REPUBLIQUE DU CAMEROUN
Paix– Travail – Patrie

MINISTERE DES ENSEIGNEMENTS SECONDAIRES

INSPECTION GENERALE DES ENSEIGNEMENTS

INSPECTION DE PEDAGOGIE/SCIENCES

SECTION
PHYSIQUE CHIMIE ET TECHNOLOGIE

REPUBLIC OF CAMEROON
Peace – Work – Fatherland

MINISTRY OF SECONDARY EDUCATION

INSPECTORATE GENERAL OF EDUCATION

INSPECTORATE OF PEDAGOGY – SCIENCES

DEPARTMENT OF PHYSICS - CHEMISTRY AND TECHNOLOGY

PHYSICS

Subject: Physics **Class: Form 1** **N° of Periods per week: 2** **Annual Teaching Hours: 50**

School: …… **Teacher's Name: ……** **Qualification: ……**

TERM	WEEK	MODULE	CHAPTER	LESSON TITLE	Hands-on Activities	Digitalisation of Teaching		№ of Periods
						Availability of Resources	Resources Used	
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**		1
				Prominent scientists and discoveries and contributions to improvement in the lives of humans.		**Available**		1
	2		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
	3		Safety laboratory rules	Safety rules for working in the Physics laboratory		**Available**		2
	4		Introduction to measurement	Job opportunities for science students		**Available**		1
				Simple measurements using measuring instruments/		**Available**		1
	5		Physical quantities	Identifying physical and non-physical quantities		**Available**		2
				Some Units of measurement and S.I units				
	6	**Activity of Integration**						1
		EVALUATION						1

	7	**Correction and Remediation**						1
		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**		1
	8		States of matter	-interconversion processes		**Available**		2
	9		Measurement of length	– Define length & state its S.I and sub units Measurement of length		**Available**		2
	10		Measurement of mass	– Define mass and state its SI and sub units Measurement of the mass of a body		**Available**		2
	11		Measurement of weight	– Define weight and state its units – Differentiate between mass & weight Measurement of weight		**Available**		2
	12		**Activity of Integration**					1
			EVALUATION					1
Second	13		**Correction and Remediation**					1
			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	**Available**		1
	14		Measurement of Density	- Define density as the mass per unit volume and state its units		**Available**		1
			Measurement of Temperature	-Define temperature and state its S.I and sub units/conversion		**Available**		1
	15		Using information on products	-safety rules on products/ materials		**Available**		1
				-using information				
		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.	**Available**		1
	16		Energy needs	-Daily applications of energy		**Available**		2
				-common devices that use different forms of energy and principle of energy conservation.				
	17		Solar energy	- Components and uses of solar energy		**Available**		2
			Chemical energy	-sources and uses of chemical energy		**Available**		
	18		**Activity of Integration**					1
			EVALUATION					1
	19		**Correction and Remediation**					1
			Electrical energy	-sources and uses of electrical energy		**Not yet**		1
	20		Thermal energy	-sources and uses of heat.		**Not yet**		1
				-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	**Not yet**		1

	21		Forces and motion	Definition and effects of forces	piece of paper and holding it close to a burning candle. - Light a bulb using a cell or battery.	**Not yet**		1
				-definition/types of motion		**Not yet**		1
	22			-safety rules: uses of seat belts, low speed/road signs		**Not yet**		2
	23	**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
	24		**Activity of Integration**					1
			EVALUATION					1
	25		**Correction and Remediation**					1
			Detection of sound	-Effects of loud sound and prevention		**Not yet**		1
	26		Temperature	-measurement of temperature of a body (clinical thermometer) -normal and abnormal body temperatures		**Not yet**		1
Third			Sports and physics	Body posture: importance of good posture to the body		**Not yet**		1
	27	**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
	28		-global warming And climate change	-greenhouse effect (concept/causes) -climate change -environmental sustainability		**Not yet**		2
	29	**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
	30		**Activity of Integration**					1
			EVALUATION					1
	31		**Correction and Remediation**					1
			Technical drawing	Instruments used/ sample drawing		**Not yet**		1
	32 - 36	**GENERAL REVISION / END OF YEAR EXAMINATION**						10

