

SUBJECT: PHYSICS

School:

Class: Form 1

No. of Periods per week: 2

Annual Teaching Hours: 50

Teacher:

Qualification:

TERM	WEEK	MODULE	CHAPTER	LESSON TITLE	Hands-on Activities	Digitalisation		№ of Periods	observation	
						Resources Availability on line	Used (yes or no, how?)			
First	1	MODULE 1 THE WORLD OF SCIENCE	Introduction to sciences + Scientific contributions and discoveries	First contact with the learners, definition and branches of science.	 - Show how straight stick/pencil/ruler will appear when placed inclined in water with one end air and other in water. - Use of a triangular glass prism to produce a spectrum. - Observe writings on a page through a convex lens. - A balloon rubbed so that it sticks to a wall or ceiling when released. (NB: These activities are mainly for observation and curiosity of learners with no explanation at this level.)	Available		2		
	Prominent scientists and discoveries and contributions to improvement in the lives of humans.			Available			2			
	3		Introduction to Physics	Definition of physics and some of its branches. What physicists do and how. Observing nature and seeking comprehension.		Available		1		
			Basic laboratory equipment	Some basic equipment in the Physics laboratory		Available		1		
	4		Safety laboratory rules	Safety rules for working in the Physics laboratory		Available		2		
	5		Introduction to measurement	Job opportunities for science students		Available		1		
				Simple measurements using measuring instruments/		Available		1		
	6		REVISION and EVALUATION			Available		2		
	7		Physical quantities	Identifying physical and non-physical quantities		Available		2		
				Some Units of measurement and S.I units						

Second	8	MODULE II MATTER: PROPERTIES AND TRANSFORMATION	Matter	-States of matter and differences between them	- Measurement of length, using a ruler/tape. - Measurement of diameter of a spherical object by placing it between two parallel sided piece of wood. - Measurement of mass.	Available		2		
	9		States of matter	-interconversion processes		Available		2		
	10		Measurement of length	- Define length & state its S.I and sub units Measurement of length		Available		2		
	11		Measurement of mass	- Define mass and state its SI and sub units Measurement of the mass of a body		Not yet		2		
	12		REVISION and EVALUATION					2		
	13		Measurement of weight	- Define weight and state its units - Differentiate between mass & weight Measurement of weight		Not yet		2		
	14		Measurement of volume	- Define volume & state its units -measurement of volumes of liquids, regular & irregular solids	- Measurement of volume of liquid and solids (regular and irregular shaped). - Measurement of temperature. Application of measurement to determine density of water, piece of stone, piece of cubic or rectangular piece	Not yet		2		
			Measurement of Density	- Define density as the mass per unit volume and state its units		Not yet				
	15		Measurement of Temperature	-Define temperature and state its S.I and sub units/conversion		Not yet		1		
			Using information on products	-safety rules on products/ materials		Not yet		1		
				-using information						
	BREAK	MODULE III ENERGY : APPLICATIONS AND USES	Forms of energy	-Definition, forms, sources of energy		- Use of candle wax marks placed on metal and non-metal and the other end held close to a candle flame to demonstrate good and bad conductors. - Convection: Water is heated in a beaker, plastic transparent cup or polythene bag.	Not yet		1	
			CHRISMAS BREAK				CHRISMAS BREAK			
	16		Energy needs	-Daily applications of energy	Not yet			2		
				-common devices that use different forms of energy and principle of energy conservation.						
	17		Solar energy	- Components and uses of solar energy	Not yet			1		
			Chemical energy	-sources and uses of chemical energy	Not yet					
			Electrical energy	-sources and uses of electrical energy	Not yet			1		
Thermal energy			-sources and uses of heat.	Not yet						

	18		REVISION and EVALUATION					2	
	19			-conduction (conductors / insulators) -convection / application (ventilation) -radiation (good and bad absorbers/emitters)	- Radiation: - Candle wax on a metal is held at different distances from a burning candle flame. - Soaking a piece of paper and holding it close to a burning candle. - Light a bulb using a cell or battery.	Not yet		2	
	20		Forces and motion	Definition and effects of forces		Not yet		1	
				-definition/types of motion		Not yet		1	
	21			-safety rules: uses of seat belts, low speed/road signs		Not yet		2	
	22	MODULE IV HEALTH EDUCATION	Sound	Definition and production	- Measurement body temperature using a clinical thermometer. - Making of any local instrument (eg tomato tins plus metal wires) to produce sound such that loudness can be varied.	Not yet		1	
				The ear and sound perception		Not yet		1	
	23		Detection of sound	-Effects of loud sound and prevention		Not yet		1	
			Temperature	-measurement of temperature of a body (clinical thermometer) -normal and abnormal body temperatures		Not yet		1	
	24			REVISIONS and EVALUATION					
Third	25		Sports and physics	Body posture: importance of good posture to the body		Not yet		2	
	26	MODULE V ENVIRONMENTAL EDUCATION AND SUSTAINABLE DEVELOPMENT	- RADIATIONS	-Harmful waste & background radiation -handling radioactive substances	- Two boxes are designed from glass or transparent plastics with one completely sealed leaving a possibility to insert a thermometer while the other has an opening. The two boxes are exposed to the sun for about 30 minutes, the readings of the thermometers can be used to explain the greenhouse effect	Not yet		2	
	27		-global warming And climate change	-greenhouse effect (concept/causes) -climate change -environmental sustainability		Not yet		2	
	28	MODULE VI TECHNOLOGY	Common tools	Machines (identification and uses)	- Drawing the 6 faces of an object such as a digital multimeter separately.	Not yet		1	
			Maintenance	-lubrication, cleaning and repairs using the tools		Not yet		1	
	29		Technical drawing	Instruments used/ sample drawing		Not yet		2	
	EASTER BREAK								
30 - 36	GENERAL REVISION / END OF YEAR EXAMINATION							14	

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School: **Class:** Form 2 **No. of Periods per week:** 2 **Annual Teaching Hours:** 50
Teacher: **Qualification:**

TERM	WEEK	MODULE	CHAPTERS	LESSON TITLE	HANDS-ON ACTIVITIES	DIGITALISATION		№ OF PERIODS	OBSERVATION
						Resources Availability on line	Used (yes or no, how?)		
FIRST	1	Module 1:The world of science	First contact with students and presentation of scheme of work		- Loading a helical spring to obtain a table of mass and corresponding extension and calculate the mass per unit length. - Provide rectangular wooden blocks of same material, for learners to measure length, breath, height and mass and use to calculate density.			2	
			1: Scientific method par	1.0 Collecting data-importance of data		Available			
	1.2 Interpreting data and concluding			Available			1		
	1.3 Predicting and evaluating			Available			1		
	3		2:Simple application of measurements	1.4 Planning (recall basic quantities units and instruments)		Available		2	
				1.5 Measurements of speed and units					
	4	1.6 Measurement of density and Units	Available		2				
	5	Module 2 : matter, Properties and transformation	3 : Change of state	2.1 Physical state of matter 2.2 Characteristics of matter in the different states.	- Measuring the temperature of a room, water and human body. - Allowing ice to melt while in contact with another object whose temperature we can measure. - Allowing spirit to evaporate while in contact with a body whose temperature we can measure.	Available		2	
	6		REVISION and FIRST EVALUATION						
	7		4 : Temperature	2.3 Temperature – measurement and units and effects on matter		Not yet		2	
	8		5:Thermal and electrical insulation	2.4 Thermal and electrical insulation		Not yet		2	
	9		6: Action of heat and electrical energy	2.5 Action of heat on materials 2.6. Action of electrical energy on materials		Not yet		2	
	10	Module 3: energy, value and uses	9: Energy needs of human beings	3 Sources and uses of energy. transmission of energy	- Light a candle so that it burns and we can show that it gives out heat which can be used for heating, drying, cooking as light for seeing. - Use a photovoltaic plate to light a small bulb to identify forms of energy. - Power a small radio with batteries for it to emit sound.	Not yet		2	
	11		10 :Renewable energy	-Solar panel for heating -Other sources		Not yet		2	
12	11:Electricity		Electricity for the home and the simple electric circuit	Not yet			2		
13	12:Light		Sources of Light	- Types of light receivers -Beams and shadows		Not yet		2	
14	12: Light	- Types of light receivers -Beams and shadows	Not yet		1				
15	13:Energy exchange	Linking one form of energy to other forms	Not yet		2				
		CHRISTMAS BREAK							

SECOND	16		14: Motion	Distance, time and speed		Not yet		2			
	17	Module 4 : Health education	15: Distribution of pressure in a liquid	4. Average blood pressure	- Use a syringe and plastic bottles with small holes to demonstrate liquid pressure when pushed using a piston or driven by a height difference.	Not yet		2			
	18		REVISION and EVALUATION								
	19		16: muscle stress	Sports and physical education		Not yet		2			
	20		17: Types of lenses and their uses.	The eye as an imaging device and use of lenses to aid eyes with vision defects		Not yet		2			
	21		Module 5: Environmental Protection and sustainable development	18:Radiation		5.0 Introduction 5.1 Radiation emitted into the atmosphere -Cosmic waves from the sun	Using transparent glass or plastic to design a box in which there is a possibility to insert a thermometer and measure temperature with time after exposing to solar radiation.	Not yet		2	
	22	19: Weather and communication		5.1 The Greenhouse Effect	Not yet			2			
	23			5.3 Global warming	Not yet			2			
	24			REVISION AND EVALUATION						2	
	25			5.4 Climate change	Not yet			2			
THIRD	26	Module 6: Technology	22: Introduction to technology	6.0: Introduction to technology Review of form one	- Use a screw driver to drive a screw - Use a tester to identify a live terminal of a source. - Draw a 3-D diagram of a multimeter.	Not yet		2			
	27		23 : Project	6.1 Fabrication of common instruments		Not yet		2			
	28		24 Care and maintenance	6.2 Care and maintenance Principle of functionality of some common appliances		Not yet		2			
	29		25:Technical drawing	6.3 Technical drawing		Not yet		2			
	EASTER BREAK										
30 - 36		GENERAL REVISION / END OF YEAR EXAMINATION						14			

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SUBJECT: PHYSICS
School:
Class: Form 3
No. of Periods per week: 03
Annual Teaching Hours: 63
Teacher:
Qualification:

