**CHEMISTRY SCHEMES OF WORK**

**FORM TWO 2016**

**TERM I**

**REFERENCES:**

1. KLB Secondary Chemistry Form 2 Students Book (2nd Edition) KLB BK 2
2. KLB Secondary Chemistry Form 3 Students Book (2nd Edition) KLB BK 3
3. Comprehensive Secondary Chemistry BK 2 (CSC)
4. Principles of Chemistry Form 2 by Muchiri and V.W Maina (POC F2)
5. Principles of Chemistry Form 3 by Muchiri and V.W Maina (POC F3)

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 | **SCHOOL OPENING** | | | | | |  |
| 2 | 1&2 | Structure of the atom  and the periodic table  - Structure of the atom | **By the end of the lesson, the learner**  **should be able to:-**  - Define atom  - Name the subatomic particles and  Where found  - Describe the structure of the atom and  label it | - Notes taking  - Discussion  - Drawing and labeling  the atom | Chart of the structure  of the atom | KLB BK 2 Pg 1  CSC Pg 2-3  POC BK2 Pg 3-6 |  |
|  | 3 | Atomic number and  Atomic mass | **By the end of the lesson, the learner**  **should be able to:-**  - Define atomic number and atomic  mass  - Do simple calculations on how to find  either of the given one of them | - Discussion  - Notes taking  - Calculation | Past questions | KLB BK 2 Pg 2-3  CSC Pg 6-7  POC BK2 Pg 7-9 |  |
|  | 4&5 | Isotopes | **By the end of the lesson, the learner**  **should be able to:-**  - Define isotopes  - Name some elements that exhibit  Isotopes  - Name isotopes of hydrogen | - Discussion  - Notes taking  - Calculation | - Chalkboard  - Charts | KLB BK 2 Pg 4  CSC Pg 8  POC BK2 Pg 10-12 |  |
| 3 | 1&2 | Energy levels and  Electron arrangement | **By the end of the lesson, the learner**  **should be able to:-**  - Write the electronic arrangement of  The 1st 20 elements  - State the importance of the number of  energy levels as well as the number of  electrons in the outermost energy level | - Discussion  - Notes taking  - Writing of the E.C | Charts of E.C of the  1st 20 elements | KLB BK 2 Pg 4-7  CSC Pg 4  POC BK2 Pg 4-7 |  |
|  | 3 | Development of the  Periodic table | **By the end of the lesson, the learner**  **should be able to:-**  - Build up the periodic table for the 1st  20 elements based on the no. of energy  levels and no. of electrons in the  outermost energy level.  - Explain the position of an element in  The table | - Discussion  - Notes taking  - Class activity | - Manila  - Plasticine  - Ruler  - Felt pens  - Charts of the 1st 20  elements | KLB BK 2 Pg 8-9  CSC BK 2 Pg 5, 11  POC BK2 Pg 13-16 |  |
|  | 4&5 | Relative atomic mass  and isotopes | **By the end of the lesson, the learner**  **should be able to:-**  - Define relative atomic mass (r.a.m)  - Calculate the r.a.m from isotopic  composition | - Discussion  - Notes taking  - Calculations | Past questions | KLB BK 2 Pg 10  CSC BK 2 Pg 9-11 |  |
| 4 | 1&2 | Valency and Ion  Formation  Radicals | **By the end of the lesson, the learner**  **should be able to:-**  - Define valency  - Describe formation of simple ions  - Define ionization energy and electron  affinity  - Derive the valency of an atom from  its position in the periodic table | - Discussion  - Notes taking  - Drawing of ions | - Charts  - Manilla papers | KLB BK 2 Pg 12  CSC BK 2 Pg 13-18  POC BK 2 Pg 16-26 |  |
|  | 3 | Oxidation numbers | **By the end of the lesson, the learner**  **should be able to:-**  - Define oxidation number  - State the rules of determining O.N of  atoms of elements and their ions | - Discussion  - Notes taking | Charts of O.N of  common elements | KLB BK 2 Pg 12  CSC BK 2 Pg 16-18 |  |
|  | 4&5 | Chemical formula | **By the end of the lesson, the learner**  **should be able to:-**  Write chemical formula of common  radicles | - Discussion  - Notes taking  - Writing of formulas for  some compounds | - Cards  - Chalkboard  - Charts | KLB BK 2 Pg 16-19  CSC BK 2 Pg 21 |  |
| 5 | 1&2 | Chemical formula | **By the end of the lesson, the learner**  **should be able to:-**  Derive the formula of simple  compounds from valencies of elements  and radicles | - Discussion  - Notes taking  - Writing of formulas for  some compounds | - Cards  - Charts | KLB BK 2 Pg 16-19  CSC BK 2 Pg 21 |  |
|  | 3 | Chemical equations | **By the end of the lesson, the learner**  **should be able to:-**  Write simple balanced equations | - Discussion  - Writing of simple  Chemical equations | Balanced equations | KLB BK 2 Pg 20-22  POC BK 2 Pg 30-33 |  |
|  | 4&5 | Chemical equations | **By the end of the lesson, the learner**  **should be able to:-**  Write simple equations which are  balanced | - Notes taking  - Write simple  Chemical equations | Balanced simple  equations | KLB BK 2 Pg 20-22  CSC BK 2 Pg 24 |  |
| 6 | 1&2 | Chemical equations | **By the end of the lesson, the learner**  **should be able to:-**  Write simple balanced equations | - Discussion  - Writing of balanced  equations |  | KLB BK 2 Pg 20-22  CSC BK 2 Pg 24 |  |
