**PRESIDENT’S OFFICE,**

**REGIONAL ADMINISTRATION AND LOCAL GOVERNMENT**

**NAMTUMBO DISTRICT COUNCIL**

**SCHEME OF WORK**

SCHOOL’S NAME:

TEACHER’S NAME:

CLASS: **FORM FOUR**

SUBJECT: **CHEMISTRY**

TERMS**:I AND II**

YEAR:**2024**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
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| **COMPETENCE** | **OBJECTIVES** | **MONTH** | **WEEK** | **MAIN-TOPIC** | **SUB- TOPIC** | **PER.** | **T/ACTIVITIES** | **L/ACTIVITIES** | **T/L AIDS** | **REF. BOOKS** | **A/MENT** | **REMARKS** |
| By the end of the topic the student should have ability to investigate the properties of non metal and their compound. | By the end of the topic the student should be able to analyse critically properties of non metals and their compound. | JANUARY | II | 1.0 NON-METALS AND THEIR COMPOUNDS | 1.1 General chemical properties of non-metals | 2 | To guide students to discuss strong and weak oxidants as electron acceptors. | Students to write several equations to show how non-metals gain electrons. | Wall charts  Cl2  KI | TIE, (1995), CHEMISTRY FOR SECONDA RY SCHOOL BOOK TWO, THP, DSM | Group work  exercise |  |
| III | 1.2 Chlorine | 2 | To demonstrate the use of chlorine to decolourizecolored flowers and dyes and discuss the oxidizing properties of chlorine. | Students to write equations for the reactions and discuss the oxidizing properties of chlorine. | Flowers  dyes  SO2 | Group work |
| IV | 1.3 Hydrogen Chloride | 2 | To guide students to prepare HCl gas in the laboratory using conc. H2SO4 and NaCl. | Students to prepare Hcl gas using concsulphuric acid and explain its properties and uses | H2SO4 | Group work |
| 1.4 Sulphur | To guide students to discuss the extraction of sulphur by the Frasch process | Student to discuss the oxidizing ad reducing properties of sulphur and its uses. | Wall charts | Group work |
| 1.5 Sulphur dioxide | 2 | To guide students to discuss the properties of sulphur dioxide | Students to discuss the uses and hazards of sulphur dioxide. | Wall charts | Group work |
| I | 1.6 Sulphuric acid | 2 | To guide students to use the lechatelier's principle to discuss he contact process of manufacture of sulphuric acid | Students to discuss the properties and uses of sulphuric acid | Wall charts | Group work |
| FEBRUARY |  | 1.7 Nitrogen | 2 | To guide students to prepare a sample of nitrogen in the laboratory | Students in groups to prepare a sample of nitrogen gas in the laboratory and test its properties and uses | Wall charts | Group work |
| II | 1.8 Ammonia | 2 | To demonstrate the preparation of ammonia | Students in groups to discuss the properties and uses of ammonia | Wall charts | Group work |
|  | 1.9 Carbon | 1 | To guide students to discuss the presence of carbon in C{2, carbonates,shells, diamond, graphite and coal. | Students to discuss the forms in which carbon appears. | Wall charts | Group work |
| 1.10 Carbon dioxide | 1 | To guide students to prepare carbon dioxide in the laboratory. | Students to discuss the uses of the carbon allotropes | Wall charts |
| By the end of the topic the student should have competences in investigating the properties of organic compounds and their applications in daily life | By the end of the topic the student should be able to show understanding of sources of organic compounds, their properties and uses in daily life | III  IV | 2.0 ORGANIC CHEMISTRY | 2.1 Introduction to organic chemistry | 4 | To lead students to discuss the meaning and importance of organic chemistry  To guide students to relate organic compounds with prehistoric system and discuss how crude oil is refined into different fractions | students to discuss the meaning and importance of organic chemistry  To guide students to relate organic compounds with prehistoric system and discuss how crude oil is refined into different fractions | Wall charts  samples of organic compound | TIE,(2005),CHEMISTRY F3 & F4, LONGMAN,DSM | Group work |  |