TERM	WEEK	MODULE	CHAPTER	LESSON TITLE	Hands-on Activities	Digitalisation of Teaching		№ of periods	OBSERVATION	
						Resources Availability on line	Used (yes or no, how?)			
FIRST	1	MODULE 1: INTRODUCTI ON TO MECHANICS	1. Physical quantities	First contact with the students					03	
	- Definitions/examples / units of physical quantities. - Scalar physical quantities and vector quantities			- Measure the length, width, and height of a box using a metre rule and use these measurements to determine its volume. - Measure the diameter of a spherical object by placing it between two parallel sided piece of wood and use the measurement to determine its volume.	Available					
	- Prefixes and use of standard form - Name some basic equipment used in the study of force: newton meter, balance, springs, masses etc.				Available					
	2				- Safety rules for working with different equipment - comparison between mass and weight	Available		02		
	Measurement of mass/Conversions between different units of mass				Available		01			
	3				Measurement of volume, temperature and time	Available		02		
	4	2. Density	Definition / calculation / unit of density	- Measure the density of a liquid, regular and irregular solids use the values obtained to determine whether the liquid or solid will float on water. - Use a collapsing can to demonstrate atmospheric pressure.	Available		01			
	Describe and carry out experiments to measure the density of regular & irregular objects		Available			02				
	Applications of the density of a material in engineering works		Available			01				
	5	MODULE II: MATTER: PROPERTIES AND TRANSFORM ATION	3. Pressure	- Definition / calculation / unit of pressure. - Factors that affect pressure in solids - Application of pressure in solids	- Use a syringe and plastic bottles with small holes to demonstrate the characteristics of pressure in liquids. - Load a helical spring and a rubber band separately with standard masses to obtain tables of mass and	Available		03		
	6			REVISION / EVALUATION / REMEDIATION				03		
	7			- Pressure in liquids - Calculation / Factors affecting of pressure in liquids - Characteristics of pressure in liquids - Applications; Hydraulic machines	Not yet		03			

	8			– Atmospheric pressure and weather – Demonstration/ Measurement/Application of atmospheric pressure – Pressure and health (Effects of high/low pressure)	corresponding extension to: - Demonstrate Hooke’s law. - Distinguish between materials that obey Hooke’s law and those that do not.	Not yet		02		
	9			- Effects of pressure on boiling point. -Application of high pressure		Not yet		01		
			Elasticity and Hooke’s law	– Definition of elasticity – Elastic and non-elastic materials – Hooke’s Law and elastic limit		Not yet		01		
				– Sketch F – e graphs within the elastic limit. – Experimental demonstration of Hooke’s law – Describe situations in which Hooke’s law applies		Not yet		02		
	10	MODULE III: ENERGY: APPLICATIONS AND USES	5. Forms of energy	– Definition / Forms of energy	- Use a photovoltaic plate to light a small bulb to identify forms of energy. - Light a candle so that it burns and a small radio powered with batteries to demonstrate conversion of energy. - Use a burning candle and a small bulb powered by a photovoltaic plate to distinguish between renewable and non-renewable energy sources. - Use a spring or a rubber band to project a small object to demonstrate conversion of potential energy to kinetic energy. - Mount systems of one, two, three, four or five pulleys and use to lift loads. - Use a simple torch and slits to produce rays and beams.	Not yet		01		
	6. Sources of energy		– Sources of energy. – Renewable and non-renewable energy sources	Not yet			01			
	7. Energy Transformations		– The law of conservation of energy / Application – Transducers and energy flow diagrams.	Not yet			01			
			– Energy transformations – Calculations of potential (gravitational and elastic) and kinetic energies	Not yet			01			
	11		8. Work	– Definition / Calculation of work involving force and displacement (in the same direction only) – Examples of situations where work is done		Not yet		02		
	12		REVISION/ HARMONISED EVALUATION / REMEDIATION					03		
	13		9. Power	– Definition / calculation of power – Power ratings of some devices e.g. electric iron, light bulbs, electric motors etc.			Not yet		01	
				– Definition / advantages of a machine.			Not yet		02	

SEC ON D			10. Simple Machines	- MA / VR / Efficiency. - Relationship between the three	- Use a simple torch, slit(s) and mirrors to demonstrate reflection of light. - Show how straight stick/pencil/ruler will appear when placed inclined in water with one end air and other in water. - Use a simple torch, slit and glass block to demonstrate refraction of light, critical angle and total internal reflection. - Use a burning candle and a convex lens to demonstrate images formed by converging lenses. - Use a prism to demonstrate dispersion of white light.						
	14			- Simple machines (Lever, inclined plane and pulley, hydraulic machines) / Experiments and Calculations		Not yet		03			
	15		Optics 10. Reflecti on of light	- Description / Propagation of light - Rays and types of beams - Luminous and non-luminous sources of light - Transparent, translucent and Opaque objects - Shadows and applications		Not yet		02			
				- Definition / laws of reflection of light - Experiment to show that i = r		Not yet		01			
				CHRISTMAS BREAK							
	16			- Image formation by plane mirrors. - Characteristics of images formed by plane mirrors - Uses / Simple calculations on plane mirrors - Curved mirrors(Types and applications)		Not yet		02			
			11. Refracti on of light	- Identification of refraction phenomena in everyday life / Definition of refraction		Not yet		01			
				- Laws of refraction - Refractive index and speed of light		Not yet		01			
				- Experiment to determine refractive index of a glass block		Not yet		01			
	- Effects of refraction of light in everyday life - Real/apparent depth and refractive index			Not yet			01				
	18		REVISION / EVALUATION / REMEDIATION						03		
	19		12. LENSE S	- Total internal reflection (TIR) - Conditions / Daily occurrence / Definition of c - Ray diagram to show TIR		Not yet		02			
				- Use of TIR / Solve problems using $\text{sinc} = \frac{1}{n}$		Not yet		01			
20		- Lens action/Types of lenses/Definition of terms:	Not yet		03						

	21			– Ray diagrams to illustrate the meaning of principal foci, for converging & diverging lenses – Measurement of focal length of a converging lens		Not yet		03	
	22			– Image formation by converging/diverging lenses – The lens formula and magnification, $m = \frac{v}{u}$		Not yet		03	
	23		13. Dispersion of light.	– Definition / Demonstration of dispersion.		Not yet		03	
				– Formation of a pure spectrum from white light. – Natural occurrence of the dispersion		Not yet			
				– Relative positions of radiation on EM spectrum, in terms of wavelength and frequency		Not yet			
			EM Spectrum	– Methods of detection/properties radiations – Health hazards caused by EM waves		Not yet			
24			REVISION/ EVALUATION / REMEDIATION				03		
THIRD	25	MODULE IV: Projects and Elementary Engineering	14. Understanding how to go about a Project.	– Technical drawing: General notions involved – 2-dimensional diagrams/orthogonal representation	- Draw a two dimensional diagram of a wall of the classroom containing the door and windows.	Not yet		03	
	26			– Technical Project Types /Elements involved – Definition/Steps involved in planning a project		Not yet		03	
	26			– Study the advantages offered by the project; – Feasibility Studies – Theoretical knowledge of a simple technical object Different energy components when using the instrument;		Not yet		03	
	27			– Technical diagram / studies – Identification of the movement of certain parts with respect to others (guide, reducing friction)		Not yet		03	
	28			REVISION / EVALUATION / REMEDIATION					
	29		15. Investigating	– Definition of new words – Realisation of a project. -Understand the uses of measuring instruments and		Not yet		03	

			forces	their limitations. Understand why and how things move. – Understand the relationship between mass and volume through measurements					
				EASTER BREAK		EASTER BREAK			
	30			– Observing colours of light on a CD or DVD and suggesting reasons for their appearance. – Observe a pen or pencil in a glass of water and explain why there is an image seen with the object.		Not yet		03	
	31			– Use the image to estimate the refractive index of water.		Not yet		03	
	32-35			GENERAL REVISION / END OF YEAR EXAMINATION					

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SUBJECT: PHYSICS
School:
Class: Form 4
No. of Periods per week: 03
Annual Teaching Hours: 63
Teacher:
Qualification:

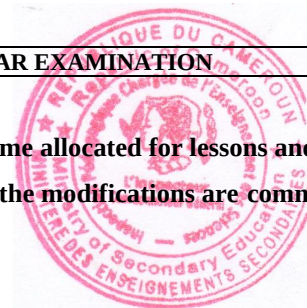
TERM	WEEK	MODULE	CHAPTERS	LESSON TITLE	HANDS-ON ACTIVITIES	DIGITALISATION		№ OF periods	OBSERVATION	
						Resources Availability on line	Used (yes or no, how?)			
FIRST	1	MODULE 1 ENERGY: APPLICATION AND USES	First contact with students and presentation of scheme of work						3	
			Heat	1.1 concept of heat and temperature 1.2 measurement of temperature	- Use a thermometer to measure temperature. - Determine the specific heat capacity of water using an electric heater.	Available				
	2		Thermometry	1.3 Thermometry 1.4 liquid-in-glass thermometer 1.5 calibration of temperature using fixed points	- Use of candle wax marks placed on metal and non-metal and the other end held close to a candle flame to demonstrate good and bad conductors.	Available		3		
				1.6 clinical and normal laboratory thermometers	- Water is Heat water in a beaker, plastic transparent cup or polythene bag to demonstrate convection.	Available		3		
	3		Calorimetry	1.1 Calorimetry 1.2 Heat capacity and specific heat capacity Calculation involving $Q=mc\Delta\theta$	- Candle wax on a metal or a soaked piece of paper is held at a distances from a burning candle flame to demonstrate radiation.	Available				
	4		Latent Heat	1.3 Latent Heat and specific Latent heat 1.4 Cooling effect	Available		3			
			Heat transfer	1.5 Heat Transfer -Conduction, Convection and Radiation	Available					
	5		Expansion	1.6 Thermal Expansion -The bimetallic strip and its principles -Radiant energy converters	Available		3			
	6		REVISION AND EVALUATION						3	
	7		MODULE 2: WAVES	Properties of Waves	2.1 Definition and classification of waves 2.2 Properties of waves: Reflection, Refraction, Diffraction and Interference 2.3 Calculations using the equation $v=f\lambda$	- Use a slinky coil to produce transverse and longitudinal waves. - Use a ripple tank or water in a basin to produce water waves	Available		3	

