SCHEMES OF WORK 2022
CHEMISTRY FORM 3

This PDF consists of part of the schemes for the named class.

CHEMISTRY FORM THREE TERM ONE 2022							
WK NO.	*L/ NO*	*TOPIC/ SUBTOPIC*	*LESSON/SPECIFIC OBJECTIVES*	*TEACHING/LEARNING ACTIVITIES*	*MATERIALS / RESOURCES*	*REF*	*REMARKS*

1	1	**GAS LAWS** Boyle's law.	*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 $P_1V_1=P_2V_2$, and sketch graphs to illustrate Boyle's law. Worked examples. Assignment. Supervised exercise: Volume in cm^3, m^3, litres, and pressure in Pa, mmHg, cmHg, atmospheres. Assignment.	Chart Volume-pressure relationship. Syringes.	***K.L.B. BK III*** *PP. 1-5* ***Longhorn Book III*** *PP 1 -4*	

	2	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*	
	3-4	Temperature in Degree Celsius and Kelvin. Equation and graphs from Charles' law.	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.		***K.L.B.*** ***BK III*** *P. 10* *Longhorn Book III P 11*	
	5	Charles' law-equation and graphical representation.	Express Charles' law with equations. Give a graphical representation of 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.		***K.L.B. BK III*** *PP. 6-7* *Longhorn Book III P 10*	
	1	Numerical questions on Charles' Law.	Solve numerical problems based on Charles' Law.	Worked examples. Supervised exercise. Assignment.	Calculators.	***K.L.B.*** ***BK III*** *P. 12* *Longhorn Book III PP 12-14*	

2	2	Combined Gas Law.	Derive the Gas Law. Derive the combined gas law equation. Solve numerical problems using the equation.	Q/A: - Combining Boyle's and Charles' Laws. Worked examples.	Calculators.	***K.L.B.*** ***BK III*** *P. 12* *Longhorn Book III PP 14-16*	
	3	Standard conditions, S.T.P. conditions and R.T.P. conditions.	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.	Exposition of s.t.p. and r.t.p. Problem solving.		***K.L.B.*** ***BK III*** *P. 14*	
	4-5	Diffusion.	*By the end of the lesson, the learner should be able to:* Define diffusion. Describe experiments to show diffusion.	Group experiments. Diffusion of $KMnO_4$ crystals, concentrated ammonia solution.	$KMnO_4$ crystals, Litmus papers.	***K.L.B. BK III*** *PP. 14-15* *Longhorn Book III P 19*	
	1	Rates of diffusion.	Compare rates of diffusion of ammonia gas and hydrogen chloride in air.	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.		***K.L.B.*** ***BK III*** *PP. 18-19* *Longhorn Book III 21*	
3	2	Graham's Law.	State Graham's Law. Represent Graham's Law mathematically. Carry out numerical tasks.	Review the experimental results above. Compare the rates of diffusion with density of a gas leading to Graham's Law. Q/A: - Graham's Law using mathematical expressions. Worked examples. Solve problems involving RMM, equal volumes of the gases involved. Supervised practice. Assignment.	Calculators	***K.L.B. BK III*** *PP. 22-26* *Longhorn Book III PP 22-24*	

	3,4	**THE MOLE** Mole, molar mass and R.A.M.	Define the term mole as a quantity of measurement. Relate the mole to R.A.M and molar mass.	Discuss various analogies that lead to the definition of the mole. Expose the meaning of R.A.M., Avogadro's constant and molar mass.	Chart- table of molar masses of elements.	***K.L.B. BK III*** *PP. 27-31* *Longhorn* *Book III* *PP 34-35*	
	5	Number of moles in a substance.	Calculate number of moles in a given mass of a substance.	Worked examples. Supervised practice.		***K.L.B .BK III*** *P. 34* *Longhorn* *BK III* *PP 39-40*	
4	1	Relative molecular mass & Relative formula mass.	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*	
	2	Moles and Avogadro's number.	Calculate number of particles in a given number of moles.	Review standard form of numbers. Worked examples. Supervised exercise.	Calculators.	***K.L.B.BK III*** *PP. 3132* *Longhorn* *Book III* *PP 30-31*	
	3	Empirical Formula.	*<u>By the end of the lesson, the learner should be able to:</u>* Define the term empirical formula of a compound. Determine empirical formula experimentally. Determine empirical formula of a compound given percentage composition by mass.	Group experiments: - Burning magnesium / copper in air to obtain mass of metal and mass of oxygen involved. Determine mole ratio, hence the empirical formula. Worked examples. Supervised practice. Assignment.		***K.L.B.BK III*** *PP. 41-43* *Longhorn Book III PP 64-71*	
	4	Molecular formula.	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	Concentration of a solution.	Define concentration of a solution. Find concentration of a solution in grams/litre and moles/litre.	Q/A: - Equivalent ratios, e.g. 4g dissolved in 500cm³ and 8g in 1 litre. Worked examples on concentration of solutions.		***K.L.B. BK III*** *PP. 46-48* *Longhorn Book III PP 76-81*	

