FORM 3 CHEMISTRY YEAR PLAN 2019- 2020

Term	Topic	OBJECTIVES / ACTIVITIES	ASSESSMENT
TERM 1 Week 1	States of Matter	• Define the terms: element; atom; compound; matter; molecule; states of matter; Osmosis; diffusion; Brownian motion; atomic theory; • Discuss the properties of the 3 states of matter • List and describe processes which support the atomic theory	Oral quiz on meaning of words
Week 2	States of matter	• Review evidences in support of the atomic theory • Perform practical work to observe the osmosis and diffusion • List elements in group 1 of the periodic table and give their properties **Assignment**: read chapter 1 states of matter	**Quiz**: names, chemical symbols and properties of group 1 elements. **Experiments**: Osmosis in potato & Diffusion of KMnO4
Week 3	States of matter	• **Review:** states of matter; Work sheet on chapter 1 • Change of states • Definitions • Evidences supporting atomic theory • Gas Laws: Boyle; Charles and general gas law	**Quiz** on group II elements **Lab report** on diffusion & osmosis due
Week 4	Pure substances and mixtures	• State the differences between a pure substance and a mixture • Define the terms: solution, solute, solvent, suspension, colloid; solubility, saturated solution,	**Quiz** group 3 and 4 **Test** on states of matter
Week 5	Pure substances and mixtures	• Describe the effect of temperature changes upon the solubility of a solute in a solvent • Describe how to separate mixtures by means of dissolving and filtering: evaporating; decanting; distilling; using a separating funnel: subliming and by chromatography	**Experiment**: Chromatography; Simple distillation of copper II sulphate Crystallization of copper II sulphate
Week 6	Pure substances and mixtures	Describe the extraction of sucrose from sugar cane. Review pure substances and mixtures	Review questions Test on pure substances and mixtures

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Week 7	Atomic structure	• Name the 3 particles found in the atom, and give their relative masses and electrical charges • Describe how these particles are arranged in the atom • Explain what is meant by the terms: atomic number; mass number, isotope, groups, periods, valence electrons	**Work sheet** on Atomic structure Lab solubility of potassium nitrate.
Week 8	Atomic structure	• Calculate the mass number and atomic number of any element from details about the number and type of particles in its atom, and vice-versa • Draw electron orbital diagrams: showing the number of protons and neutrons in the nucleus, the electron shells, and the electronic configuration.	**Quiz** group 5 & 6 of the periodic table Homework: answer questions 1 – 7 page 69 Atoms and the periodic table
Week 9	Atomic structure Radioactivity	• Review atomic structure • Define the term radioactivity • Describe the three types of radioactivity and compare their penetrating power • Describe the use of radioisotopes in medicine and industry	Test on atomic structure
Week 10	Periodic table	• Outline the development of the periodic table into its present day form highlighting two important contributions made by two scientists • Sketch the approximate shape of the periodic table and put the 1st 20 elements in their correct places • Discuss trends in groups 1; 2, 7 and 8	**Quiz** on radioactivity **Lab**: Trends in group 7
Week 11	Energy	• Distinguish between various forms of energy and trace their interconversions : • State the law of conservation of energy • Identify major energy sources: renewable and non-renewable	**Quiz** Group 7 and 8 of the Periodic table of elements Quiz Transition elements
Week 12	Energy	• List the criteria of a good fuel • Describe how petroleum and coal are formed • Discuss alternative sources of energy that can be used in the Caribbean • Discuss energy conservation	Quiz on Energy
		• Revision for exam	

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Week 13	Revision	Review: States of matter Pure substances and mixtures Atoms and the periodic table Atomic structure Radioactivity and energy	end of term exam
TERM 2 Week 1	Energy	• Distinguish between various forms of energy and trace their inter-conversions : • State the law of conservation of energy • Identify major energy sources: renewable and non-renewable	Quiz Transition elements
Week 2	Energy	• List the criteria of a good fuel • Describe how petroleum and coal are formed • Discuss alternative sources of energy that can be used in the Caribbean • Discuss energy conservation	Quiz on Energy
Week 3	Bonding How do atoms bond? Ionic & Covalent bonding	• Explain why noble gases do not react & why other elements react • Describe with the means of a diagram how two elements react to form a compound • Explain how a coordinate bond is formed	Lab on covalent and ionic compounds List of polyatomic ions
Week 4	Bonding Lewis dot structures Coordinate covalence	• Work out the ions formed by elements according to their position in the periodic table • Write chemical formulae • Describe the shape of a sodium chloride crystal lattice and explain how it is constructed form the its ions.	Worksheet on bonding Quiz on cations
Week 5	Bonding Properties of ionic and covalent compounds	• List the Differences between Ionic and covalent compounds • Explain the metallic bonding using the terms ‘cation’ and ‘mobile electrons’ • List the characteristics of metals	Lab which substances conduct electricity Quiz anions
Week 6	bonding	• Review bonding	Test on bonding
Week 7	Chemical reactions	• Distinguish between physical and chemical changes • List and give examples of different types of chemical reactions	Class demonstration Report written by students p. 104 Q 1 & 2
Week 8	Chemical Reactions	• Outline rules for writing chemical equations • Write and balance chemical equations	Practice sheet on Classify, write and balance chemical equations