	8		Stationary Waves	2.4 Stationary waves 2.5 Harmonics and Overtones 2.6 Relationship between inter-node distance and wavelength	and demonstrate properties of water waves.	Not yet		3	
	9		Sound Waves	2.7 Production and transmission of sound 2.8 Characteristics of sound (Amplitude, frequency, and pitch, quality and overtones. Frequency limit of audibility)		Not yet		3	
	10			2.9 Measurement of the speed of sound (echo method and gun firing method) Application of echo in sea bed 2.10 Calculation of speed of sound in air	Not yet		3		
	11		Vibration in strings	2.11 Vibrating strings Relationship between frequency and length, frequency and mass per unit length, frequency and tension	Not yet		3		
	12		REVISION AND EVALUATION						3
SECOND	13	MODULE 2: WAVES	Forced vibration and Resonance	Forced vibration on a string and in a tube Define and explain resonance. -State importance and applications of resonance including measurement of speed of sound		Not yet		3	
	14	MODULE 3 ELECTRIC ENERGY	ELECTROSTATICS	Charges and their origins	- A balloon rubbed so that it sticks to a wall or ceiling when released to demonstrate charging by friction.	Not yet		1	
				3.1 Types of charge and testing for charge with electroscope 3.2 Charging and discharging 3.3 Separation of charges		Not yet		2	
	15		The coulomb	3.4 conductors and insulators 3.5 Basic law of electrostatics and Coulomb's law		Not yet		3	
	CHRISTMAS BREAK					CHRISTMAS BREAK			
	16			3.6 Force between charges Positive and negative charges Application of electrostatics industrially eg photocopying, painting		Not yet		3	

	17		Current Electricity	3.8 Introduction 3.9 Electricity and charge movement. Use of meters in electric circuits, how they are connected and reasons..		Not yet		3		
	18			REVISION AND EVALUATION						3
	19		Emf	3.10 Emf and pd 3 sources of emf		Not yet		3		
	20		Electric circuits	3.11 Energy consumption W=QV and P=VI	- Building simple electrical circuits with small torch bulbs of know resistances: Connecting at least two bulbs in series or parallel and calculate their combine resistance.	Not yet		3		
	21			3.12 ELECTRIC CIRCUITS -components of a circuit network		Not yet		3		
	22			3.13 Ohms’ law and Resistance		Not yet		3		
	23			3.14 Circuit network -Parallel and series connections Calculations in circuits		Not yet		3		
	24			REVISION AND EVALUATION					3	
THIRD	25	MODULE III ELECTRICAL ENERGY	Power in ac and dc	3.15 DC and AC Definition Transportation of electric current 3.16 calculation of power dissipated		Not yet		3		
	26			3.17 Calculation of power consumed at home (KWH)		Not yet		3		
	27		House wiring	3.18 Fuse and selection 3.19 House wiring		Not yet		3		
	28			3.20 Ring circuit and linear circuit in house wiring 3.21 Safety precaution		Not yet		3		
	29		CRO	3.22 The cathode ray oscilloscope				3		
	EASTER BREAK									
	30	MODULE IV PROJECTS AND ELEMENT	REVISION AND EVALUATION						3	
	31		Technical Drawing	Realization of a technical project. 1 Technical drawing 2 Reading of technical drawing	Draw a three dimensional diagram of a wall of the	Not yet		3		
32	Section view		1.2. Cross section of an Object	Not yet			3			

		AY ENGINEE RING	Building plans	List the various ways of viewing an object. e.g top – view	classroom containing the door and windows.				
33				Reading of the plan of a construction sheet Drawing and giving of dimensions of a building		Not yet		3	
34 - 36	GENERAL REVISION / END OF YEAR EXAMINATION						9		

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SUBJECT: PHYSICS

School:

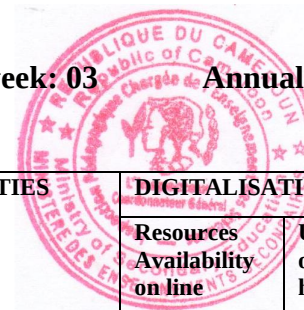
Class: Form 5

No. of Periods per week: 03

Annual Teaching Hours: 50

Teacher:

Qualification:



TERM	WEEK	MODULE	CHAPTERS	LESSON TITLE	HANDS-ON ACTIVITIES	DIGITALISATION		№ of Periods	OBSERVATION	
						Resources Availability on line	Used (yes or no, how?)			
FIRST	1	Module 1: FIELDS: MAGNETIC FIELDS AND THEIR EFFECTS	First contact with students and presentation of scheme of work						3	
	2		Magnetic Field	1.0: Magnets 1.1 Introduction to magnetism-magnetic and non-magnetic substances -Identification of magnets	- Use a magnetic compass to identify non-magnetic, magnets and ferromagnetic materials. - Use iron filings to trace the magnetic field pattern round a magnet. - Use a thread to hang a bar and use it to identify use to identify the earth's magnetic North. - Produce a solenoid using a nail and copper wire connected to battery and use it to pick up small magnetic materials. - Move a bar magnet at different rates towards a coil connected to a bulb.	Available		3		
				1.2 Law of magnetism - applications of magnets - Making magnets and care for magnets -Hard and soft magnetic materials		Available				
				1.3 Magnetic Field 1.4 Magnetic flux pattern -defining magnetic flux -Drawing of magnetic field lines for; bar magnet, the earth and the horse-shoe magnet. -flux pattern around two poles of magnets near each other		Available				
				1.5 Magnetic effect of current -Magnetic field pattern of a straight conductor carrying current -direction of field lines: current carrying solenoid and factors which affect field strength.		Available				
5		- Force on a current carrying conductor placed in a magnetic field	Available		3					

				- Factors which determine the size of the force. Principle of electric motor					
	6		REVISION and FIRST EVALUATION					3	
	7		Electromagnetic Induction and Alternating Current	1.6 Electromagnetic Induction - Introduction to electromagnetic induction - Faraday's law		Available		3	
	8			- Lenz laws - Conservation of energy		Available		3	
	9			1.7 Alternating Current Mutual inductance		Available		3	
	10			- The transformer - Energy losses and remedies - Turn ratio		Available		3	
	11			- Efficiency - Practical transformers and power transmission - Applications of transformers		Available		3	
	12		REVISION and EVALUATION					3	
SECOND	13	MODULE 2 ENVIRONMENTAL PROTECTION: Modern Physics and basic electronics.	The Atom	2.0 The nuclear model of the atom - the composition of the atom The electron (Q=Ne)		Available		3	
	14			2.1 The nuclear model of the atom - the composition of the atom The electron (Q=Ne)		Available		3	
	15		The Nucleus	2.2 The Nucleus Nuclear stability 2.3 Radioactivity and decay equations		Available		3	
				CHRISTMAS BREAK					
	16		Radioactivity	2.4 Radioactive decay α , β and γ . And their properties including behaviour in electric field, magnetic field and cloud chamber.		Available		3	
	17			2.5 The concept of half-life -The importance and use of isotopes.		Available		3	

				- Background radiation							
	18		REVISION and EVALUATION							3	
	19			2.6 uses of radioactive isotopes: eg in medicine, agriculture. 2. 7: safety and hazard of radioactivity			Available		3		
	20		Basic electronics	2.8 Semiconductors -intrinsic and extrinsic -P-type and N-type P-n junctions and rectification			Available		3		
	21	Module 3: MECHANICS	Physical quantities	3.1 Vector and scalar physical quantities 3.2 Forces -Type of forces -Resolution of forces -Free body diagrams -Archimedes Principle		Use magnets to demonstrate non-contact forces. Pulling very fast an A4 paper on which an object has been placed to demonstrate Newton’s first law.	Not yet		3		
	22			3.3 Mass and weight Turning effect of forces -Moments, couples and applications			Not yet		3		
	23		Motion	3.4 Linear motion - Distance, displacement , Speed, velocity, acceleration -motion graphs			Not yet		3		
	24			REVISION and EVALUATION							
	THIRD			25	3.5 Uniform motion -Equations of uniformly accelerated linear motion and simple calculations - Free fall and gravity -Experiment to determine g, by free fall			Not yet		3	
			26	Newton’s law	3.6: Linear momentum -Interaction and conservation of momentum.			Not yet		3	

				-Principle of conservation of momentum and real life situations						
	27			3.7 Newton’s laws of motion		Not yet		3		
	28	Module 4: PROJECTS AND ELEMENT ARY ENGINEER ING	Preservation of appliances	Preservation and Maintenance of appliances.	- Dismantle an electric motor and re-assemble. - Use the electric motor to pull a load.	Not yet		3		
	29			The essential elements in a repair box. (give the name, role and method of application)						
			EASTER BREAK			EASTER BREAK				
	30		Maintenance of appliances	Understand the labelling on appliances		Not yet		3		
	31			Techniques of dismantling and assembling of appliances (FOLI AND LIFO) techniques						
	32 - 36		GENERAL REVISION/ END OF YEAR EXAMINATION						15	

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SUBJECT: PHYSICS

School:

Class: LOWER SIXTH SCIENCE

Hours per Week: 08

Annual Teaching Hours: 270

Teacher:

Qualification:

Term	Week	Module	Chapter	Lesson title	Digitalisation		Durat ion	Module	Chapter	Lesson title	Digitalisation		Durat ion	
					Resour ces Availa bility on line	Used (yes or no, how?)					Resour ces Availa bility on line	Used (yes or no, how?)		
I	1	Module 1: Physical quantities	First contact with students and presentation of scheme of work/Advanced Level course outline.				02H	Module 3: Energetics	First contact with students and presentation of scheme of work/Advanced Level course outline				02H	
			1.1 Physical quantities	Physical quantities, base and derived physical quantities/units, SI units	YES		02H							
	Dimensions, physical equations and homogeneity of physical equations.			YES		04H	3.1 Temperatu re		Thermal equilibrium, zeroth law and thermometric properties	YES		02H		
	Experimental physics. Experimental techniques, approach, accuracy, sensitivity error and precautions								Temperature measurement, temperature scales and disagreement between temperature scales					
	3		2.1 Kinematics	Motion, distance/displacement, speed/velocity, Linear momentum, acceleration	YES		04H		Different types of thermometers	YES		02H		
				Graphs of motion in one dimension and equations of uniformly accelerated motion					Different types of thermometers					
	4			Motion under gravity and experiment to measure acceleration due to gravity	YES		04H		3.2 Energy Transfer	Heat capacity and specific heat capacity	YES		02H	
				Projectile motion **This could still be taught under motion in the gravitational field.		YES				04 H				Experiments to measure specific heat capacity
	5			2.2 Dynamics and force	Meaning and nature of forces, types and classification. Centre of gravity, centre of mass, free-body diagrams and resultant of coplanar forces	YES			04H		Latent heat and specific latent heat	NO		02H