|  | 3 | Chemical families  Patterns and properties  - Alkali metals | **By the end of the lesson, the learner**  **should be able to:-**  - Identify alkali metals in the periodic  table and write their electronic  arrangement.  - State and explain the trend in size of  the alkali metals, ion and ionization  energy | - Discussion  - Notes taking | - Charts  - Past questions | KLB BK 2 Pg 26-27  CSC BK 2 Pg 27  POC BK 2 Pg 39-42 |  |
|  | 4&5 | Physical properties of  Alkali metals | State and explain trends in physical  Properties of alkali metals | - Discussion  - Notes taking | - Charts  - Past questions | KLB BK 2 Pg 28  CSC BK 2 Pg 27-28  POC BK 2 Pg 43-44 |  |
| 7 | 1&2 | Chemical properties of  Alkali metals.  - Uses of alkali metals | **By the end of the lesson, the learner**  **should be able to:-**  - State and explain trends in chemical  properties of alkali metals.  - State uses of alkali metals | - Discussion  - Notes taking | - Past questions  - Charts | KLB BK 2 Pg 29-32  CSC BK 2 Pg 30-32 |  |
|  | 3 | Alkaline Earth Metals | **By the end of the lesson, the learner**  **should be able to:-**  - Identify A.E.M in the periodic table  and write their electron arrangement  - State and explain trends in size of  atoms, ions and ionization energy | - Discussion  - Notes taking | - Past questions | KLB BK 2 Pg 33  CSC BK 2 Pg 35-36 |  |
|  | 4&5 | Physical properties of  Alkaline earth metals | **By the end of the lesson, the learner**  **should be able to:-**  State and explain trends in physical properties of A.E.M. | - Discussion  - Notes taking | - Charts of properties | KLB BK 2 Pg 33  CSC BK 2 Pg 36-37 |  |
| 8 | 1 | Chemical properties of  Alkaline Earth Metals | **By the end of the lesson, the learner**  **should be able to:-**  - State and explain trends in chemical  properties of A.E.M  - State uses of A.E.M | - Discussion  - Notes taking | - Charts on chemical  trends  - Past questions | KLB BK 2 Pg 36-39  CSC BK 2 Pg 38-41  POC BK 2 Pg 50-64 |  |
|  | 2 | Chemical formula of  Alkaline earth metal  Compounds | **By the end of the lesson, the learner**  **should be able to:-**  Explain the similarities in formula of  compounds formed by Alkali Earth  Metal oxides, chlorides and hydroxides | - Discussion  - Notes taking | - Charts of some AEM  compounds | KLB BK 2 Pg 40  CSC BK 2 Pg 41-42  POC BK 2 Pg 65 |  |
|  | 3 | Halogens | **By the end of the lesson, the learner**  **should be able to:-**  - Identify halogens in the periodic table  And write their electron arrangement  - State and explain the trends in size of  Their atoms, ions and electron affinity | - Discussion  - Notes taking | - Charts of the periodic  table | KLB BK 2 Pg 43-44  CSC BK 2 Pg 43-44 |  |
|  | 4 | Physical properties of  Halogens | **By the end of the lesson, the learner**  **should be able to:-**  State and explain trends in physical  Properties of halogens – appearance,  Mp, Bp, thermal and electrical  Conductivity. | - Discussion  - Notes taking | - Charts on physical  properties | KLB BK 2 Pg 42-44  CSC BK 2 Pg 44-46  POC BK 2 Pg 70 |  |
|  | 5 | Chemical properties of  Halogens  - Uses of halogens | - Explain the trend in reactivity of  Halogens with metals and water  - Explain similarities in formula of ions  and compounds formed by halogens  - State uses of halogens | - Discussion  - Notes taking | - Past questions  - Charts on the trend of  reactivity of halogens | KLB BK 2 Pg 45-49  CSC BK 2 Pg 46-50  POC BK 2 Pg 71-80 |  |
| 9 | 1&2 | Noble Gases  - Uses of Noble gases | **By the end of the lesson, the learner**  **should be able to:-**  - Identify noble gases in the periodic  table and write their electronic  arrangement  - Explain the unreactive nature of the  Noble gases in terms of electron  arrangement.  - State uses of noble gases | - Discussion  - Notes taking  - Answering of questions  and asking of questions | - Periodic table  - Past questions | KLB BK 2 Pg 50-51  CSC BK 2 Pg 54-56  POC BK 2 Pg 81-84 |  |
|  | 3 | Properties and trends  across a period | **By the end of the lesson, the learner**  **should be able to:-**  - Identify elements in period 3 and  write their electron arrangement | - Discussion  - Notes taking | Charts on trends across  Period 3 elements | KLB BK 2 Pg 52  CSC BK 2 Pg 56-57  POC BK 2 Pg 85-88 |  |
|  | 4&5 | Trends in physical  Properties of elements  in period 3 | **By the end of the lesson, the learner**  **should be able to:-**  State and explain the trends in physical  properties of the elements in period 3 –  atomic size, ionization/electron affinity,  Mp, Bp, thermal and electrical  Conductivity. | - Discussion  - Notes taking | Charts on trends across  Period 3 elements | KLB BK 2 Pg 52-54  CSC BK 2 Pg 57-60  POC BK 2 Pg 89-90 |  |
| 10 | 1&2 | Trends in chemical  properties of elements  in period 3 | **By the end of the lesson, the learner**  **should be able to:-**  State and explain the trends in chemical  Properties of period 3 elements –  Reaction with O2, H2O and dil acids | - Discussion  - Teacher demonstration  - Notes taking | - Past questions  - Na, Mg, Al, S, H2O,  Dil acids e.g. HCl | KLB BK 2 Pg 55-59  CSC BK 2 Pg 60-63  POC BK 2 Pg 90-95 |  |