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Subject: Physics **Class: Form 2** **N° of Periods per week: 2** **Annual Teaching Hours: 50**

School: …… **Teacher's Name: ……..** **Qualification: ……**

Term	Week	Module	Chapters	Lesson title	Hands-on Activities	Digitalisation of Teaching		№ of Periods
						Availability of Resources	Resources Used	
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**		
	2			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) 1.5 Measurements of speed and units		**Available**		2
	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		**Activity of Integration**					1
			EVALUATION					1
	7		**Correction and Remediation**					1
			4: Temperature	2.3 Temperature – measurement and units and effects on matter		**Available**		1
	8		5: Thermal and electrical insulation	2.4 Thermal and electrical insulation		**Available**		2
	9		6: Action of heat and electrical energy	2.5 Action of heat on materials 2.6. Action of electrical energy on materials		**Available**		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.	**Not yet**		2
	11		10: Renewable energy	-Solar panel for heating -Other sources		**Not yet**		2
	12		**Activity of Integration**					1
			EVALUATION					1
	13		**Correction and Remediation**					1
			11: Electricity	Electricity for the home and the simple electric circuit		**Not yet**		1
	14		12: Light	Sources of Light		**Not yet**		1

SECOND			12: Light	- Types of light receivers	- Power a small radio with batteries for it to emit sound.	**Not yet**		1
				-Beams and shadows		**Not yet**		1
	15		13: Energy exchange	Linking one form of energy to other forms		**Not yet**		2
	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		**Activity of Integration**					1
			EVALUATION					1
	19		**Correction and Remediation**					1
			16: Muscle stress	Sports and physical education		**Not yet**		1
	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			**Activity of Integration**				1
				EVALUATION				1
THIRD	25			**Correction and Remediation**				1
				5.4 Climate change		**Not yet**		2
	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
	30 - 36	**GENERAL REVISION / END OF YEAR EXAMINATION**						14

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Subject: Physics **Class: Form 3** **N^{o} of Periods per week: 2** **Annual Teaching Hours: 50**

School: …… **Teacher's Name: ……..**
Qualification: ……

TERM	WEEK	MODULE	CHAPTER	LESSON TITLE	Hands-on Activities	Digitalisation of Teaching		№ 0f periods
						Availability of Resources	Resources Used	
FIRST	1	MODULE 1: **INTRODUCTION TO MECHANICS**	**1.** Physical quantities	First contact with the students				**02**
				– Definitions, examples and 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 determined 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**		
	3			– Measurement of volume, temperature and time		**Available**		**02**
		MODULE II: MATTER: PROPERTIES AND TRANSFORMATION	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. - Use a syringe and plastic bottles with small holes to demonstrate the characteristics of pressure in liquids.	**Available**		
	4			– 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**		
	5		3. Pressure	– Definition / calculation / unit of pressure. – Factors that affect pressure in solids – Application of pressure in solids		**Available**		**02**
	6			**Activity of Integration**				**01**
				EVALUATION				**01**
	7			**Correction and Remediation**				**02**
				– Pressure in liquids – Calculation / Factors affecting of pressure in liquids – Characteristics of pressure in liquids		**Available**		