				Turning effect of forces, moment and couples, integration exercise						Experiments to measure specific latent heat of fusion and specific latent heat of vaporization				
	6			REVISION AND EVALUATION				04H		REVISION AND EVALUATION				02H
	7			Equilibrium of objects acted upon by a number of coplanar forces	YES		04H			Heating and cooling curves, integration exercises	NO		02H	
	8			Newton’s first and second Laws, impulse, experimental investigations of $a \propto F$ and $a \propto \frac{1}{m}$	YES		04H		3.2 Energy Transfer	Thermal conduction and mechanism, temperature gradient	NO		02H	
	9		2.3 Newton’s Laws of motion and momentum	Newton’s Third law of motion, the law of conservation of linear momentum from Newton’s second and third laws	YES		04H			Thermal conductivity,	NO		02H	
	10			Law of conservation and experiment to investigate the law of conservation of linear momentum.	YES		04H			Comparing electrical conduction to thermal conduction, experiment to compare thermal conductivity of different materials	NO		02H	
	11			Elastic and inelastic collisions.	YES		04H			Thermal convection and radiation, mechanisms	NO		02H	
				Explosions, head-on and oblique collisions.						3.3 Electrical energy				Electric current, electric potential difference, drift velocity.
	12								INTEGRATION EXERCISES AND EVALUATION					
II	13		2.4 Work, energy and power	Work, potential energy and kinetic, Law of conservation of mechanical energy	YES		04H		3.3 Electrical energy	Electrical resistance, resistor colour codes, Ohm’s Law and resistivity.	NO		02H	
	14			Work-kinetic energy theorem, efficiency, power	YES		04H			Experiment to determine resistivity, temperature coefficient of resistance	NO		02H	
	15		2.5 Circular motion	Period and frequency, angular speed and velocity, centripetal acceleration and centripetal force, consolidation examples	NO		04H			Resistor networks and the potential divider	NO		02H	
			CHRISTMAS BREAK						CHRISTMAS BREAK					

	16			Motion in a vertical circle, the conical pendulum, cornering and banking	NO		04H			Ideal and non-ideal ammeters and voltmeters in circuit	NO		02H		
	17		2.6 Simple harmonic motion	Meaning and equations	NO		04H		3.3 Electrical energy	Electromotive force, terminal p.d. and internal resistance	NO		02H		
	18				HARMONISED EVALUATION										
	19		2.6 Simple harmonic motion	Energy changes in simple harmonic motion, examples of simple harmonic oscillators	NO		04H		3.3 Electrical energy	Kirchhoff's Laws	NO		02H		
	20			Mechanical oscillations and resonance			04H			Potentiometer	NO		02H		
	21	Module 4: Matter, effects of energy and applications	4.1 Solids and liquids	Differences in the molecular properties of solids, liquids and gases, molecular spacing, intermolecular force vs separation curves, potential energy vs separation curves	NO		04H	Option 1: Energy Resources and environmental Physics		Wheatstone bridge circuit, consolidation exercise	NO		02H		
	22			Elasticity and Young modulus energy stored in a stretched wire	NO		04H		3.4 Energy resources and environmental Physics	Classification of energy sources, functional energy, efficiency of conversion	NO		02H		
	23			Experiment to determine Young Modulus, consolidation exercises	NO		04H			Hydroelectricity and wind energy	NO		02H		
	24			REVISION AND EVALUATION					04H	REVISION AND EVALUATION				02H	
III	25			Surface tension and capillarity, Angle of contact, experiment to measure surface tension of water	NO		04H			Solar energy and tidal energy	NO		02H		
	26		4.2 Gases and thermodynamics	Brownian motion in gases, gas laws and the ideal gas equation	NO		04H			Biomass, geothermal energy and wave energy	NO		02H		
	27		4.2 Gases and thermodynamics	Kinetic theory of ideal gases, derivation of $P = \frac{1}{3} \rho \overline{c^2}$ and k.e. $= \frac{1}{2} m \overline{c^2} = \frac{3}{2} kT$.Distribution of	NO		04H		3.4 Energy resources and environmental Physics	Fossil fuels and nuclear fuel.	NO		02H		

				molecular speeds, Real gases and Andrew's experiment								
	28			First law of thermodynamics; isochoric, isobaric, isothermal and adiabatic processes	NO		04H			Simple structure of the atmosphere, ozonosphere and the ionosphere, destruction of the ozone layer	NO	02H
	29			Second law of thermodynamics, basic function of heat engines, entropy, Consolidation examples	NO		04H			Greenhouse effect, global warming and climate change	NO	02H
			EASTER BREAK									
	30 - 36		GENERAL REVISION AND END OF YEAR EVALUATION									

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SUBJECT: PHYSICS

School:

Class: UPPER SIXTH SCIENCE

Hours per Week: 08

Annual Teaching Hours: 270

Teacher:

Qualification:

Term	Week	Module	Chapter	Lesson title	Digitalisation		Duration	Module	Chapter	Lesson title	Digitalisation		Duration
					Resources Availability on line	Used (yes or no, how?)					Resources Availability on line	Used (yes or no, how?)	
I	1	Module 5: Field Phenomena		First contact with students and presentation of scheme of work/USS course outline • Newton's law of universal gravitation and inverse square relation			02H	Module 6: Waves around us.		First contact with students and presentation of scheme of work/USS course outline. 6.1 6.1 MECHANICAL WAVES: Classification of Waves: mode of propagation and medium of propagation with specific examples.			02H
			5.1 GRAVITATIONAL FIELDS	• Kepler's laws, Qualitative description of the earth's gravitational field. • Field Strength	YES		04H						
	2			• Variation of g inside and outside the earth. • Gravitational potential and gravitational potential energy	YES		04H		6.1 MECHANICAL WAVES	• The progressive wave and equation. • Graphical representation of waves.	NO		02H
	3			• Escape velocity Orbital speed and geostationary satellites. Orbital speed and movement of satellites with geostationary satellites as example.	YES		04H			Properties of Waves Production of waves, reflection, refraction, diffraction: Interference. Single slit pattern	NO		02H
	4			. Motion in the gravitational field: Projectile motion. **Check if this was not treated under mechanics in LSS.	YES		04H			Double slits and multiple slits interference patterns and measurement of wavelength of a wave.	NO		02H
	5		ELECTROSTATIC S + ELECTRIC	• Electric charge and current • Good and bad conductors of electricity. • Charging by friction, contact, induction and by chemical action.	YES		04H			• Properties of Waves: Polarization-meaning and production of plane polarized waves.	NO		02H

		C FIELDS	Point action and the lightening conductor										
	6		REVISION AND EVALUATION				04	REVISION AND EVALUATION					02H
	7		- Coulomb’s law and inverse square nature. Dependence of size of force on medium. - Electric field and field strength	YES		04H	3.2	The factors affecting the speed of transverse waves on taut strings and wires	NO		02 H		
	8		- Electric potential and work done in moving a charge in an electric field. - Electric field dipole and torque.	YES		04 H		Doppler Effect for Sound in air with specific cases of moving source/ stationary observer and moving observer with stationary source.	NO		04 H		
	9		CAPACITORS	- Identification of capacitors and circuit symbols. - Measurement of capacitance. - Factors which affect capacitance. - Relative permittivity	YES			04H	Stationary waves and characteristics.	NO		02H	
	10			- Combination of capacitors (series & parallel) - Energy/charge stored in a different combinations of capacitors connected to a dc power supply	YES			04H	Measurement of the speed of sound in air.	NO		02H	
	11			Charging and discharging capacitors through resistors and time constant. The equations for charging/ discharging and interpretations at t=0 and as $t \rightarrow \infty$.	YES			04H	- Electromagnetic waves and their characteristics. - EM-spectrum; production, detection and uses of different sections	NO		02H	
	12		REVISION AND EVALUATION					04H	REVISION AND EVALUATION				
II	13	5.4 MAGNETIC FIELDS	- The magnetic field - Magnetic flux density and its units (the tesla).	YES		04H	3.2	- X-rays, production and uses - Meaning and application of plane polarized em waves.	NO		02H		

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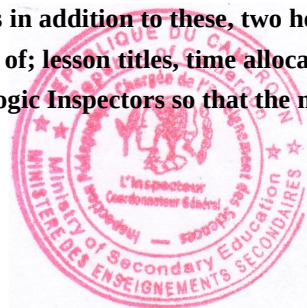
	19	ELECTR OMAGN ETIC INDUCTI ON + ALTERN ATING CURREN T	• Meaning of self-inductance and mutual inductance. • the L-R DC circuit (the growth and decay of current) • Energy stored in an inductor • Coefficient M and L should be understood to be defined as the constants in the equations: • $N\phi = LI$ $N\phi_2=MI_1$ and $N\phi_1=MI_2$	NO		04H		3.	• Familiarity with practical situations in which a single converging lens produces a magnified or diminished image, dioptre. • Prisms, optical instruments eg compound microscopes and Astronomical telescopes	NO		02H
	20		• Theory of transformers • Knowledge, understanding but not derivation of • $\frac{V_p}{V_s} = \frac{N_p}{N_s} = \frac{I_s}{I_p}$ for ideal transformers Sources of power losses for practical transformers and how each is minimized.	NO		04H		• Conservation of energy for waves in free space from a point source. • Inverse square law	NO		02H	
	21		• Root-mean-square values • Impedance and resonance • use of $f_0 = \frac{1}{2\pi\sqrt{LC}}$	NO		04H		• Photoelectric effect. • The photons, Plank constant	NO		02H	
	22		• Power in a.c. Circuits. • Rectification of ac signals and Smoothening	NO		04H		• Einstein’s photoelectric equation. • Wave-particle duality	NO		02H	
	23		The atom, the nucleus of the atom, • The atom, Rutherford’s alpha scattering experiment and atomic model.	NO		04H		3.3	Emission and absorption spectra. Energy levels. The electron volt.	NO		02H
	24	REVISION AND EVALUATION					04H	REVISION AND EVALUATION				
III	25	Radioacti vity	• Nuclear stability and radioactivity • Properties of radiations and applications	NO		04H		3.3 E	Use of equation: $E = hf = E_2 - E_1$. The Schrodinger model of the hydrogen atom	NO		02H

	26			- Mass defect in nuclear processes and relation to energy - Nuclear fission and fusion	NO		04H	Option 2: Communication		Representing information: Analogue method, digital method, advantages and disadvantages. Radio waves: Surface or ground wave.	NO		02H
	27	:	Option 3: Electronics	Thermionic emission and the electron gun	NO		04H			Sky wave, space wave. Aerials: transmitting, receiving aerials. Tuning circuit, its resonance curve	NO		02H
	28			Semiconductors and doping The p-n junction diode, biasing and applications	NO		04H	Option 2: Communication	3.4	Transmission of information: modulation, demodulation. Amplitude modulation (AM), frequency modulation (FM), advantages and disadvantages of each over the other	NO		02H
	29			The transistor Logic gates and amplifiers	NO		04H			Analogue and digital signals Analogue to Digital converters Digital to Analogue converters. Advantages of each over the other	NO		02H
				EASTER BREAK						EASTER BREAK			
	30		Option 4: Medical Physics	The physics of vision and defects Hearing and defects	NO		04H		Main parts. Communication Channels - band width - sidebands - use of satellite for communication Base station and their role	NO		02H	