|  | 3 | Structure and Bonding  - The role and  Significance of the  outer electrons in  chemical bonding  - Types of bonds | **By the end of the lesson, the learner**  **should be able to:-**  - Define the terms bonding and  Structure  - Name the three main types of bonding  and related structures. | - Class Discussion  - Notes taking  - Asking of questions | Models of common  Structures e.g. Nacl,  Diamond and graphite |  |  |
|  | 4&5 | Ionic Bond | **By the end of the lesson, the learner**  **should be able to:-**  - Define Ionic bonding  - State compounds with ionic bonding  - Illustrate ionic bonding by use of dot  (.) and cross (x) diagrams of atleast  Three compounds. | - Class Discussion  - Notes taking  - Drawing dots (.) and  cross (x) diagrams. | Dots (.) and crosses  diagrams on a chart |  |  |
| 11 | 1&2 | Giant Ionic Structures | - Show the bonding in an organic cpds  - Draw the ionic structures of a given  Compound  - State characteristics of an ionic  compound | - Class Discussion  - Notes taking  - Observing the teacher’s  Illustrations | Charts of dots and  Crosses diagrams |  |  |
|  | 3 | Covalent Bonding | **By the end of the lesson, the learner**  **should be able to:-**  - Define covalent bonding  - List examples of compounds with  Covalent bonding  - Use dots and crosses diagrams to  show the formation of covalent  bonding. | - Class Discussion  - Observation of covalent  compounds models  - Notes taking | - Charts of graphite of  Diamond, methane,  And H2O  - Models of water, CH4 | Explore BK 2  Pg 75-77  KLB BK 2 Pg 55-59  CSC BK 2 Pg 74-75 |  |
|  | 4&5 | Coordinate Covalent  Bond/Dative Bonding | **By the end of the lesson, the learner**  **should be able to:-**  - Define coordinate bond  - Describe how the bond is formed  using dots and crosses bonds of:  - Ammonium ion  - Hydroxinium ion  - Carbon (II) Oxide  - Phosphonium ion | - Class Discussion  - Notes taking  - Drawing the dots and  crosses diagrams of  compounds with  coordinate bond | Charts of compounds  such as NH4+, H3+O | Explore BK 2  Pg 81-82  KLB BK 2 Pg 55-59  CSC BK 2 Pg 76-78 |  |
| 12 | 1&2 | Molecular structure  and their properties | **By the end of the lesson, the learner**  **should be able to:-**  - Draw structures of molecular structure  e.g. I2, CO2, H2O.  - State and explain properties of  Molecular structures in relation to  Bonding | - Class Discussion  - Notes taking | Charts of iodine  structure | KLB BK 2 Pg  CSC BK 2 Pg 76-78 Explore BK 2  Pg 88-89 |  |
|  | 3 | Giant Atomic  Structures  - Diamond  - Graphite  - Silicon (IV)oxide | **By the end of the lesson, the learner**  **should be able to:-**  - Define allotropy, allotropes  - State the allotropes of carbon  - Draw the structures of diamond and  Graphite | - Observing the models  of graphite & diamond  - Class Discussion  - Notes taking  - Drawing of the  structures of diamond  and graphite | - Models of diamond  and graphite  - Charts showing  structure of diamond  and graphite | KLB BK 2 Pg  CSC BK 2 Pg 79  Explore BK 2  Pg 89-92 |  |
|  | 3 | Types of bonds across  Period 3 elements | **By the end of the lesson, the learner**  **should be able to:-**  - Name the elements in period 3  - Explain the nature of oxides across  Period 3  - Describe the reactivity of the elements  of period 3 with oxygen and water  - Explain the physical properties of  Oxides across period 3 | - Class Discussion  - Notes taking | Charts of periodic table  showing bond type and  properties of oxides of  period 3 elements | KLB BK 2 Pg 80-82  CSC BK 2 Pg 82  Explore BK 2  Pg 93-94 |  |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | 4&5 | Chlorides of elements  of period 3 | **By the end of the lesson, the learner**  **should be able to:-**  - Explain the nature of chlorides across  period 3  - Explain the properties of elements of  period 3  - Mp and Bp  - Structure  - Bond type  - PH of solutions formed | - Observations  - Notes taking | - Chlorides of Mg, Na,  Si, and S  - Litmus paper  - Test tubes  - water | KLB BK 2 Pg 82-84  Explore BK 2  Pg 95 |  |
|  | 4&5 | Graphite | **By the end of the lesson, the learner**  **should be able to:-**  - Draw the structure of graphite  - State properties of graphite in relation  to structure and bonding  - State the uses of graphite in relation  to structure and bonding  - Explain the structural differences  Between graphite and diamond. | - Discussion  - Notes taking  - Drawing of the  structure of diamond | Charts of the structures  of diamond and  graphite | KLB BK 2 Pg 77-78  CSC BK 2 Pg 79 |  |
| 13 | 1&2 | Metallic Bonding | - Describe and explain how a metallic  Bonding is formed  - State properties of metals | - Discussion  - Notes taking  - Drawing of the  structure of monovalent  metal | Chart showing metallic  bonding in monovalent  metal | KLB BK 2 Pg 78-81  CSC BK 2 Pg 81-82 |  |
| 14 | 1-5 | **END TERM CATS**  **REVISION OF THE CATS** | | | | |  |
| 15 |  | **REVISION OF THE CATS**  **CLOSING SCHOOL FOR APRIL HOLIDAY** | | | | |  |