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Week 9	Chemical reactions	• Explain what is meant by the terms endothermic and exothermic reactions
		• State and explain: The Law of
		  ○ Conservation of matter
		  ○ Constant composition
		  ○ Multiple proportions
		• Define oxidation and reduction
			Lab Physical and chemical changes
			Quiz chemical reactions

	Chemical Reactions	• Calculate oxidation numbers from formulae • Perform tests for oxidizing and reducing agents • Distinguish between oxidizing and reducing agents	Test Chemical reactions
Week 10	The Mole concept	• Work out the relative atomic mass of a compound • Explain the meaning of the terms, mole, RAM & empirical formula • Calculate the number of moles a given mass of any element • Work out empirical formulae	Practice problems on moles p. 105 Q 3—6
Week 11	The Mole Concept	• Calculate the amount of substances that combine in a reaction by using equations • Calculate the number of particles in given mass and moles of a substance	Quiz on mole concept
Week 12	The Mole concept	• Review Mole Concept • Mass $\Longleftrightarrow$ moles • Numbers of particles • Empirical and molecular formulae • Balance equations	study guides and practice problems
Week 13		• Complete revision on moles.	Test on Mole concept

TERM 3	TOPIC	OBJECTIVES / ACTIVITIES	ASSESSMENT

TERM 3
Week 1
	Acids, Bases and Salts	• Define the terms acid:
		  ○ acid anhydride
		  ○ acid
		  ○ base
		  ○ salt
		  ○ Basicity of an acid
		• List common acids and their sources
		• Distinguish between strong and weak acids
			Lab
			Reactions of an acid

Week 2	Acids, Bases and Salts	• List the properties of acid and bases • Distinguish between concentration and strength of an acid • What is an indicator and what is it used for? • Distinguish between normal, acid and basic salts	Quiz: definitions
Week 3	Acids, Bases and Salts	• Describe the pH scale and use of indicators • Explain what is meant by the term: Normal salt, acid salt and double salt • Determine the pH of household products	Lab : determining the pH of household products
Week 4	Acids, Bases and Salts	• Review acids, bases and salts	Test on Acids, Bases and Salts
week 5	Metals and Non-metals	• Distinguish between metals and non-metals in the periodic table • Describe the physical and chemical properties of metals and compare them with non-metals • Explain why metals are good conductors of heat and electricity	
week 6	Metals and Non-metals	• Write down the common metals I in the order in which they appear in the activity series • Explain how the reactions of metals with air, water and dilute acids follow the order of the activity series	work sheet on properties of metals and non-metals
week 7	Metals and Non-metals	• Define the terms reduction and oxidation • Examine chemical equations and determine whether a substance is oxidized or reduced • Calculate the oxidation numbers of elements	Lab: Identifying oxidizing and reducing agents Quiz: Metals and Non-metals page 203- 212

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week 8	Metals and Non-metals	• Compare the reducing powers of hydrogen, carbon, carbon monoxide, and other metals on metal oxides • Describe what is meant by displacement reaction in terms of redox and the activity series	
week 9	Metals and Non-metals	• Show that the oxidation number of an element or ion increases when it is oxidized and decreases when it is reduced • Discuss the importance of metals and non-metals in living things and the environment	complete assignment on page 222 -223 questions 1 – 4
week 10		• Revision for 2nd test on Metals and Non-metals	Test 2nd part of Chapter 12 Metals and Non-metals pages 213 - 222
Week 11	Non-metals (water)	• Explain and describe the water cycle • Suggest sources of impurities in water • Describe how drinking water is prepared from river water • Describe how sewage is treated • Explain how hardness of water is formed and how it destroys soap	
Week 12		• Topics to be revised for Final exams • Separation techniques • Atomic structure • Periodicity • Energy • Bonding • Writing and balancing chemical equations • Acids bases and salts • Moles • Metals and non-metals	
week 13		•	final exams