5	1	Molarity of a solution.	Define molarity of a solution. Find molarity of a solution in M/dm^3	Teacher explains that molarity of a solution is given in moles of the solute per litre. Worked examples. Supervised exercise.		*K.L.B. BK III* *PP. 48-49* *Longhorn* *Book III* *PP 76-81*	
	2	Preparation of molar solutions. Calculations on molar solutions.	Define molar solutions. Prepare molar solutions. Solve numerical calculations on molar solutions. Problems on molar solutions.	Q/A: - Description of preparation of molar solutions. Worked examples. Supervised exercise. Assignment.	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*	
	3	Dilution of solutions.	Calculate molarity of a solution after dilution.	Group experiments. Calculations.		*K.L.B. BK III* *PP. 76-81*	
	4	Stoichiometry of a chemical reaction.	To determine mole ratio of given reactions. To define a stoichiometric equation. To investigate and determine Stoichiometric equations of various reactions.	Group experiments: - Determine masses, hence moles of reacting $CuSO_4$ solution and iron metal. To write stoichiometric equations of the above reactions.	$CuSO_4$ solution and iron metal.	*K.L.B. BK III* *P. 56,62* *Longhorn Book III* *PP 87-92*	
	5	**HALF**	**TERM**	**BREAK**			
6	1	**Volumetric Analysis**. Apparatus used in titration experiments. Titration process.	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. 63-67* *Longhorn* *Book III* *PP 104-8*	
	2	Titration experiment (Neutralization reaction)	To carry out a titration experiment and obtain accurate results. To carry out calculations from experimental results.	Class experiments: - To neutralize HCl with NaOH solution. Fill in a table of results. Find the average base used. Step-by-step calculations.	Calculators.	*K.L.B. BK III* *P. 66* *Longhorn Book III PP 108-114*	

	3	Basicity of an acid.	To define basicity of an acid.	Complete a table of number of replaceable hydrogen ions of an acid; hence define basicity of an acid. Write corresponding ionic equations.		*K.L.B. BK III* *P. 73*	
	4	Standardization of HCl.	To define standardization of HCl.	Class experiments.	Dilute HCl, Na_2CO_3 solutions.	*K.L.B. BK III* *PP. 74-75*	
	5	Concentration of HCl.	To calculate concentration of HCl from experimental results.	Calculations & supervised practice.		*K.L.B. BK III* *PP. 74-75*	
7	1	Redox Titration Reactions.	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*	
	2	Water of crystallization.	To determine amount of water of crystallization in ammonium iron sulphate crystals.	Teacher exposes the formula of water of crystallization. Class experiment. Filling in a table of results.	Ammonium Iron (II) Sulphate crystals. Dilute sulphuric (VI) acid.	*K.L.B. BK III* *P. 76*	
	3	Formula mass of ammonium iron (II) sulphate.	To find formula mass of ammonium iron (II) sulphate.	Calculations from experimental results.		*K.L.B. BK III* *PP. 76 -77*	
	4-5	Formula mass of a given salt.	To solve numerical problems involving water of crystallization.	Problem solving from sample results.		*K.L.B. BK III* *P.77*	
8	1	Atomicity of gases.	To define atomicity of gases.	Review by Q/A atoms and molecules; hence the definition. Discuss a table of gases and their atomicity.		*K.L.B. BK III* *PP. 78 -80* *Longhorn BK III* *PP 126-128*	

	2	Mass and volume of gases.	To determine mass and volume of gases. To define molar gas volume.	Teacher demonstration: - Determining mass of known volumes of oxygen / CO_2. 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.	Lubricated syringes Oxygen/ CO_2.	*K.L.B. BK III* *P. 81* *Longhorn BK III* *PP 126-127*	
	3	Combining volumes of gases.	To compare combining volumes of two reacting gases.	Teacher demonstration: - Determining volumes of reacting gases; hence deduce volume rations.		*K.L.B BK III* *P. 82*	
	4&5	Gay Lussac's Law.	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.		*K.L.B. BK III* *P. 85* *Longhorn Book III* *PP 129-131*	
9-10		**END OF TERM EXAMS AND CLOSING OF SCHOOLS**					