**CHEMISTRY SCHEMES OF WORK**

**FORM TWO 2016**

**TERM II**

**REFERENCES:**

1. KLB Secondary Chemistry Form 2 Students Book (2nd Edition) KLB BK 2
2. KLB Secondary Chemistry Form 3 Students Book (2nd Edition) KLB BK 3
3. Comprehensive Secondary Chemistry BK 2 (CSC)
4. Principles of Chemistry Form 2 by Muchiri and V.W Maina (POC F2)
5. Principles of Chemistry Form 3 by Muchiri and V.W Maina (POC F3)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **WK** | **LSN** | **TOPIC/S-TOPIC** | **OBJECTIVES** | **L/ACTIVITIES** | **L/T AIDS** | **REFERENCE** | **REMARKS** |
| 1 |  | **OPENING OF THE SCHOOL FOR TERM II**  **CAT 1 ADMINISTRATION** | | | | |  |
| 2 | 1&2 | Salts  Type of salts | **By the end of the lesson, the learner**  **should be able to:-**  - Define the term salt  - Name the types of salts and in each  Case give three examples | - Discussion  - Notes taking | Salts-sodium chloride,  NaHCO3, Mg(OH)Cl,  Fe(NH4)2(SO4)2 | KLB BK 2 Pg 89-90  Explore BK 2  Pg 102 |  |
|  | 3 | Solubility of salts,  Oxides and hydroxides | **By the end of the lesson, the learner**  **should be able to:-**  Identify soluble and insoluble salts in  water | - Discussion  - Experiment  - Notes taking  - Recording observations | - Test tubes  - Water  - Nitrates  - Chlorides  - Sulphates  - Carbonates | KLB BK 2 Pg 90-92  CSC BK 2 Pg 91-92  Explore BK 2  Pg 103-105 |  |
|  | 4&5 | Methods of preparing  Salts  Reaction of acid and  Metal | **By the end of the lesson, the learner**  **should be able to:-**  - Identify soluble salts prepared by  reaction between acid and metal  - Describe how to prepare salts by  Reaction of acid on a metal  - Write equations of the reactions  Between acids and metals | - Notes taking  - Discussion  - Writing of chemical  equations  - Teacher demonstration | Dil. H2SO4  Zinc  Beaker  Stirring rod  Filter paper  Source of heat  Evaporating dish | KLB BK 2 Pg 96-97  Explore BK 2  Pg 106-107 |  |
| 3 | 1&2 | Preparation of a  soluble salt by reacting  acid and metal oxide | **By the end of the lesson, the learner**  **should be able to:-**  - Describe how to prepare a salt by  reacting an acid and a metal oxide  - Name any three salts which can be  Prepared by the method  - Write chemical equations for the  reactions that occur  - Explain what is meant by water of  crystallization | - Teacher demonstration  - Discussion  - Recording of observations  - Notes taking | Dil. H2SO4  CuO  Beaker  Rod  Filter paper  Source of heat  Evaporating dish | KLB BK 2 Pg 97-98  CSC BK 2 Pg 83  Explore BK 2  Pg 107-108 |  |
|  | 3 | Reaction of Acid and  Metal hydroxide | **By the end of the lesson, the learner**  **should be able to:-**  - Define the term alkali  - Describe how salts are prepared by  the method  - Write equations of the reactions | - Discussion  - Notes taking  - Teacher demonstration | Pipette  Burette  Conical flask  Indicator  NaOH solution  HCl solution | KLB BK 2  Pg 98-100  CSC BK 2 Pg 87-88 |  |
|  | 4&5 | Preparation of a soluble  Salt from a reaction  Between acid and a  Carbonate | **By the end of the lesson, the learner**  **should be able to:-**  - Describe the preparation of a salt  using a carbonate and acid  - Write equations of the reaction  Between PbCO2 and dil. HNO3 to  Form Pb(NO3)2  - Name three salts prepared by the  method | - Teacher demonstration  - Recording the  observations  - Discussion  - Notes taking | Dil. HNO3  PbCO3  Beaker  Filter paper  Source of heat  Evaporating dish | KLB BK 2 Pg  100-101  CSC BK 2 Pg 88-89  Explore BK 2  Pg 108-109 |  |
| 4 | 1&2 | Preparation of a salt  from acid and a  hydrogen carbonate | **By the end of the lesson, the learner**  **should be able to:-**  - Describe how to prepare salt from  acid and a hydrogen carbonate i.e.  HCl and NaHCO3  - Write chemical equation of reaction  between NaHCO3 and HCl  - Name three salts which can be  Prepared using this method | - Discussion  - Teacher demonstration  - Notes taking | Dil. HCl  NaHCO3  Beaker  Rod  Source of heat  Evaporating dish | CSC BK 2 Pg 89 |  |
|  | 3 | Preparation of  Insoluble salts  Precipitation method | **By the end of the lesson, the learner**  **should be able to:-**  - Describe precipitation reaction  - Write ionic equation for the preparation  of insoluble salt e.g. PbI and PbCl2 | - Class Experiment  - Recording the  observations  - Discussion  - Notes taking | Pb(NO3)2  KI, NaCl  Beakers  Filter paper  Funnel | KLB BK 2 Pg  102-104  CSC BK 2 Pg 89  Explore BK 2  Pg 113-114 |  |
|  | 4&5 | Direct combination of  Elements/Direct  Synthesis | **By the end of the lesson, the learner**  **should be able to:-**  - Write balanced chemical equations  for the reaction between iron fillings  and sulphur powder.  - Identify salts which can be prepared  by direct synthesis | - Discussion  - Teacher demonstration  - Notes taking | - Fe fillings  - Sulphur  - Crucible + lid  - Source of heat | KLB BK 2 Pg  101-102  Explore BK 2  Pg 111-113 |  |