	31			Biological Measurements for the heart Imaging in medical diagnosis (Non-ionising methods)	NO		04H			REVISION			02H
	32			Ionizing technics in imaging for medical diagnosis Use of optical fibres in medical procedures.	NO		04H			REVISION			02H
	33			GENERAL REVISION				04H			GENERAL REVISION		02H
	34			GENERAL REVISION				04H			GENERAL REVISION		02H
	35			GENERAL REVISION				04H			GENERAL REVISION		02H
	36			GENERRAL REVISION				04 H	GENERRAL REVISION				

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REPUBLIC OF CAMEROON
Peace-Work-Fatherland

MINISTRY OF SECONDARY EDUCATION

INSPECTORATE GENERAL OF EDUCATION

INSPECTORATE OF PEDAGOGY IN CHARGE OF THE TEACHING OF SCIENCES

DEPARTMENT OF PHYSICS CHEMISTRY AND TECHNOLOGY

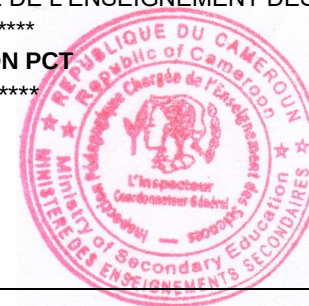
REPUBLIQUE DU CAMEROUN
Paix-Travail-Patrie

MINISTERE DES ENSEIGNEMENTS SECONDAIRES

INSPECTION GENERALE DES ENSEIGNEMENTS

INSPECTION DE PEDAGOGIE CHARGEE DE L'ENSEIGNEMENT DES SCIENCES

SECTION PCT



CHEMISTRY NATIONAL TEACHING SYLLABUS OUTLINE

FIRST CYCLE

CLASS	TOPICS	SUBTOPIC	
		S/N	TITLE
Form 1	Module I : Matter : Properties and Transformation	1	Understanding chemistry
		2	Effect of heat on substances
		3	Simple classification of substances
		4	Chemical elements
		5	Acids and bases
	Module II : Environmental Education	6	Air
		7	Water and solutions
Form 2	Module I : Matter : Properties and Transformation	1	The Atom
		2	Chemical symbols, formulae and valency
		3	Periodic Table
		4	Chemical Reactions and Equations
		5	Reactions with Oxygen of the air
		6	Mixtures and Pure substances
	Module III : Energy	7	Action of heat on materials

		8	Action of Electricity on materials
Form 3	Module I : Matter : Properties and Transformation	1	Atoms
		2	Structure of the atom in relation to the Periodic table
		3	Structure and Bonding
		4	Acidic and Alkaline Solutions
		5	Hydrogen
		6	Oxygen
		7	Phosphorus
		8	Halogens
		9	Carbon
Form 4	Module I : Matter : Properties and Transformation	1	Sulphur
		2	Nitrogen
		3	Formulae, Moles and Equations
		4	Gaseous state
		5	Alkali metals and Alkaline Earth metals
		6	Transition metals
		7	Identification of ions
		8	Salts
		9	Organic chemistry Part 1- Hydrocarbons
Form 5	Module III : Energy	1	Energetics
		2	Electro chemistry
	Module I : Matter : Properties and Transformation	3	Rates of Reaction
		4	Reversible Reaction

	Module II : Environmental Education	5	Solutions and Acid-Base Titrations
		6	Organic Chemistry 2 : Alcohols and Carboxylic acids
		7	Extraction of metals
		8	Heavy Chemical Industries
	SECOND CYCLE		
LSS	Module I : Matter : Properties and Transformation	1	The Mole Concept
		2	Atomic Structure and Related Patterns in the Periodic Table
		3	Bonding and Structure, and Intermolecular forces
		4	Organic Chemistry I : Fundamentals
		5	Descriptive Inorganic Chemistry : Modern Periodic Table, Periodicity and s-block elements
		6	Phase Equilibria and Raoult's law
	Module III : Energy	7	Thermochemistry/ Energetics
USS	Module I : Matter : Properties and Transformation	8	Equilibria
		9	Organic Chemistry 2 : Study of other organic compounds (functional groups)
		10	Organic Chemistry 3 : Reaction mechanism and synthetic routes
		11	Descriptive Inorganic Chemistry : Group IV, Group VII, Transition metals
	Module III : Energy	12	Reaction Kinetics
	Module II : Environmental Education	13	Chemistry and Society

NATIONAL HARMONISED CHEMISTRY SCHEMES OF WORK (PROGRESSIONS)

FIRST CYCLE

School: Class: Form 1 Hours per Week: 02 Annual Teaching Hours: 50

Teacher: Qualification: Subject: CHEMISTRY No. of Periods per week:

TERM	WEEK	TOPIC/SUBTOPIC	LESSONS	PRACTICAL ACTIVITIES	Digitalized		Duration	OBSERVATION
					Resources Available on line	Use (yes or no, how ?)		
I	1	Topic I: Matter: Properties and Transformation. 1. Understanding Chemistry.	1.1. Chemistry and its importance in everyday life		Available		2H	
	2		1.2. Some basic equipment used in the study of chemistry	- Visit of the chemistry laboratory.	Available		2H	
	3		1.3. Hazardous symbols on reagent bottles and their meanings 1.4. Safety rules observed in the Lab.		Available		2H	
	4		1.5. Measurements of mass, volume, time and temperature.	- Use of balances, measuring cylinders, stopwatch, thermometer, etc.	Available		2H	
	5	Topic II: Energy: Applications and uses. 2. Effect of heat on Substances.	2.1. Physical and chemical changes.	- Melting candle wax, ice, etc.	Available		2H	
	6		Revision and Evaluation					
	7		2.2. States of matter and changes of states.	- Melt ice, evaporate water, etc.	Available		2H	
	8		2.3. Simple kinetic theory of matter and change of state.		Available		2H	
	9	Topic I: Matter: Properties and Transformation. 3. Simple classification of substances.	3.1. Mixtures and pure substances. 3.2. Types of mixtures and examples.		Available		2H	
	10		3.3. Methods of separating mixtures	- Experiments on separation of mixtures.	Available		2H	
	11		3.3. Methods of separating mixtures	-Filtration, hand picking, winnowing, etc	Available		2H	

II	12		Revision and Evaluation	END OF FIRST TERM				
	13		3.4. Matter and its constituents.				2H	
	14		3.5. Pure substances. -Differences between mixtures and pure substances. -Differences between compounds and mixtures.				2H	
	15	4. Chemical elements	4.1. Elements and compounds.				2H	
	16		4.2. Metal and non-metals elements	-Testing physical properties of metals and non-metals.			2H	
	17	5. Acids and Bases	5.1. Definition, examples, properties and reaction of acids				2H	
	18		Revision and Evaluation					
	19		5.2. Definition, examples, properties and reactions of bases.				2H	
	20		5.3. Tests for acids and bases with familiar indicators. 5.4. Extraction of indicators.	-Preparation of natural indicators and testing for acids and bases			2H	
	21		5.5. The pH scale. 5.6. Reaction of acids with bases and alkalis. Importance of neutralization reactions.				2H	
	22	Topic III: Environmental Education and Sustainable Development	6.1. Composition of air: -Active and inactive air -Composition of air by volume	-Experiment to determine the active part of air			2H	
	23		6.2. Functions of gases in air 6.3. Air as a mixture 6.4. Effects of active air				2H	
	24		Revision and Evaluation	END OF SECOND TERM				
	25	6. Air	6.5. Air pollution -Definition -Sources of air pollution -Types of pollutants, sources, effects and possible solutions				2H	
	26	7. Water and solutions	7.1. Natural sources of water and the water cycle	.			2H	

	27		7.2. Methods of purification of water. Undesirable features of water and quality of good drinking water 7.3. Test for water.	-Test for water with anhydrous CuSO_4 , CoCl_2 .			2H	
	28		7.2. Methods of purification of water. Undesirable features of water and quality of good drinking water 7.3. Test for water.	-Construction and use of sand filter for water purification			2H	
	29		7.4. Uses of water. 7.5. Water pollution.				2H	
	30		7.6 Solutions: Definitions and preparations of solutions.				2H	
	31		7.7. Solubility in water. 7.8. Crystallisation				2H	
	32		General Revision and Evaluation				2H	
	33		HOLIDAYS					

NB: This scheme of work is summarised and should be used alongside the syllabus to put in all the details.

School: Class: Form 2 Hours per Week: 02 Annual Teaching Hours: 50

Teacher: Qualification: Subject: CHEMISTRY No. of Periods per week:

Term	Week	Topic/Subtopic	Lessons	Practical Activities	Digitalized		Duration	Observation
					Resources Available	Use (yes or no, how ?)		
I	1	Topic I: Matter: Properties and Transformation. 1. The Atom	1.1. Composition and Simple structure of the Atom (sub-atomic particles)				2H	
	2		1.2. Composition and Simple structure of the Atom (Bohr's model of an atom)		Available		2H	
	3		1.3 Simple electronic structure (Identification of group and period from the electronic structure)				2H	
	4	2. Chemical symbols, formulae and valency.	2.1. Dalton's Atomic Theory. 2.2. Chemical symbols, formulae and valencies of elements and radicals.		Available		2H	
	5		2.2. Chemical symbols, formulae and valencies of elements and radicals.		Available		2H	
	6		Revision and Evaluation					
	7		2.3. Use of tables to derive the formulae of compounds.		Available		2H	
	8	3. Periodic Table	3.1. The Periodic Table: History and purpose for classifying elements.				2H	
	9		3.1. The Periodic Table: History and purpose for classifying elements. Metal/ Non-metal. The Modern periodic table				2H	
	10		3.2. Families of Elements and Reactivity of Families				2H	
	11		3.2. Families of Elements and Reactivity of Families				2H	
	12		Revision and Evaluation	END OF FIRST TERM				
	13		4.1. Chemical Changes.	-Heat sugar	Available		2H	

