg 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 nitratesRecording and discussing observations  | HNO3,NaNO3,Ca(NO3)2KNO3 soluton, dil. H2SO4, FeSO4 solution,test tubes, dropper, | KLB BK 3Pg 172-174CMS BK 3Pg 165-166 |  |
| 13 | 1&2 | Nitrogen containingFertilizers.ExamplesAmount of nitrogen inVarious 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 nitrogenousfertilizers NH4NO3(NH4)3PO4(NH4)2SO4 | KLB BK 3Pg 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
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)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **WK** | **LSN** | **TOPIC/S-TOPIC** | **OBJECTIVES** | **L/ACTIVITIES** | **L/T AIDS** | **REFERENCE** | **REMARKS** |
| 1 |  | **SCHOOL RE-OPENS** |  |
|  | 1,2&3 | Pollution effect ofNitrogen compoundsIn 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 showingsubstances affected bynitrogen compounds | KLB BK 3Pg 174-175CMS BK 3Pg 167-168 |  |
|  | 4&5 | Nitrogen containingFertilizers.ExamplesAmount of nitrogen inVarious 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 nitrogenousfertilizers NH4NO3(NH4)3PO4(NH4)2SO4 | KLB BK 3Pg 161-162 | 13 |
| 2 | 1,2&3 | Pollution effect ofNitrogen compoundsIn 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 showingsubstances affected bynitrogen compounds | KLB BK 3Pg 174-175CMS BK 3Pg 167-168 |  |
|  | 4&5 | Reducing Environmental Pollution by NitrogenCompounds | **By the end of the lesson, the learner** **should be able to:-**Explain the methods and ways ofreducing environmental pollution bynitrogen compounds e.g. recycling gases ,sewage treatment, adding lime to lakes | - Field trip- Record discussion of Observations | Note books | KLB BK 3Pg 175 |  |
| 3 | 1&2 | Sulphur and itsCompoundsOccurrence of sulphurExtraction 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 3Pg 180-181CMS BK 3Pg 175-176 |  |
|  | 3&4 | Allotropes of sulphurRhombic sulphurMonoclinic sulphurAmorphous 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 3Pg 182-183CMS BK 3Pg 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 3Pg 184-186CMS BK 3Pg 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 3Pg 187-190CMS BK 3Pg 182 |  |
|  | 3&4 | Compounds of SulphurSulphur (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 3Pg 194 |  |
|  | 5 | Chemical properties ofSulphur (IV) Oxide | **By the end of the lesson, the learner** **should be able to:-**Carry out test using litmus paper andwrite equations fro neutralizationreaction  | - Carryout litmus paper  test- Writing of chemical  equations | - Moist litmus paper- Sulphur(IV)oxide gas- Blue or red flower Petals | KLB BK 3Pg 187-190CMS BK 3Pg 183-185 |  |
| 5 | 1&2 | Chemical properties ofSulphur (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 3Pg 195-199 |  |
|  | 2&3 | Test for sulphate andSulphide ionsUses 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 3Pg 199-201 |  |
|  | 4&5 | Sulphuric (IV) acidLarge 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 stepsin contact process | KLB BK 3Pg 201-203CMS BK 3Pg 195-196 |  |
| 6 | 1,2&3 | Properties of sulphuricAcid | **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 3Pg 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 3Pg 210-211 |  |
| 7 | 1&2 | Chemical properties ofH2S 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 3Pg 211-213CMS BK 3Pg 199-200 |  |
|  | 3&4 | Test for hydrogen Sulphide gasEnvironmental pollutionof compounds of sulphurControl of pollution bySulphur 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 3Pg 213-214CMS BK 3Pg 200-201 |  |
|  | 5 | Chloride and itsCompoundsPreparation 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 3Pg 219-221CMS BK 3Pg 208-210 |  |
| 8 | 1,2&3 | Chemical properties ofChlorine | **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 3Pg 221-229CMS BK 3Pg 211-213 |  |
|  | 4&5 | Hydrogen chloridePreparationPhysical properties | **By the end of the lesson, the learner** **should be able to:-**Explain the physical properties ofHydrogen chloride gas | Performing an experimenton preparation of HCl gasDiscussion of physicalProperties of HCl gas | Round bottomed flask,Gas, conical flask, Clamp, conc. H2SO4,Sodium chloride | KLB BK 3Pg 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 metalNa2CO3Ca(OH)2NaOH | Longhorn sec chem.BK 3 Pg 330KLB BK 3Pg 236-237 |  |
|  | 3,4&5 | Uses of HydrogenChloride gasIndustrial manufactureof hydrochloric acidUses of hydrochloric acidPollution by chlorineGas | **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 thePreparation of hydrochloric acid | - Charts- Diagrams | Longhorn sec chem.BK 3 Pg 332-336KLB BK 3Pg 237-240 |  |