| 5 | 1&2 | Behaviour of salt when  exposed to the  atmosphere | **By the end of the lesson, the learner**  **should be able to:-**  Define hydroscopy, deliquescent and  efflorescent and name an example of  salt exhibiting the behaviour | - Discussion  - Teacher demonstration  - Notes taking | Watch, glass,  anhydrous MgCl2,,  CaCl2, KNO3, Na2CO3  10H2O, FeCl3 | KLB BK 2 Pg  104-105  Explore BK 2  Pg 121 |  |
|  | 3 | Action of heat on salt.  Action of heat on  Carbonates and  Hydrogen carbonates | **By the end of the lesson, the learner**  **should be able to:-**  Describe and explain experimental observations made when carbonates are  Heated. | - Experiment  - Discussion  - Taking notes | Sample of ZnCO3,  CaCo3, NaHCO3  Ca(OH) Solution  Source of heat. | KLB BK 2  Pg 105-107  CSC BK 2  Pg 94-95  Explore BK 2  Pg 118. |  |
|  | 4&5 | Action of heat on  Nitrates | - Describe and explain experimental  observations made when nitrates are  strongly heated  - Identify the gases evolved from  Nitrate when heated | - Teacher demonstration  - Recording of  observations  - Taking notes | Samples of NaNO3,  AgNO3, Zn(NO3)2  Source of heat  Test tubes  Litmus paper | KLB BK 2 Pg  108-110  CSC BK 2 Pg 96-97  Explore BK 2  Pg 118-119 |  |
| 6 | 1&2 | Action of heat on  Sulphates | **By the end of the lesson, the learner**  **should be able to:-**  - Give test for the gases produced when  sulphates are heated  - Describe and explain experimental  observations made when sulphates  are heated | - Teacher demonstration  - Taking observations  - Taking notes | FeSO4.7H2O  CuSO4.5H2O  Source of heat | KLB BK 2 Pg  110-111  CSC BK 2 Pg 98-99 |  |
|  | 3&4 | Action of heat on  Metal hydroxides,  Hydrated salts and  Ammonium salts | **By the end of the lesson, the learner**  **should be able to:-**  - Describe & explain the experimental  Observations on the action of heat on  Hydrated salts  - Explain why group 1 metal hydroxide  are not affected by heat.  - State the products when hydrated  salts are heated | - Discussion  - Teacher demonstration  - Notes taking  *© Education Plus Agencies* | NaOH  Mg(OH)2  Cu(OH)2  Source of heat | KLB BK 2 Pg  111  CSC BK 2 Pg 95 |  |
|  | 5 | Uses of salts | **By the end of the lesson, the learner**  **should be able to:-**  state uses of some salts | - Discussion  - Notes taking | - Actal tablets  - Ca(OH)2 | KLB BK 2 Pg  111-112  Explore BK 2  Pg 121-124 |  |
| 7 | 1 | Application of salts | **By the end of the lesson, the learner**  **should be able to:-**  State and explain the various  applications of some salts e.g. lime in changing soil PH; as fertilizers e.t.c. | - Class Discussion  - Notes taking | CaSO4  CaCl2  NH4NO3 | KLB BK 2 Pg  112  CSC BK 2 Pg 100 |  |
|  | 2&3 | Carbon and its  Compounds  - Occurrence | **By the end of the lesson, the learner**  **should be able to:-**  State the different forms in which  carbon occur | - Discussion  - Notes taking | Charcoal, graphite  and diamond models | KLB BK 2 Pg 115  CSC BK 2  Pg 115-116  POC F 2 Pg 168 |  |
|  | 4&5 | Allotropes of carbon | **By the end of the lesson, the learner**  **should be able to:-**  - Define allotropy and allotropes  - Explain the physical properties of  Carbon allotropes in terms of bonding  and how their properties are related to  their uses | - Discussion  - Notes taking | Models of graphite and  Diamond | KLB BK 2 Pg 116  CSC BK 2 Pg 115  POC F 2  Pg 182-186 |  |
| 8 | 1 | Chemical properties of carbon | **By the end of the lesson, the learner**  **should be able to:-**  State and describe the chemical  properties of carbon e.g. combustion,  reducing properties e.t.c. | - Teacher demonstration  - Notes taking | - Charcoal burner  - Charcoal | KLB BK 2  Pg 117-120  CSC BK 2 Pg 120 |  |
|  | 2&3 | Oxides of carbon  Carbon (IV) Oxide  Preparation in the lab. | **By the end of the lesson, the learner**  **should be able to:-**  - Describe laboratory preparation of  CO2  - Draw diagram for the preparation of  the gas  - Relate the method of collection of  the gas to the properties of CO2(g) | - Discussion  - Notes taking | CaCO3, Dil. HCl  Round bottomed flask  Gas jar  Lime water | KLB BK 2  Pg 121-124  CSC BK 2  Pg 124-125  POC F 2 Pg 197-198 |  |
|  | 4&5 | Physical and chemical  Properties of CO2 | **By the end of the lesson, the learner**  **should be able to:-**  - State and explain the physical  properties of CO2  - State and explain the chemical  properties of the gas with limewater,  water and alkalis | - Discussion  - Notes taking | CaCO3  Dil. HCl | KLB BK 2 Pg 124  CSC BK 2  Pg 125-128  POC F 2 Pg 197-198 |  |
| 9 | 1&2 | Uses of carbon (IV)  Oxide | **By the end of the lesson, the learner**  **should be able to:-**  State and explain the uses of  carbon (IV) Oxide | - Discussion  - Notes taking |  | KLB BK 2 Pg 125  CSC BK 2  Pg 128-129  POC F 2 Pg 199-200 |  |