	14	4. Chemical reactions and equations.	4.2. Chemical equations: Writing and Balancing chemical equations		Available		2H	
	15		4.2. Chemical equations: Writing and Balancing chemical equations		Available		2H	
	16		4.3. The law of conservation of mass. Types of changes in matter, definitions and differences		Available		2H	
	17	5. Reactions with oxygen of air.	5.1. Composition of Air Separation of the components of Air by Fractional Distillation		Available		2H	
	18		Revision and Evaluation					
	19		5.1. Composition of Air Separation of the components of Air by Fractional Distillation		Available		2H	
	20		5.2. Reaction of substances with oxygen of air (Burning)	-Burn paper, piece of cloth, etc	Available		2H	
	21		5.3. Reaction of substances with oxygen of air (Burning)		Available		2H	
	22		5.4. Rusting (conditions, composition and prevention)	-Iron sponge kept dry and in moist conditions	Available		2H	
	23	6. Mixtures and pure substances	6.1. States of Matter				2H	
	24		Revision and Evaluation	END OF SECOND TERM				
	25		6.2. Techniques for separation: distillation, paper chromatography.	-Simple distillation of ethanol/water mixture, paper chromatography to separate blue ink colours, etc			2H	
	26		6.3. Definitions: Sublimation, melting point and boiling point. Simple Criteria for purity				2H	
III	27	Topic II: Energy: Application and Uses 7. Action of heat on materials.	7.1. Sources of energy: renewable and non-renewable.				2H	
	28		7.2. Action of heat on substances: carbonates, hydrates, nitrates etc.				2H	
	29		7.3. Experimental study of change in mass resulting from heating of substances. 7.4. Concept of reversibility.	-Heat CaCO_3 solid while measuring the mass before and after heating			2H	
	30		Revision and Evaluation					
	31	8. Action of electricity on materials.	8.1. Action of electricity on metals, non-metals,	-Verify conduction of solids like spoons, nails, wood using			2H	

				a 9V battery.				
	32		8.1. Action of electricity on solid compounds and their solutions.	-Verify conduction of electricity by solutions of common salt and liquids such as kerosene using a 9v battery			2H	
	33		8.2. Electrolytes and Non-electrolytes				2H	
	34		General Revision				2H	
	35		Revision and Evaluation					
			HOLIDAYS					

NB: This scheme of work is summarised and should be used alongside the syllabus to put in all the details.

School: Class: Form 3 Hours per Week: 3 Annual Teaching Hours: 87

Teacher:.....Qualification: Subject: CHEMISTRY No. of Periods per Week:.....

Term	Week	Topic/Subtopic	Lessons	Practical activities	Digitalized Lessons		Duration	Observation
					Resource Available on line	Use (yes or no, how ?)		
I	1	Topic I: Matter: properties and transformation 1. Atoms	1.1 Review of simple structure of the Atom 1.2 Diffusion and Brownian motion 1.3 Charge and approximate mass of subatomic particles	-Place some KMnO_4 in water. -Spray some perfume at one end of the classroom.	Available		3H	
	2		1.1. Review of simple structure of the Atom 1.2 Diffusion and Brownian motion 1.3 Charge and approximate mass of subatomic particles		Available		3H	
	3		1.4. Isotopy and Calculation of Relative Atomic Mass (RAM) A Mole of atoms: Explanation of Avogadro's Constant.	-Calculations done on the board in groups and individually by students.	Available		3H	
	4	2. Structure of the atom in relation to the Periodic Table.	2.1. Structure of the Atom and electronic configuration		Available		3H	
	5		2.2. Valence Electrons and the Periodic Table 2.3. Electronic Configuration and Chemical Properties		Available		3H	
	6		Revision and Evaluation					
	7	3. Structure and Bonding.	3.1 Chemical Bond formation and the Octet Rule (Noble gas Configuration) 3.2 Ionic Bond: Formation and properties of ionic compounds		Available		3H	

	8		3.3 Covalent Bond: Formation and properties of covalent compounds *Structure and shapes of simple covalent compounds (VSEPR theory)				3H	
	9		3.4. The metallic bond: Formation and properties of metals. 3.5. Crystals: Definition and types of crystal structures.				3H	
	10		Properties of Substances related to bond type and structure.				3H	
	11	4. Acidic and alkaline solutions.	4.1 Acid-base Indicators 4.2 Acids, Alkalis and Neutralization 4.2 Acids, Alkalis and Neutralization	-Use some common solutions: orange juice, tomatoe juice, baking powder solution, water, kanwa solution, NaOH solution, H ₂ SO ₄ solution Moist litmus paper pH paper Dip litmus paper in different solutions.			3H	
	12		Revision and Evaluation	END OF FIRST TERM				
II	13		4.3 Some properties of Acid Solutions (Action on metals, Metal Oxides and Carbonates) 4.4 Classify oxides as acidic, basic or amphoteric, based on metallic/non-metallic character.	-Carry out acid-base titration to demonstrate change from acidic to basic medium passing through neutralization.			3H	
	14	5. Chemistry of the elements : Hydrogen	5.1 Laboratory preparation and properties of Hydrogen				3H	
	15		5.2 Effect of dilute acid and alkalis on some metals. 5.3. Reaction of hydrogen with oxygen and chlorine				3H	
	16	6. Chemistry of the elements : Oxygen	6.1 Physical properties: state, colour, odour and solubility. 6.2 Simple description of a laboratory preparation of oxygen from potassium chlorate (V) or some common reagent. Chemical test for oxygen.	-Preparation of oxygen by heating KClO ₃			3H	
	17		6.3 Preparation of Oxides of common elements and definition of oxidation. From methods of preparation, establish order of reactivity of elements on reacting with oxygen.				3H	

	18		Revision and Evaluation					
	19		6.4 Reaction of oxides with water and classification of oxides. (Soluble, Insoluble, Acidic, Basic or Neutral) 6.5 Reduction of Oxides with hydrogen and Carbon.	-Preparation and reactions of oxides.			3H	
	20		6.6 Reaction of oxides with water and classification of oxides. (Soluble, Insoluble, Acidic, Basic or Neutral) 6.7 Reduction of Oxides with hydrogen and Carbon.				3H	
	21	7. Chemistry of the elements : Phosphorus	7.1. Structural forms of phosphorus: white, red, black. 7.2 Reactions of phosphorus with: air, oxygen and chlorine. Uses of phosphorus and its compounds.	-Use of PCl_5 as reagent to test for alcohols (through the presence of the – OH group).			3H	
	22	8. Chemistry of the elements : Halogens	8.1 The elements fluorine, chlorine, bromine, iodine: Physical properties and electronic configuration. 8.2 Preparation and properties of chlorine. Test and uses of chlorine.	-Laboratory preparation of chlorine by reacting HCl with KMnO_4 .			3H	
	23		8.3 Preparation and properties of hydrogen chloride; test and uses. 8.4 Obtaining chlorine from sodium chloride and sodium chloride from chlorine.	-Place a glass rod dipped in aqueous ammonia into a gas jar of hydrogen chloride.			3H	
	24		Revision and Evaluation	END OF SECOND TERM				
	25	III	8.3 Preparation and properties of hydrogen chloride; test and uses. 8.4 Obtaining chlorine from sodium chloride and sodium chloride from chlorine.	-Place a glass rod dipped in aqueous ammonia into a gas jar of hydrogen chloride.			3H	
	26		8.5 Preparation of other halides of the alkali metals	-Displacement reactions of halogens			3H	
	27		8.6 Displacement reaction of one halogen by another.				3H	
	28		8.7 Tests for chlorides, bromides and iodides. 8.8 Some uses of halogens and their	-Add $\text{AgNO}_3(\text{aq})$ to aqueous solutions of common salt, a metal bromide and iodide.			3H	

			compounds.					
29	9. Chemistry of the elements : Carbon	9.1 Structural forms of carbon: Structure, physical Properties and uses. 9.2 Reactions of carbon with metal oxides.	-Students to identify charcoal graphite, soot, lampblack as forms of carbon.			3H		
30		Revision and Evaluation						
31		9.3 Preparation, properties and reactions of Carbon dioxide; tests and uses.	-Test for carbon dioxide with lime water and flame.			3H		
32		9.4 Preparation and properties of Carbon monoxide. 9.5 Preparation and reactions of carbonates. 9.6 Uses and hazards of carbon dioxide and carbon monoxide.				3H		
33		General Revision				3H		
34		General Revision				3H		
35		Revision and Evaluation				3H		
		HOLIDAYS						

NB: This scheme of work is summarised and should be used alongside the syllabus to put in all the details.

School: Class: Form 4 Hours per Week: 03 Annual Teaching Hours: 87

Teacher:.....Qualification: Subject: CHEMISTRY No. of Periods per Week:...

Term	Week		Topic/Subtopic	Lesson	Practical activity	Digitalized Lessons		Duration	Observation
						Available on line	Use (yes or no, how ?)		
I	1		Topic I: Matter: properties and Transformation. 1. Chemistry of the Elements : Sulphur	1.1 Occurrence: extraction of sulphur by the Frasch process. Allotropes of sulphur. Physical and chemical properties of sulphur. Structural forms of sulphur allotropes.				3H	
	2			1.2 Sulphur dioxide: Preparation and Properties:				3H	
	3			1.3 Sulphides and hydrogen sulphide: Preparation and Properties. 1.4 Reactions of sulphuric acid. Uses of sulphur and its compounds.				3H	
	4		2. Chemistry of the Elements : Nitrogen	2.1 Source and Physical properties of nitrogen. 2.2 Ammonia: Laboratory preparation and properties.	-Laboratory preparation of ammonia using NH_4Cl and $\text{Ca}(\text{OH})_2$			3H	
	5			2.3 Nitric acid: Preparation and properties 2.4 Nitrates: Effect of heat on nitrates 2.5 Oxides of Nitrogen: Nitrogen dioxide, Nitrogen oxide and Dinitrogen oxide; Preparation and properties. 2.6 The nitrogen cycle. 2.7 Uses of nitrogen compounds.	-Decompose a nitrate (Group I or Group II or higher nitrate) and test for NO_2 and O_2 .			3H	
	6			Revision and Evaluation					
	7		3. Principles of chemistry : Formulae, Moles and Equations	3.1. Definition of the mole and its application to atoms, molecules and ions. The Avogadro's number, L, and what it represents. 3.2. Definitions: relative atomic mass, relative molecular mass, molecular mass, molecular volume		Available		3H	