| 2.2 Hydrocarbons | 4 | To lead students to discuss the meaning of hydrocarbons and write the condensed and open structure of the first five members of the homologue series of alkanes, alkenes and alkynes  To guide students to use open and condensed structures to discuss the concept of isomerism and write structural isomers of the lower hydrocarbons  To guide students to discuss the rules of naming isomers of hydrocarbons and use the general formulae to identify alkanes, alkenes and alkynes | students to discuss the meaning of hydrocarbons and write the condensed and open structure of the first five members of the homologue series of alkanes, alkenes and alkynes  students to use open and condensed structures to discuss the concept of isomerism and write structural isomers of the lower hydrocarbons  To guide students to discuss the rules of naming isomers of hydrocarbons and use the general formulae to identify alkanes, alkenes and alkynes | Wall charts  models of different isomers | Group work  exercise |  |
|  |  | MARCH | I |  | 2.3 Properties of hydrocarbons | 4 | To guide students to discuss physical properties of hydrocarbons eg. Density, melting point, boiling point and state at room temp  Using pictures and chart to guide students to discus the concept of saturation and unsaturation in hydrocarbons  To lead a discussion on chemical pro of lower hydrocarbons | students to discuss physical properties of hydrocarbons eg. Density, melting point, boiling point and state at room temp  Students to prepare models and drawings illustrating saturated and unsaturated hydrocarbons  Students to discuss on chemical properties of lower hydrocarbons | Wall charts  models and pictures |  | Group work  practicals |  |
| I | 2.4 Alcohols | 2  2 | To lead a discussion on the preparation of ethanol in the the laboratory and its homologue series  To supervise students' work  To lead a discussion on systematic nomenclature of alcohols and find out the properties of alcohols  To make genera comments | Students to prepare ethanol by fermentation of a mixture of yeast and sugar in the right temperature  Students to practice the writing of open and condensed structures of the isomers of alcohols up to 5 carbon atoms  Students to use rules of systematic nomenclature to name all the isomers of alcohols  and properties of alcohols  Students to discuss different uses of alcohols and their harmful effects | Wall charts  pictures  models | Group work  practicals  exercise |  |
| MARCH | II | 2.5 Carboxylic acid | 4 | To guide students to find out sources of organic acids like milk, citrus fruits, etc  To guide students to find out what happen to different types of alcohols when exposed to air  To follow students' work and make general comments  To lead students to discuss the reactions of ethanoic acid with ethanol and NaOH  To guide students to prepare soap by boiling a mixture of NaOH and oil, isolate the soap , dry it and use it in washing | Students to find out sources of organic acids like milk, citrus fruits, etc  Students to find out what happen to different types of alcohols when exposed to air  Students to write the open and condensed structures of Carboxylic acids and systematic names of all isomers of Carboxylic acids  Students to discuss the reactions of ethanoic acid with ethanol and NaOH  students to prepare soap by boiling a mixture of NaOH and oil, isolate the soap , dry it and use it in washing | NaOH  ethanoic acid  wall charts  ethanol  pictures | Group work  exercise |  |
| By the end of the topic the student should have ability to determine the nature and properties of soil | By the end of the topic the student should be able to use scientific skill to investigate the nature and properties of soil | III  III  IV | 3.0 SOIL CHEMISTRY | 3.1 Soil Formation | 3 | To guide students to discuss the process of soil formation and the factors influencing soil formation | students to discuss the process of soil formation and the factors influencing soil formation | Soil samples  PH meter | TIE,(2005),CHEMISTRY F3 & F4, LONGMAN,DSM | Group work  project |  |
| 3.2 Soil reaction | 3 | To guide students to discuss the natural and artificial causes of soil acidity and measurements of soil PH  To assist students to choose liming materials among the following, CaO, wood ash, MgCO3,Ca(OH)2 | students to discuss the natural and artificial causes of soil acidity and measurements of soil PH  Students to manage the soil PH by using different liming materials | CaO, wood ash, MgCO3,Ca(OH)2 | project |  |