|  | 3 | Carbon (II) Oxide  Preparation in the  Laboratory | **By the end of the lesson, the learner**  **should be able to:-**  - Describe lab. Preparation of CO  - Relate the method of collection of the  gas to its properties | - Discussion  - Notes taking  - Drawing of diagrams  for the preparation | Charts of preparation  of carbon (II) oxide | KLB BK 2  Pg 125-127  CSC BK 2  Pg 131-133  POC F 2 Pg 201 |  |
|  | 4&5 | Dangerous nature of  Carbon (II) Oxide | **By the end of the lesson, the learner**  **should be able to:-**  Explain hoe CO is a respiratory  ‘poison’ when charcoal is burned in  Limited supply of oxygen | - Discussion  - Notes taking |  | KLB BK 2  Pg 128  CSC BK 2  Pg 134-135 |  |
| 10 | 1&2 | Physical and chemical  Properties of CO  Uses of CO | **By the end of the lesson, the learner**  **should be able to:-**  - State and explain the physical and  chemical properties of CO  - State the uses of CO | - Discussion  - Notes taking |  | KLB BK 2  Pg 128-130  CSC BK 2  Pg 133-135  POC F 2 Pg 207 |  |
|  | 3 | Carbonates, Na2CO3  and NaHCO3 | **By the end of the lesson, the learner**  **should be able to:-**  Describe the chemical reactions of  carbonates and hydrogen carbonates | - Teacher demonstration  - Discussion  - Notes taking | Na2CO3, NaHCO3,  Source of heat, HCl,  Limewater | KLB BK 2 Pg 130  CSC BK 2 Pg 136  POC F 2 Pg 207 |  |
|  | 4&5 | Production of Na2Co3  From lake Magadi | **By the end of the lesson, the learner**  **should be able to:-**  Describe how Na2CO3 is obtained from  Lake Magadi | - Discussion  - Notes taking | Flow chart of the  process of extraction | CSC BK 2  Pg 144-145  POC F 2 Pg 217 |  |
| 11 | 1&2 | Solvay process | **By the end of the lesson, the learner**  **should be able to:-**  - Describe the manufacture of sodium  Carbonate by the solvay process  - Use simple schematic diagrams to  illustrate the process | - Discussion  - Notes taking  - Drawing of the  schematic diagram of  solvay process | Chart of solvay  process | KLB BK 2  Pg 135-136  CSC BK 2  Pg 141-144  POC F 2 Pg 214 |  |
|  | 3 | Effects of CO2 and CO  on the environment | **By the end of the lesson, the learner**  **should be able to:-**  - Explain the effect of CO2 and CO in  the atmosphere  - State the effects of CO in the  environment | - Discussion  - Notes taking |  | KLB BK 2 Pg 137  CSC BK 2 Pg 147  POC F 2 Pg 220 |  |
|  | 4&5 | Carbon cycle | **By the end of the lesson, the learner**  **should be able to:-**  Describe the ways by which CO2 is  removed from atmosphere and hoe it is  added to the atmosphere | - Discussion  - Notes taking  - Draw the cycle | Chart of CO2 | KLB BK 2  Pg 137-138  CSC BK 2 Pg 145  POC F 2 Pg 154-156 |  |
| 12 | 1&2 | Nitrogen and its  Compounds  - Introduction  - Separation of  Nitrogen from air | **By the end of the lesson, the learner**  **should be able to:-**  - Describe how nitrogen is separated  from the air  - Name impurities found in the nitrogen  Obtained by the method | - Discussion  - Notes taking  - Writing of equations | Flowcharts of the  separation process | KLB BK 3  Pg 134-135  POC F 3 Pg 154-156 |  |
|  | 3 | Large scale isolation  of N2 from air | **By the end of the lesson, the learner**  **should be able to:-**  Describe how N2 is separated from air  in large scale | - Discussion  - Notes taking | Chart on isolation of  N2 from air | KLB BK 3  Pg 135-136  POC F 3 Pg 158-160 |  |
|  | 4&5 | Preparation of N2 in  the laboratory | **By the end of the lesson, the learner**  **should be able to:-**  Describe how nitrogen is prepared in  the laboratory | - Discussion  - Notes taking |  | KLB BK 3 Pg 136  CSC BK 3  Pg 152-154  POC F 3 Pg 156-158 |  |
| 13 | 1&2 | Properties of Nitrogen  - Uses of Nitrogen | **By the end of the lesson, the learner**  **should be able to:-**  - State and explain the properties of  Nitrogen  - State uses of Nitrogen | - Discussion  - Notes taking | Past questions | KLB BK 3  Pg 138-139  POC F 3 Pg 160-163 |  |
|  | 3 | Oxides of Nitrogen  - N­2O, its properties  and its uses | **By the end of the lesson, the learner**  **should be able to:-**  - State the reagents for the preparation  of N2O  - State the physical and chemical  Properties of N2O  - State the uses of N2O | - Discussion  - Notes taking  - Drawing of diagram | Past questions | KLB BK 3  Pg 139-141  POC F 3 Pg 164-168 |  |
|  | 4&5 | Nitrogen (II) Oxide  Preparation in the lab.  and its uses | **By the end of the lesson, the learner**  **should be able to:-**  - Describe the preparation of nitrogen  (II) oxide in the laboratory  - State the properties of nitrogen (II)  Oxide  - State the uses of nitrogen (II) oxide | - Discussion  - Notes taking  - Drawing of diagram | Chart of the preparation  diagram | KLB BK 3  Pg 142-144  POC F 3 Pg 168-171 |  |
| 14 |  | **REVISION OF CATS OF END TERM**  **CLOSING SCHOOL FOR AUGUST HOLIDAY** | | | | |  |