	8			3.3. Experimental determination of formulae of water and Magnesium Oxide or Copper Oxide.	-Use partially inflated balloons to observe volume and pressure changes.			3H	
	9			3.4. Calculations involving : Percentage composition by mass Determination of empirical and molecular formulae Limiting reagents Theoretical and percentage yield Molecular volumes		Available		3H	
	10			3.5. Balancing chemical equations using the mole concept. Stoichiometry of chemical reactions; full formula equation. Write equations including state symbols.		Available		3H	
	11		4.Principle of chemistry : state Gaseous	4.1 Changes of state: solid, liquid, gas. Kinetic theory (particle theory, diffusion and Brownian motion explained in terms of kinetic theory).		Available (F5 page)		3H	
	12			Revision and Evaluation	END OF FIRST TERM				
II	13			4.2 Molar enthalpies of evaporation and fusion. Use of values to compare energy needed to separate molecules of substances. Molar enthalpies and structure.		Available (F5 page)		3H	
	14			4.3 Boyle's and Charles' laws. Calculations on the combined gas law: $\frac{P_1 V_1}{T_1} = \frac{P_2 V_2}{T_2}$		Available (F5 page)		3H	
	15		5. Chemistry of the Elements : Alkali metals and Alkaline-Earth metals.	5.1 Group I: Alkali metals. a) Action of metal on water and oxygen. b) Preparation of hydroxides, halides, sulphates, nitrates and carbonates.	-Investigate the effects of metal on water by dropping a piece of sodium metal in water -Test resulting solution with litmus	Available		3H	

	16			5.1. c) Properties (solubility and stability to heat) of hydroxides, halides, sulphates, nitrates and CO_3^{2-} 5.2. Group II: Alkaline-earth metals. a) Action of metals on water and action of magnesium on acid. b) Preparation of oxide, hydroxide, carbonate and chloride	-Drop a piece of magnesium and calcium in cold and in warm water -Heat a piece of CaCO_3 on a crucible lid	Available		3H	
	17			c) Properties of oxide, hydroxide of magnesium and calcium. d) Hardness of water: Causes, effects, methods of removal (boiling, distillation, precipitation, washing soda and use of ion exchange. - Industrial uses of calcium carbonate.	-Using soap, wash your hands with rain water and tap water	Available		3H	
	18			Revision and Evaluation					
			6. Chemistry of the Elements : Transition Metals.	6.1 Position of Transition Metals in the Periodic Table General Characteristics				3H	
	19			6.2. Reactions of Iron and Copper				3H	
	20		7. Chemistry of the Elements : Identification of ions	7.1 Use the flame test, physical properties and appropriate reagents to test for cations and 7.2 Use of appropriate reagents to identify anions.	-Test for cations and anions			3H	
	21		8. Principles of chemistry : Salts	8.1 Preparation of salts a) Soluble salts by action of acids on metals, metal hydroxides, metal oxides and metal carbonates. b) Insoluble salts by precipitation.	-Prepare each type of salt and collect a pure dry sample.			3H	
	22			8.2 Solubility of some salts, sulphates, chlorides, nitrates, carbonates. Solubility curves.	-Determine solubility of salts & draw curve; get info from curve.			3H	
	23			8.3 Action of heat on salts; carbonates, nitrates, sulphates, hydrated salts and ammonium salts. 8.4 Definition and examples of Deliquescent, hygroscopic and efflorescent compounds.	-Experiments on action of heat on substances.			3H	
	24			Revision and Evaluation	END OF SECOND TERM				
III	25		9. Organic chemistry	9.1 Introduction: Definition,	-Recall burning of			3H	

		part 1 ; Hydrocarbons	Characteristics, shapes and properties of organic compounds. Definition of a homologous series and general physical properties.	kerosene in stoves/ lamps. - Demonstrate volatility of ethanol, flammability of gas, etc.				
26			9.2 Fractional distillation of crude oil, physical properties of products, uses of products, combustion of products. Cracking.				3H	
27			9.3 Alkanes: (C ₁ -C ₄) Saturated hydrocarbons with General formula C _n H _{2n} +2.				3H	
28			9.3. Preparation, manufacture, properties and uses. Isomerism of butanes.				3H	
29			9.4 Alkenes and Alkynes(C ₁ -C ₄); Preparation, manufacture, properties and uses. Test for unsaturation. Polymerisation.	-Use Br ₂ /CCl ₄ or Br ₂ /H ₂ O to test for alkenes and alkynes.			3H	
30			9.4 Alkenes and Alkynes(C ₁ -C ₄); Preparation, manufacture, properties and uses. Test for unsaturation. Polymerisation.				3H	
31			Revision and Evaluation					
32			General Revision				3H	
33			Revision and Evaluation				3H	
			HOLIDAYS					

NB: This scheme of work is summarised and should be used alongside the syllabus to put in all the details.

School: Class: Form 5 Hours per Week: 03 Annual Teaching Hours: 87

Teacher: Qualification: Subject: CHEMISTRY No. of Periods per Week:

Term	Week		Topic/Subtopic	Lessons	Practical activity	Digitalized Lessons		Duration	Observation
						Available on DE Website	Used by Teacher		
I	1		1. Principles of chemistry : Energetics	1.1 Latent heat: molar heat of fusion and evaporation as evidence of inter-particle forces. Enthalpy notation (ΔH) for exothermic and endothermic reactions.				3H	
	2			1.2 Heat of reaction and calculations. Quantitative determination of enthalpies of: a) Combustion e.g. ethanol and methanol b) Neutralisation c) Solution d) Reaction Precipitation		Available		3H	
	3			1.3 Simple energy level diagrams. Hess's law. (Principle of conservation of energy)				3H	
	4		2. Principles of chemistry : Electrochemistry	2.1 a) Formation of ions. b) Define electrolyte and non-electrolyte, electrolysis, electrodes, anode, cathode, anion, cation and electrolytic cell (voltameter).		Available		3H	
	5			2.2 a) Migration of ions to Electrodes and Selective Discharge of ions b) Half Reactions and Overall Cell Reactions		Available		3H	
	6			Revision and Evaluation					
	7			2.3 Electrolysis of: a) Molten electrolyte (Sodium Chloride or Lead Bromide) b) An aqueous	-Electrolysis of $\text{CuSO}_4(\text{aq})$ using carbon and copper electrodes.	Available		3H	

			electrolyte (i) Copper sulphate solution (ii) Acidified water (dil. H ₂ SO ₄)					
	8		2.4 Faraday's laws of Electrolysis. Mathematical expression and related calculations		Available		3H	
	9		2.5 a) The Electrochemical Series b) The Electrochemical Cell c) Uses and Applications of Electrolysis. d) Redox reactions		Available		3H	
	10		2.5 a) The Electrochemical Series b) The Electrochemical Cell c) Uses and Applications of Electrolysis. d) Redox reactions	-Electroplate a piece of iron material with copper.	Available		3H	
	11	3. Principles of chemistry : Rates of reaction.	3.1 Factors which affect rate of reaction: surface area, concentration, temperature, catalyst. Homogeneous and heterogeneous reactions		Available		3H	
	12		Revision and Evaluation	END OF FIRST TERM				
II	13		3.2 Experiments to show effects of factors on rate of reaction and related graphs/curves.	-Experiments on rates of reactions	Available		3H	
	14	4. Principles of chemistry : Reversible reactions	4.1 The concept of reversible reactions, equilibrium and its notation. 4.2 Equilibrium state :Open and closed systems.				3H	
	15		4.3 Le Chatelier's principle, factors affecting the equilibrium position and the yield of important products, such as in industrial processes: Haber/Contact process.				3H	
	16	5. Principles of chemistry : Solutions and Acid-Base Titration	5.1 Definition of Terms. 5.2 Preparation of standard solutions.	-Preparation of standard solutions and Acid- base titration	Available		3H	
	17		5.3 Titration Technique and calculations based on titration results 5.4 Calculations of concentrations from given amounts of substance and		Available		3H	

				/ or volume					
	18		6. Organic chemistry part 2 : Alcohols and Carboxylic acids	Revision and Evaluation					
	19			6.1 Alcohols: (C ₁ -C ₄) Preparation, manufacture, properties and uses.			3H		
	20			6.1 Alcohols: (C ₁ -C ₄) Formation and polymerization of Esters.			3H		
	21			6.2 Carboxylic acids (C ₁ to C ₄) carboxylic acids as a homologous series containing the –CO ₂ H group. Preparation, manufacture, properties and uses.			3H		
	22			6.3 Soap and detergents: Saponification - Uses -Properties of soap	-Production of soap from palm/kernel oil or alternative source.		3H		
	23		Topic III: Environmental Education and Sustainable development	7.1 The Electrochemical Series and principles underlining the Extraction of metals		Available		3H	
	24			Revision and Evaluation	END OF SECOND TERM				
III	25		7. Chemistry in society: Extraction of metals.	7.2 The extraction of aluminium by electrolytic reduction Physical properties of aluminium.		Available		3H	
	26			7.2 Extraction of iron and copper		Available		3H	
	27			7.3 Extraction of titanium and Properties of these metals and their alloys related to their uses.		Available		3H	
	28		8. Chemistry in society: Heavy chemical industries.	8.1 Sources of raw material: air, water, the sea, nitrates, limestone, iron oxides, sulphur, silicates, phosphates.		Available		3H	
	29			8.2 Industrial manufacture of ammonia, nitric acid, Uses and effect on environment.		Available		3H	
	30			8.2 Industrial manufacture of sulphuric acid Uses and effect on environment		Available		3H	
	31			8.3 Industrial manufacture of sodium hydroxide, chlorine and hydrogen. Uses and effect on environment				3H	
	32			Revision and Evaluation					

	33			8.4 Fertilizers: nitrogenous and phosphatic, composition and calculation of components.				3H	
	34			8.5 Definition of Polymerization a) Addition polymers b) Condensation polymers c) natural polymers				3H	
	35			General Revision and Evaluation				3H	
	37			HOLIDAYS					



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REPUBLIC OF CAMEROON
Peace-Work-Fatherland

MINISTRY OF SECONDARY EDUCATION

INSPECTORATE GENERAL OF EDUCATION

INSPECTORATE OF PEDAGOGY IN CHARGE OF THE TEACHING OF SCIENCES

DEPARTMENT OF PHYSICS CHEMISTRY AND TECHNOLOGY

SCHOOL YEAR: 20----/20----

REPUBLIQUE DU CAMEROUN
Paix-Travail-Patrie

MINISTERE DES ENSEIGNEMENTS SECONDAIRES

INSPECTION GENERALE DES ENSEIGNEMENTS

INSPECTION DE PEDAGOGIE CHARGEE DE L'ENSEIGNEMENT DES SCIENCES

SECTION PCT



HARMONISED NATIONAL SCHEMES OF WORK (PROGRESSIONS)

SECOND CYCLE

School: Class: LSS Hours per Week: 08 Annual Teaching Hours: 147

Teacher: Qualification: Subject: CHEMISTRY No. of Periods per Week:

Term	Week		Topic / Subtopic	Lessons	Practical activities	Digitalized Lessons		Duration	Observation
						Available on DE Website	Used by Teacher		
I	1		Topic I: Matter: Properties and transformation. 1. The Mole Concept	1.1. Definitions: The Mole, Avogadro's constant, Relative atomic mass, relative molecular mass, molar mass 1.2. Empirical and Molecular Formulae. 1.3. Gas Laws and ideal gas equation. Mole quantities of gases, Molar Volume at s.t.p. and r.t.p. Experimental determination of the relative molecular mass of a volatile liquid, and calculations.	- Introduction to the chemistry laboratory and equipment. - Guidance on use of laboratory equipment	Available		6H	
	2			1.4. Mole quantities of solutions: concentrations of homogeneous solutions in mol dm ⁻³ and g dm ⁻³ 1.5. Interpretation of chemical equations: yields of reactions and limiting reagents	- Preparation of a standard solution. - Using of burette, pipette, etc	Available		6H	

	3			1.6. Redox and oxidation numbers: Rules for assigning oxidation numbers. Writing and balancing redox equations.		Available		6H	
	4			1.7. Types of titrations and related calculations Acid-base titrations Redox titrations Precipitation titrations Complexometric titration Back titrations	-Acid-base titrations -Redox titrations	Available		6H	
	5		2. Atomic Structure and Related Patterns in the Periodic Table	2.1. The Atom and subatomic particles: discovery of electrons, protons, nucleus, neutrons and their characteristics.		Available		6H	
	6			Revision and Evaluation					
	7			2.2. The mass spectrometer: Functioning and uses. 2.3. Radioactivity: Characteristics, uses and dangers of radiations, nuclear equations.		Available		6H	
	8			2.4. The electronic structure of atoms - electromagnetic spectrum		Available		6H	
				- absorption spectrum and - emission spectrum 2.5. Atomic emission spectrum of hydrogen 2.6. Experimental evidence of ionization energy		Available		6H	
	9			2.7. Building up principle and electronic configuration 2.8. Description of s-orbitals, electron density, uncertainty principle and the wave-particle duality, shape of the orbital 2.9. Electron affinity as converse of ionization energy, and definition of periodic trends		Available		6H	
	10			3.1. Types of chemical bonds 3.1.1. The Ionic bond: Formation and characteristics of ionic compounds. 3.1.2. Covalent bond: Formation and characteristics of covalent bonds				6H	

	11		3. Bonding, Structure and Intermolecular Forces	3.1.3. Intermediate bond types 3.1.4. Metallic bond: Formation and characteristics of metals. 3.2. Intermolecular Forces 3.2.1. Van der Waals, dipole-dipole, hydrogen-bonding 3.2.2. Effects of intermolecular forces on physical properties of substances.				6H	
	12			Revision and Evaluation	END OF FIRST TERM				
II	13			3.3. Shapes of simple molecules and ions 3.4. Bonding, structure and physical properties	-Use of models to explain shapes of molecules			6H	
	14			3.5. Crystal structures 3.5.1. X-ray diffractions 3.5.2. Ionic solids 3.5.3. Covalent solids and molecular crystals				6H	
	15		4. Organic Chemistry: Fundamentals and the chemistry of hydrocarbons	4.1. Introduction Definition of organic chemistry. The peculiar nature of carbon. Brief review of bonding and hybridization of carbon. 4.2. Classification of organic compounds 4.3. Functional groups and homologous series	- Carry out practical work to identify functional groups such as carbon to carbon double and triple bonds			6H	
	16			4.4. Isomerism 4.5. Nomenclature				6H	
	17			4.6. Determination of structures 4.6.1. Isolation techniques; extraction, synthesis 4.6.2. Methods of purifying organic compounds 4.6.3. Qualitative analysis of elements					
	18			Revision and Evaluation					
	19			4.6.4. Quantitative analysis of elements 4.6.5. Empirical and molecular formulae 4.6.6. Spectroscopic techniques (U.V, IR, NMR, mass spectroscopy, x-ray diffraction) 4.7. Types of organic reactions	- Carry out Lassaigne's tests			6H	
	20			4.8. Chemistry of hydrocarbons 4.8.1 Petroleum chemistry 4.8.2 Saturated H.C.s				6H	
				4.8.3 Unsaturated H.C.s					

	21			4.8. Chemistry of hydrocarbons 4.8.1 Petroleum chemistry 4.8.2 Saturated H.C.s 4.8.3 Unsaturated H.C.s	-Use of models to explain bonding in organic compounds			6H	
	22			4.8. Chemistry of hydrocarbons 4.8.4. Aromatic hydrocarbons 4.8.5. Pollution from organic compounds				6H	
	23			5.1. Introduction and Measurements of enthalpy changes. Hess' law and its applications.				6H	
	24			Revision and Evaluation	END OF SECOND TERM				
III	25		Topic II: Energy: Applications and uses 5. Thermochemistry and Enthalpy Changes	5.1. Introduction and Measurements of enthalpy changes. Hess' law and its applications.	- Carry out practical work on measuring temperatures changes during neutralisation reactions			6H	
	26			5.2. Energetics of formation of covalent molecules 5.3. Energetics of formation of ionic compounds				6H	
	27			5.4. Solvation 5.5. Energy sources				6H	
	28		Topic I: Matter: Properties and transformation.	6.1. The long form of the Periodic Table 6.2. Periodicity (from Li to Ar)	- Practical work on identification of cations. -Identification of anions -Practical work on thermal decomposition of carbonates, nitrates and hydroxides of s-block elements			6H	
	29			6.1. The long form of the Periodic Table 6.2. Periodicity (from Li to Ar)				6H	
	30			Revision and Evaluation					
	31		6. Descriptive Inorganic Chemistry	6.3. Periodic relationships amongst the oxides, chlorides and simple hydrides of elements of periods 2 & 3 (Li to Cl)				6H	
	32			6.4. Comparative study of the s-block elements				6H	
	33		7. Raoult's law and phase Equilibria	7.1. Equilibrium state 7.2. One-component systems 7.3. Two-component systems 7.4. Solutions 7.5. Ideal solutions				6H	
	34			7.6. Non-ideal solutions 7.7. Non-miscible liquids				6H	
	35			General Revision				6H	
	36			General Revision				6H	
	36			Revision and Evaluation				6H	
	37			HOLIDAYS					

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➤ **The Hours in this progression sheet are for theory. In addition to this, 2 Hours (3 periods) should be allocated for practicals.**

School: Class: USS Hours per Week: 08 Annual Teaching Hours: 147

Teacher: Qualification: Subject: CHEMISTRY No. of Periods per Week:

Term	Week		Topic / Subtopic	Lessons	Practical activities	Digitalized Lessons		Duration	Observation
						Available on DE Website	Used by Teacher		
I	1		Topic I: Matter: Properties and transformation 8. Equilibria	8.1. Chemical Equilibria Concept of reversibility The equilibrium State Types of Equilibrium Equilibrium law and Equilibrium constants: Calculations		Available		6H	
	2			8.1. Chemical Equilibria Factors Affecting Equilibrium Position and State Solubility and Solubility Product Common Ion Effect Solvent Extraction		Available		6H	
	3			8.2. Redox Equilibria Qualitative Introduction; Balancing Redox Reactions. Metal/metal-ion and Ion/ion Systems; The Daniel Cell	-Practical work on redox titrations	Available		6H	
	4			8.2. Redox Equilibria Standard Electrode Potentials: The Hydrogen Electrode and Other Reference Electrodes Coupling Half-Cells and Measurement of Redox Potentials Uses of E^{θ} Values	-Practical work on redox titrations	Available		6H	

II	5			8.3. Acid-Base Equilibria Acid-Base theories; ionic product of water The pH meter; Calculation of pH of strong and weak Acids and Bases Dissolution of Salts in Solution and Calculation of pH Values	-Practical work acid-base titrations	Available		6H	
	6			Revision and Evaluation					
	7			8.3. Acid-Base Equilibria Acid-Base Indicators, Titrations and Titration Curves. Buffer solutions and salt hydrolysis.	-Practical work on acid-base titrations	Available		6H	
	9		9. Organic chemistry 2 : Study of other organic compounds.	9.1 Halogenoalkanes and aromatic halogenobenzenes		Available		6H	
	10			9.2 Alcohols, ethers and phenol	-Qualitative analysis tests on alcohols.	Available		6H	
	11			9.3 Aldehydes and ketones	-Qualitative analysis tests on aldehydes and ketones			6H	
	12			Revision and Evaluation	END OF FIRST TERM				
	13			9.4 Carboxylic acid and derivatives	Qualitative analysis tests on carboxylic acids and derivatives			6H	
	14			9.5 Organic nitrogen compounds	Qualitative analysis tests on amines, amides, etc			6H	
	15		10. Organic Chemistry 3: Reaction mechanisms and synthetic routes.	10.1 Reaction mechanisms in organic chemistry				6H	
	16			10.2 Synthetic routes				6H	
	17		11. Descriptive inorganic Chemistry:	11.1. Halogens 11.1.1 The halogen group: Comparative study of the Halogens 11.1.2 Reactions of the halides	Qualitative analysis tests on halides			6H	
	18			Revision and Evaluation					
	19			11.1.2 Reactions of the halides 11.1.3 The idea of variable oxidation number				6H	
	20			11.2. Group IV 11.2.1 Study of trends 11.2.2 Compounds of Group IV elements	Qualitative analysis tests on Group IV cations			6H	

III	21			11.3. d-block metals 11.3.1 Introduction 11.3.2 Variable oxidation states				6H	
	22			11.3.3 Complex compounds of transition metals 11.3.4 Stereo structures of complex ions 11.3.5 Magnetic and catalytic properties	Qualitative analysis tests on transition metal cations			6H	
	23			12.1 Introduction 12.2 Rate determination				6H	
	24			Revision and Evaluation	END OF SECOND TERM				
	25		12. Reaction kinetics		Carry out practical work on rates of reactions.			6H	
	26			12.3 Rate measurement				6H	
	27			12.4 Order of reaction 12.5 Energy factors				6H	
	28			12.6 Simple theories of kinetics 12.7 Catalysis				6H	
	29			Revision and Evaluation					
	30		Topic III: Environmental education and sustainable development 13. Aluminium, Sulphur and Nitrogen	13.1 Sulphur				6H	
	31			13.2 Nitrogen				6H	
	32			13.3 Pollution from organic compounds and heavy chemicals.				6H	
	33			Revision and Evaluation				6H	
				HOLIDAYS					

NB: This scheme of work is summarised and should be used alongside the syllabus to put in all the details.

- The Hours in this progression sheet are for theory. In addition to this, 2 Hours (3 periods) should be allocated for practicals.