| 3.3 Plants nutrients in the soil | 3 | To guide students to consider the following list of elements of plants, C, H, O, N,P K, S, Ca, Zn, Mo, Cl and Co as essential nutrients  To guide students to prepare complete nutrients cultures and grow plants in them and discuss the prevention of nutrients loss from the soil when the following methods are applied, prevention of soil erosion. Leaching, crop rotation and good harvesting practice | Students to categorize macro elements as N, P, K, Ca, Mg and S while the rest of the essential elements remain as micro elements and explain their functions  students to prepare complete nutrients cultures and grow plants in them and discuss the prevention of nutrients loss from the soil when the following methods are applied, prevention of soil erosion. Leaching, crop rotation and good harvesting practice | Wall charts  nutrients cultures | Group work  exercise  test |  |
|  | |  |  | MIDTERM TEST | | | | | | | | |
|  | MIDTERM BREAK FROM 31 MARCHTH TO 08TH APRIL 2024 | | | | | | | | |
|  |  |  | IV |  | 3.4 Manures and fertilizers | 4 | To guide students to prepare compost manures by different ways and explain their advantages and disadvantages  To facilitate students in groups to discuss the types of artificial fertilizers used in different parts of Tanzania  To guide a class discussion and make clarification on fertilizer grades and analysis as it appears on the labels of fertilizers  To assist students to identify methods of fertilizer application including broadcasting, top-dressing and side dressing and explain advantages and disadvantages of artificial fertilizers as compared to manures | students to prepare compost manures by different ways and explain their advantages and disadvantages  students in groups to discuss the types of artificial fertilizers used in different parts of Tanzania  Students in groups to discuss the fertilizers grades and analysis  Students to practice different methods of fertilizers and state advantages and disadvantages of artificial fertilizers as compared to manures | Fertilizers bags  form plot  wall charts  manures |  | Group work  home work  individual work |  |
|  |  | I | 3.5 Soil fertility and productivity | 4 | To guide students in groups to discuss the concept of soil fertility and productivity and their differences  To guide students to discuss the following factors which determine fertility and productivity of the soil, mineral and organic matter content, drainage, water table, climate, soil depth, soil texture and structure and soil Ph  To guide students to discuss causes of loss in soil fertility | students in groups to discuss the concept of soil fertility and productivity and their differences  students to discuss the following factors which determine fertility and productivity of the soil, mineral and organic matter content, drainage, water table, climate, soil depth, soil texture and structure and soil Ph  students to discuss causes of loss in soil fertility | Areas with fertile soil  sample of fertile soil  farm plot | Group work  test |  |
| By the end of the topic the student should have ability to apply appropriate skill to conserve the environment | By the end of the topic the student should be able to understand effects of pollution and remedial measures | MAY | II | 4.0 POLLUTION | 4.1 Con of Pollution | 4 | To guide students to discuss the meaning of pollution | Students to discuss and give examples of pollution in real life situations | Wall charts | TIE,(2005),CHEMISTRY F3 & F4, LONGMAN,DSM | exercise |  |
| 4.2 Terrestrial pollution | 4 | To lead a class discussion on the meaning and examples of terrestrial pollution  To guide students to discuss how the environment is destroyed by careless dumping of rotting garbage, bottles etc | Students to discuss activities which cause terrestrial pollution and point out its hazards and suggest different methods of preventing terrestrial pollution | Wall charts  examples of terrestrial pollutants | Group work |  |
| III | 4.3 Aquatic pollution | 4 | To guide students to discuss the meaning of aquatic pollution  To guide students to identify cases where water pollution from industrial effluents has caused death to aquatic flora and fauna  To guide students to identify and discuss the effects of fertilizers and other agrochemicals on nearby rivers or lakes | Students to discuss examples of aquatic pollution  Students to discuss how to stop aquatic pollution  Students to suggest ways of preventing water pollution | Wall charts  pictures |  | Group work  individual work |  |
