SCHEME OF WORK CHEMISTRY FORM 3 2022

TERM I ENDARASHA BOYS

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| **WK** | **LSN** | **TOPIC** | **SUB-TOPIC** | **OBJECTIVES** | **L/T ACTIVITIES** | **L/T AIDS** | **REFERENCE** | **REMARKS** |
| **2** | 1-2 | GAS LAWS | Boyle?s law. Boyle?s law: - Equation and graphical representation. Boyle?s law: Numerical questions. | By the end of the lesson, the learner should be able to:  State Boyle?s law. Explain Boyle?s law using kinetic theory of matter.  Represent Boyle?s law mathematically and graphically.  Solve further problems involving Boyle?s law. | Teacher demonstration ? Use syringes / pumps to show variation of volume with pressure.  Teacher asks probing questions leading to statement of the law. Discuss the cause of build-up-in pressure. Q/A: relation between volume and pressure mathematically and graphically.  Derive the relation P1V1=P2V2, and sketch graphs to illustrate Boyle?s law.  Worked examples. Assignment.  Supervised exercise: Volume in cm?, m?, litres, and pressure in Pa, mmHg, cmHg, atmospheres.  Assignment. | Chart  Volume-pressure relationship.  Syringes. chart Calculators. | K.L.B. BK III PP. 1-2  Longhorn Book III PP 1 -2  K.L.B. BK III PP. 4-5  Longhorn Book III PP 6-8 |  |
| 3 | GAS LAWS | Boyle?s law: Interpretation of graphs. | By the end of the lesson, the learner should be able to:  Plot and intepret graphs involving pressure and volume of gases. | Completing tables and plotting graphs.  Interpret the plotted graphs.  Make deductions from the graphs. | Graph papers. | K.L.B. BK III PP. 4-5 |  |
| 4 | GAS LAWS | Charles? law. | By the end of the lesson, the learner should be able to:  State Charles? law. Explain Charles? law using kinetic theory of matter. | Teacher demonstration:- To show expansion of air when heated and contraction when pressure is constant.  Explain increase in volume when temperature is raised. Q/A: - relation between volume and temperature, leading to Charles? law. | Coloured water, Glass tube, Warm water, Cork and  Flask. | .K.L.B. BK III P. 6  Longhorn Book III PP 9- 11 |  |
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|  | 5 | GAS LAWS | Temperature in Degree Celsius and Kelvin.  Equation and graphs from Charles? law. | By the end of the lesson, the learner should be able to:  Convert temperature in degree Celsius to Kelvin and vice-versa. | Teacher explains inter- conversion of the units. Students complete a table of temperature in the two units. | student book | K.L.B.  BK III P. 10  Longhorn Book III P 11 |  |
| **3** | 1-2 | GAS LAWS | Charles? law- equation and graphical representation. Numerical questions on Charles? Law. | By the end of the lesson, the learner should be able to:  Express Charles? law with equations.  Give a graphical representation of Charles? law.  Solve numerical problems based on Charles? Law. | Derive equations from volume and temperature relationship.  Exposition: - Teacher exposes a volume- temperature graph and extrapolates it to obtain the absolute temperature. The definition of absolute temperature is exposed.  Worked examples. Supervised exercise.  Assignment. | student book Calculators. | K.L.B. BK III PP. 6-7  Longhorn Book III P 10 K.L.B.  BK III P. 12  Longhorn Book III PP 12- 14 |  |
| 3 | GAS LAWS | Combined Gas Law.  Standard conditions, S.T.P.  conditions and R.T.P.  conditions. | By the end of the lesson, the learner should be able to:  Derive the Gas Law. Derive the combined gas law equation.  Solve numerical problems using the equation.  State standard conditions of temperature and pressure of an ideal gas. State room temperature and pressure of a gas.  Use standard conditions in problem solving. | Q/A: - Combining Boyle?s and Charles? Laws.  Worked examples. Exposition of s.t.p. and r.t.p.  Problem solving. | Calculators. student book | K.L.B.  BK III P. 12  Longhorn Book III PP 14- 16 |  |
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|  | 4 | GAS LAWS | Diffusion. | By the end of the lesson, the learner should be able to:  Define diffusion. Describe experiments to show diffusion. | Group experiments. Diffusion of KMnO4 crystals, concentrated ammonia solution. | KMnO4 crystals, Litmus papers. | K.L.B. BK III PP. 14-15  Longhorn Book III P 19 |  |
| 5 | GAS LAWS | Rates of diffusion. Graham?s Law. | By the end of the lesson, the learner should be able to:  Compare rates of diffusion of ammonia gas and hydrogen chloride in air.  Carry out numerical tasks. | Teacher demonstration: - To deduce rate of diffusion of ammonia gas and hydrogen chloride.  Q/A: - Students calculate ratio of rates of diffusion of the gases.  Solve problems involving RMM, equal volumes of the gases involved.  Supervised practice. Assignment. | student book Calculators | K.L.B. BK III PP. 18-19  Longhorn Book III 21 |  |