**CHEMISTRY SCHEMES OF WORK**

**FORM TWO 2016**

**TERM III**

**REFERENCES:**

1. KLB Secondary Chemistry Form 2 Students Book (2nd Edition) KLB BK 2
2. KLB Secondary Chemistry Form 3 Students Book (2nd Edition) KLB BK 3
3. Comprehensive Secondary Chemistry BK 2 (CSC)
4. Principles of Chemistry Form 2 by Muchiri and V.W Maina (POC F2)
5. Principles of Chemistry Form 3 by Muchiri and V.W Maina (POC F3)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **WK** | **LSN** | **TOPIC/S-TOPIC** | **OBJECTIVES** | **L/ACTIVITIES** | **L/T AIDS** | **REFERENCE** | **REMARKS** |
| 1 |  | **SCHOOL OPENING**  **CAT 1 ADMINISTRATION** | | | | |  |
| 2 | 1&2 | Nitrogen (IV) Oxide,  Its preparation in the  Laboratory, properties  and uses | **By the end of the lesson, the learner**  **should be able to:-**  - Describe how NO2 is prepared in the  laboratory  - State and explain the physical and  chemical properties of NO2  - State the uses of NO2 | - Discussion  - Notes taking  - Drawing the preparation  diagram of NO2 | Chart of the laboratory  Preparation of NO2 | KLB BK 3  Pg 144-147  POC F 3 Pg 172-177 |  |
|  | 3 | Ammonia, preparation  in the laboratory and  properties | **By the end of the lesson, the learner**  **should be able to:-**  - Describe the laboratory preparation  Of ammonia  - State and explain the properties of  Ammonia  - State the uses of ammonia | - Discussion  - Notes taking  - Drawing the preparation  diagram of ammonia in  the lab. | Chart of the laboratory  preparation of  ammonia | KLB BK 3  Pg 147-152  POC F 3 Pg 177-187 |  |
|  | 4&5 | Reaction of Ammonia  with metal ions | **By the end of the lesson, the learner**  **should be able to:-**  State observations made when NH3(aq)  reacts with metal ions in a solution | - Discussion  - Notes taking  - Class experiment | Test tube, solution of  Fe2+, Fe3+, Cu2+, Zn2+,  Pb2+ | KLB BK 3  Pg 152-154  POC F 3 Pg 187-189 |  |
| 3 | 1&2 | Reaction of ammonia  with dilute Acids and  oxygen | **By the end of the lesson, the learner**  **should be able to:-**  - State the products formed when  Ammonia reacts with dilute acid, air  - State the observations made when  Ammonia burns in air in the presence  of a catalyst | - Discussion  - Notes taking  - Experiment | - Ammonia solution  - Dil. H2SO4  - Platinum wire | KLB BK 3  Pg 155-159 |  |
|  | 3 | Large scale  manufacture of  ammonia | **By the end of the lesson, the learner**  **should be able to:-**  Describe how ammonia is produced in  large scale by Haber process | - Discussion  - Notes taking | Chart on large scale manufacture of  ammonia | KLB BK 3  Pg 159-160  POC F 3 Pg 189-191 |  |
|  | 4&5 | Nitrogenous Fertilizers | **By the end of the lesson, the learner**  **should be able to:-**  - Name common Nitrogenous fertilizers  - Calculate the percentage of Nitrogen  in the nitrogenous fertilizers | - Discussion  - Calculations  - Notes taking | Past questions | KLB BK 3  Pg 161-162  POC F 3 Pg 191-194 |  |
| 4 | 1&2 | Nitric (V) Acid,  Its preparation in the  laboratory and  Industrial preparation | - Describe the preparation of Nitric (V)  Acid in the laboratory  - Describe the Otswald process used in  the large scale manufacture of  nitric (V) acid | - Discussion  - Notes taking  - Drawing the Otswald  Process flowchart | Chart on Otswald  process | KLB BK 3  Pg 162-165  POC F 3 Pg 194-198 |  |
|  | 3 | Reaction of dilute  HNO3 with Metals,  Carbonates,  Hydroxides and oxides | **By the end of the lesson, the learner**  **should be able to:-**  State and explain the observations made  when dilute HNO3 react with metals,  carbonates, metal hydroxides & oxides | - Experiment  - Discussion  - Notes taking | Test tube, dilute HNO3  Na2CO3, NaHCO3,  NaOH and MgO | KLB BK 3  Pg 165-169  POC F 3 Pg 198-199 |  |
|  | 4&5 | Reaction of  Concentrated HNO3  - Uses of nitric acid | **By the end of the lesson, the learner**  **should be able to:-**  - State and explain the chemical  reactions of concentrated HNO3  - State the uses of HNO3 | - Discussion  - Notes taking |  | KLB BK 3  Pg 169-171  POC F 3 Pg 200-202 |  |
| 5 | 1 | Action of heat on  Nitrates  - Test for nitrates | **By the end of the lesson, the learner**  **should be able to:-**  - Identify the products formed when  Different nitrates are heated  - Describe how nitrates are tested | - Discussion  - Teacher demonstration  - Notes taking | Test tubes, NaNO3,  Mg(NO3)2, AgNO3  NH4NO3, source of  heat | KLB BK 3  Pg 171-174  POC F 3 Pg 203-206 |  |