| IV | 4.4 Aerial pollution | 4 | To guide students to discuss the meaning of aerial pollution  To lead a discussion on industrial air pollutants eg, heavy smoke,SO2, NO2, etc | Students to discuss and give examples of aerial pollution  Students to discuss aerial pollutants and its effects , suggest effective methods which can be used to avoid aerial pollution | Wall charts  pictures | Group work  home work |  |
|  | IV | 4.5 Environmental conservation | 2 | To lead students to discuss the meaning of environmental conservation | Students to differentiate environmental conservation from environmental protection and do the following activities, planting flowers and trees,  clean the environment | Pictures  wall charts | Group work  home work |  |
|  | |  |  | **TERMINAL EXAMS** | | | | | | | | |
|  |  | **TERMINAL HOLIDAY FROM 31TH MAY TO 01TH JULY 2024** | | | | | | | | |
|  |  | AUGUST | IV |  | 4.6 Global warming | 4 | To guide students to discuss the meaning of global warming and green house effects  To guide students to discuss how the following greenhouse gases are produced in life, CO2, NO2, CH4,SO2  To guide students to discuss how the following climatic conditions can be caused by global warming  melting of polar ice,  submerging of islands and costlines  formation of hurricanes and typhoons,  expansion of desert  flooding | students to discuss the meaning of global warming and green house effects  students to discuss how the following greenhouse gases are produced in life, CO2, NO2, CH4,SO2  students to discuss how the following climatic conditions can be caused by global warming  melting of polar ice,  submerging of islands and costlines  formation of hurricanes and typhoons,  expansion of desert  flooding and suggest ways of preventing global warming | Wall charts  pictures |  | Group work  home work |  |
| I-II | 4.7 Ozone layer destruction | 4  4 | To lead students to discuss the meaning and significance of ozone layer in relation to life on earth  To lead students to discuss how the following substances destroy ozone layer,  aerosols  chlorofluorocarbons | students to discuss the meaning and significance of ozone layer in relation to life on earth  students to discuss how the following substances destroy ozone layer,  aerosols  chlorofluorocarbons and suggest methods of protecting the ozone layer | Wall chart  picture | Group work  home work |  |
| By the end of the topic the student should have ability to identify anions and cations in a given chemical sample | By the end of the topic the student should be able to use chemistry skills in identifying chemical compounds | III | 5.0 QUALITATIVE ANALYSIS | 5.1 The concept of qualitative analysis | 4 | To guide students to discuss the meaning of qualitative analysis and the use of qualitative analysis in finding out poisonous substances in the environment and etc | students to discuss the meaning of qualitative analysis and the use of qualitative analysis in finding out poisonous substances in the environment and etc | Wall charts | TIE,(2005),CHEMISTRY F3 & F4, LONGMAN,DSM | Group work  home work |  |
| IV | 5.2 Qualitative analysis procedures | 4 | To guide students to practice the use of special apparatus for qualitative analysis  To guide students to carry out the preliminary tests  To guide students to prepare stock solutions using distilled water, dil. Hydrochloric acid, dil. HNO3 | students to practice the use of special apparatus for qualitative analysis  students to carry out the preliminary tests  students to prepare stock solutions using distilled water, dil. Hydrochloric acid, dil. HNO3  Students to carry out experiments to precipitate different ions from their solutions and carry out confirmatory tests on the identified ions | Qualitative analysis reagents  qualitative analysis sheets  wall charts | Group work  home work |  |
|  | |  |  | **MIDTERM TEST** | | | | | | | | |
|  | **MID - TERM BREAK FROM 30TH TO 16TH SEPTEMBER 2024** | | | | | | | | |
|  | **GENERAL REVISIONS** | | | | | | | | |
| **OCTOBER** | I  II  III  IV | **GENERAL REVISIONS** | | | | | | | | |
| **NOVEMBER** | I | **GENERAL REVISIONS** | | | | | | | | |
| **FORM FOUR NATIONAL EXAMINATION –CSEE, NOVEMBER 2024** | | | | | | | | | | | | |