| **4** | 1-2 | THE MOLE | Mole, molar mass and R.A.M.  Number of moles in a substance. | By the end of the lesson, the learner should be able to:  Define the term mole as a quantity of measurement.  Relate the mole to  R.A.M and molar mass. Calculate number of moles in a given mass of a substance. | Discuss various analogies that lead to the definition of the mole.  Expose the meaning of R.A.M., Avogadro?s constant and molar mass. Worked examples.  Supervised practice. | Chart- table of molar masses of elements. student book | K.L.B. BK III PP. 27-31 Longhorn Book III  PP 34-35  K.L.B .BK III  P. 34 Longhorn BK III PP 39-40 |  |
| 3 | THE MOLE | Relative molecular mass & Relative formula mass. | By the end of the lesson, the learner should be able to:  Define relative molecular mass.  Calculate RMM of a compound. | Q/A: - Review formulae of compounds.  Complete a table of compounds and their molecular / formula mass. | Calculators. | K.L.B.BK III PP. 34-35  Longhorn Book III PP 44- 60 |  |
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|  | 4 | THE MOLE | Moles and Avogadro?s number.  Empirical Formula. | By the end of the lesson, the learner should be able to:  Calculate number of particles in a given number of moles.  Determine empirical formula of a compound given percentage composition by mass. | Review standard form of numbers.  Worked examples. Supervised exercise. Supervised practice. Assignment. | Calculators. student book | K.L.B.BK III PP. 3132  Longhorn Book III PP 30-31 |  |
| 5 | THE MOLE | Molecular formula. | By the end of the lesson, the learner should be able to:  Define molecular formula of a compound. Find molecular formula given percentage composition of a compound by mass. | Worked examples. Supervised practice. | Calculators. | K.L.B.BK III  P. 45  Longhorn Book III PP 73-75 |  |
| **5** | MID TERM EXAMS AND BREAK | | | | | | | |
| **6** | 1-2 | THE MOLE | Concentration of a solution. Molarity of a solution. | By the end of the lesson, the learner should be able to:  Define concentration of a solution.  Find concentration of a solution in grams/litre and moles/litre.  Define molarity of a solution.  Find molarity of a solution in M/dm? | Q/A: - Equivalent ratios,  e.g. 4g dissolved in 500cm? and  8g in 1 litre.  Worked examples on concentration of solutions.  Teacher explains that molarity of a solution is given in moles of the solute per litre.  Worked examples. Supervised exercise. | chart  student book | K.L.B. BK III PP. 46-48  Longhorn Book III PP 76- 81  K.L.B. BK III PP. 48-49  Longhorn Book III PP 76-81 |  |
| 3 | THE MOLE | Preparation of molar solutions. | By the end of the lesson, the learner should be able to:  Define molar solutions. Prepare molar solutions. | Q/A: - Description of preparation of molar solutions. | Volumetric flasks, teat droppers/wash bottle. Sodium hydrogen pellets.  Weighing balance. | K.L.B. BK III PP. 50-51  Longhorn Book III PP 78-81 |  |
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|  | 4 | THE MOLE | Calculators on molar solutions.  Dilution of solutions. | By the end of the lesson, the learner should be able to:  Solve numerical calculations on molar solutions.  Problems on molar solutions.  Calculate molarity of a solution after dilution. | Worked examples. Supervised exercise. Assignment.  Group experiments. Calculations. | student book | K.L.B. BK III P 51  Longhorn Book III PP 76- 81 |  |
| 5 | THE MOLE | Stoichiometry of a chemical reaction. | By the end of the lesson, the learner should be able to:  To determine mole ratio of given reactions. | Group experiments: - Determine masses, hence moles of reacting CuSO4 solution and iron metal. | CuSO4 solution and iron metal. | K.L.B. BK III  P. 56  Longhorn Book III PP 87- 92 |  |
| **7** | 1-2 | THE MOLE | Stoichiometric equations.  Stoichiometric equations of various reactions. | By the end of the lesson, the learner should be able to:  To define a stoichiometric equation. To investigate and determine Stoichiometric equations of various reactions. | To write stoichiometric equations of the above reactions.  Class experiments.  Problem solving. | student book | K.L.B. BK III  Longhorn Book III PP 14- 16  PP. 88-93  K.L.B. BK III  P. 62 |  |
| 3 | Volumetric Analysis. | Apparatus used in titration experiments.  Titration process. | By the end of the lesson, the learner should be able to:  To use and read a pipette and a burette.  To define titration as a process.  Define a titration end- point. | Discussion and practical use of the apparatus.  Emphasis is laid on need to sterilize the apparatus after use.  Review by Q/A: -  -Indicators and colour changes.  -Choice of indicators.  -Balanced chemical equations.  Discuss characteristics of a good titre, when an an- end point is attained. | Pipettes Burettes. Indicators  Suitable acid and base. | K.L.B. BK III PP. 63-64 Longhorn Book III  PP 104-8 |  |