|  | 2 | Pollution effects of  Nitrogen compounds  in the environment | **By the end of the lesson, the learner**  **should be able to:-**  Explain the pollution effects of nitrogen  compounds in the environment | - Discussion  - Notes taking | Past questions | KLB BK 3  Pg 174-175  POC F 3 Pg 206-207 |  |
|  | 3 | Sulphur and its  Compounds.  Occurrence and  Extraction of sulphur  - Frasch process  - Allotropes of sulphur | **By the end of the lesson, the learner**  **should be able to:-**  - Describe the extraction of sulphur  by the frasch process  - Describe the allotropes of sulphur | - Discussion  - Notes taking | Chart on the frasch  process | KLB BK 3  Pg 180-184  POC F 3 Pg 218-223 |  |
|  | 4 | Physical and chemical properties of sulphur  - Uses of sulphur | **By the end of the lesson, the learner**  **should be able to:-**  - State the physical and chemical  properties of sulphur  - State the uses of sulphur | - Discussion  - Notes taking |  | KLB BK 3  Pg 184-190  POC F 3 Pg 224-228 |  |
|  | 5 | SO2 Preparation in the  laboratory | **By the end of the lesson, the learner**  **should be able to:-**  Describe the laboratory preparation of  SO2 | - Discussion  - Notes taking | Chart on the  Preparation of SO2 | KLB BK 3  Pg 190-191  POC F 3 Pg 228-232 |  |
| 6 | 1 | Chemical and physical  Properties of SO2 | **By the end of the lesson, the learner**  **should be able to:-**  State and describe the chemical and  physical properties of SO2 | - Discussion  - Notes taking |  | KLB BK 3  Pg 191-201  POC F 3 Pg 232-238 |  |
|  | 2 | Large scale  manufacture of  sulphuric acid | **By the end of the lesson, the learner**  **should be able to:-**  Explain the preparation of sulphuric  acid the contact process | - Discussion  - Notes taking | Chart on the contact  process | KLB BK 3  Pg 201-203  POC F 3 Pg 238-241 |  |
|  | 3&4 | Reaction of dilute  H2SO4  Reaction of  concentrated H2SO4 | **By the end of the lesson, the learner**  **should be able to:-**  - State and explain the chemical  Properties of dilute H2SO4 and  Concentrated H2SO4  - Distinguish between the reaction of  dilute and concentrated H2SO4 | - Discussion  - Notes taking  - Teacher demonstration | CuSO4.5H2O, sugar,  Copper, Zn, S, C and  NaCl | KLB BK 3  Pg 203-210  POC F 3 Pg 243-251 |  |
|  | 5 | H2S, preparation and  Properties | **By the end of the lesson, the learner**  **should be able to:-**  Describe the preparation and state the properties of hydrogen sulphide | - Discussion  - Notes taking | Chart on the  Preparation of H2S | KLB BK 3  Pg 210-213  POC F 3 Pg 251-255 |  |
| 7 | 1 | Atmospheric pollution  by sulphur compounds | **By the end of the lesson, the learner**  **should be able to:-**  Explain the environmental pollution  caused by sulphur containing  compounds | - Discussion  - Notes taking | Past questions | KLB BK 3  Pg 213-214  POC F 3 Pg 255-256 |  |
|  | 2 | Chlorine and its  Compounds  Preparation in the  laboratory and its  properties | **By the end of the lesson, the learner**  **should be able to:-**  - Describe and explain the laboratory  preparation of chlorine  - State and explain the properties of  chlorine | - Discussion  - Notes taking | Chart on the laboratory  preparation of Cl2 | KLB BK 3  Pg 219-228  POC F 3 Pg 265-283 |  |
|  | 3&4 | Test for chloride ions  Uses of chlorine  HCl gas preparation in  the laboratory and its  properties | **By the end of the lesson, the learner**  **should be able to:-**  - Describe the test for Cl- ion  - State the uses of chlorine  - Describe the preparation of HCl  - State and explain thepropertiesof HCl  - Explain the effect of H2O on HCl | - Discussion  - Notes taking |  | KLB BK 3  Pg 229-237  POC F 3 Pg 283-294 |  |
|  | 5 | Large scale  manufacture of HCl  Uses of HCl  Environmental  pollution of Cl2 and its  compounds | **By the end of the lesson, the learner**  **should be able to:-**  - Describe the industrial manufacture  Of HCl  - State the uses of HCl  - Explain the environmental pollution  caused by Cl2 and its compounds | - Discussion  - Notes taking | Chart on large scale  manufacture of HCl | KLB BK 3  Pg 237-239  POC F 3 Pg 294-296 |  |
| 8 | 1-5 | **END YEAR EXAMINATIONS** | | | | |  |
| 9 | 1-5 | **END YEAR EXAMINATIONS AND REVISION OF THE EXAMINATIONS**  **CLOSING OF THE SCHOOL FOR DECEMBER HOLIDAYS** | | | | |  |