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|  | 4 | Volumetric Analysis. | Titration experiment (Neutralization reaction) | By the end of the lesson, the learner should be able to:  To carry out a titration experiment and obtain accurate results. | Class experiments: - To neutralize HCl with NaOH solution.  Fill in a table of results. Find the average base used. | student book | K.L.B. BK III  P. 66  Longhorn Book III PP 108-114 |  |
| 4 | Volumetric Analysis. | Titration experiment (Neutralization reaction) | By the end of the lesson, the learner should be able to:  To carry out a titration experiment and obtain accurate results. | Class experiments: - To neutralize HCl with NaOH solution.  Fill in a table of results. Find the average base used. | student book | K.L.B. BK III  P. 66  Longhorn Book III PP 108-114 |  |
| 5 | Volumetric Analysis. | Titration experiment (Neutralization reaction) | By the end of the lesson, the learner should be able to:  To carry out calculations from experimental results. | Step-by-step calculations. | Calculators. | K.L.B. BK III P 66  Longhorn Book III PP 108-114 |  |
| **8** | 1-2 | Volumetric Analysis. | Basicity of an acid.  Standardization of HCl.  Concentration of HCl. | By the end of the lesson, the learner should be able to:  To define basicity of an acid.  To define standardization of HCl.  To calculate concentration of HCl from experimental results. | Complete a table of number of replaceable hydrogen ions of an acid; hence define basicity of an acid.  Write corresponding ionic equations.  Class experiments. Calculations & supervised practice. | student book  Dilute HCl, Na2CO3 solutions. | K.L.B. BK III  P. 73  K.L.B. BK III PP. 74-75 |  |
| 3 | Volumetric Analysis. | Redox Titration Reactions. | By the end of the lesson, the learner should be able to:  To standardize a solution with an iron (II) salt. | Experiment and calculations. | Potassium Magnate (VII) | K.L.B. BK III PP. 74-75  Longhorn Book III PP 114-115 |  |
| 4 | Volumetric Analysis. | Redox Titration Reactions. | By the end of the lesson, the learner should be able to:  To standardize a solution with an iron (II) salt. | Experiment and calculations. | Potassium Magnate (VII) | K.L.B. BK III PP. 74-75  Longhorn Book III PP 114-115 |  |
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|  | 5 | Volumetric Analysis. | Water of crystallization. Formula mass of ammonium iron (II) sulphate. | By the end of the lesson, the learner should be able to:  To determine amount of water of crystallization in ammonium iron sulphate crystals.  To find formula mass of ammonium iron (II) sulphate. | Teacher exposes the formula of water of crystallization.  Class experiment. Filling in a table of results.  Calculations from experimental results. | Ammonium Iron (II)  Sulphate crystals. Dilute sulphuric (VI) acid.  student book | K.L.B. BK III  P. 76 |  |
| **9** | 1-2 | Volumetric Analysis. | Formula mass of a given salt. Atomicity of gases.  Mass and volume of gases. | By the end of the lesson, the learner should be able to:  To solve numerical problems involving water of crystallization.  To define atomicity of gases.  To determine mass and volume of gases. | Problem solving from sample results.  Review by Q/A atoms and molecules; hence the definition.  Discuss a table of gases and their atomicity.  Teacher demonstration: - Determining mass of known volumes of oxygen / CO2. | student book student book Lubricated syringes Oxygen/  CO2. | K.L.B. BK III P.77  K.L.B. BK III PP. 78 -80  Longhorn BK III PP 126- 128 |  |
| 3 | Volumetric Analysis. | Molar gas volume. | By the end of the lesson, the learner should be able to:  To define molar gas volume. | Use the above results to describe volume of one mole of a gas.  Discuss molar gas volume at R.T.P and  S.T.P conditions. | student book | K.L.B. BK III 79 ? 80 Longhorn Book III  PP 126-127 |  |
| 4 | Volumetric Analysis. | Combining volumes of gases. | By the end of the lesson, the learner should be able to:  To compare combining volumes of two reacting gases. | Teacher demonstration: - Determining volumes of reacting gases; hence deduce volume rations. | student book | K.L.B BK III  P. 82 |  |
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|  | 5 | Volumetric Analysis. | Gay Lussac?s Law. | By the end of the lesson, the learner should be able to:  To state Gay Lussac?s Law.  To compare Gay Lussac? s Law with Avogadro?s Law.  To solve numericals using Gay Lussac?s Law. | Teacher exposes the law; and compares it with Gay Lussac?s Law.  Worked examples. Supervised practice. | student book | K.L.B. BK III  P. 85  Longhorn Book III PP 129-131 |  |
| **10** | END OF TERM EXAMS | | | | | | | |