				– Applications; Hydraulic machines	- Load a helical spring and a rubber band separately with standard masses to obtain tables of mass and corresponding extension to: - Demonstrate Hooke's law. - Distinguish between materials that obey Hooke's law and those that do not.			
	8			– Atmospheric pressure and weather – Demonstration/ Measurement/Application of atmospheric pressure – Pressure and health (Effects of high/low pressure)		**Available**		**02**
				- Effects of pressure on boiling point. -Application of high pressure		**Available**		
	9		4. Elasticity and Hooke's law	– Definition of elasticity – Elastic and non-elastic materials – Hooke's Law and elastic limit		**Available**		**02**
				– Sketch F – e graphs within the elastic limit. – Experimental demonstration of Hooke's law – Describe situations in which Hooke's law applies		**Available**		
	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.	**Available**		**02**
			6. Sources of energy	– Sources of energy. – Renewable and non-renewable energy sources		**Available**		
			7. Energy Transformations	– The law of conservation of energy / Application – Transducers and energy flow diagrams.		**Available**		
	11			– Energy transformations – Calculations of potential (gravitational and elastic) and kinetic energies		**Available**		**02**
			8. Work	– Definition / Calculation of work involving force and displacement **(in the same direction only)** – Examples of situations where work is done		**Available**		
	12		**Activity of Integration**					**02**
			EVALUATION					
	13		**Correction and Remediation**					**02**
			9. Power	– Definition / calculation of power – Power ratings of some devices e.g. electric iron, light bulbs, electric motors etc.		**Available**		
			10. Simple Machines	– Definition / advantages of a machine. - MA / VR / Efficiency.		**Available**		

				- 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		**Available**		**02**
SE CO ND	15		**Optics** **10.** Reflection 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**		
			CHRISTMAS BREAK			**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**
	17		**11.** Refraction of light	– Identification of refraction phenomena in everyday life / Definition of refraction		**Not yet**		
				– Laws of refraction – Refractive index and speed of light		**Not yet**		**02**
				– Experiment to determine refractive index of a glass block		**Not yet**		
				– Effects of refraction of light in everyday life – Real/apparent depth and refractive index		**Not yet**		
	18			**Activity of Integration**				**02**
				EVALUATION				
	19			**Correction and Remediation**				
				– Total internal reflection (TIR) – Conditions / Daily occurrence / Definition of c – Ray diagram to show TIR		**Not yet**		**02**
				- Use of TIR / Solve problems using $sinc = \frac{1}{n}$		**Not yet**		
	20		12. LENSES	– Lens action/Types of lenses/Definition of terms:		**Not yet**		**02**
	21			– Ray diagrams to illustrate the meaning of principal foci, for converging & diverging lenses – Measurement of focal length of a converging lens		**Not yet**		**02**

	22			– Image formation by converging/diverging lenses – The lens formula and magnification, $m = \frac{v}{u}$		**Not yet**		**02**
	23		13. Dispersion of light.	– Definition / Demonstration of dispersion.		**Not yet**		**02**
				– Formation of a pure spectrum from white light. – Natural occurrence of the dispersion		**Not yet**		
	24			**Activity of Integration**				**02**
				EVALUATION				
THIRD	25			**Correction and Remediation**				**02**
		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**		
	26			– Technical Project Types /Elements involved – Definition/Steps involved in planning a project		**Not yet**		**02**
	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**		**02**
	27			– Technical diagram / studies – Identification of the movement of certain parts with respect to others (guide, reducing friction)		**Not yet**		**02**
	28		15. Investigating forces	– Definition of new words – Realisation of a project. -Understand the uses of measuring instruments and their limitations. Understand why and how things move. – Understand the relationship between mass and volume through measurements		**Not yet**		**02**
				EASTER BREAK		**EASTER BREAK**		
	29			– 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**		**02**
	30			– Use the image to estimate the refractive index of water.		**Not yet**		**02**

	31-35	**GENERAL REVISION / END OF YEAR EXAMINATION**	**10**

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Subject: Physics **Class: Form 4** **Nº of Periods per week: 3** **Annual Teaching Hours: 63**

School: …… **Teacher's Name: ……** **Qualification: ……**

Term	Week	Module	Chapters	Lesson title	Hands-on Activities	Digitalisation of Teaching		№ 0f periods
						Availability of Resources	Resources Used	
FIRST			First contact with students and presentation of scheme of work					
	1	MODULE 1 ENERGY: APPLICATION AND USES	**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. - 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. - Water is Heat water in a beaker, plastic transparent cup or polythene bag to demonstrate convection. - 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**		3
	2		**Thermometry**	1.3 Thermometry 1.4 liquid-in-glass thermometer 1.5 calibration of temperature using fixed points		**Available**		3
	3			1.6 clinical and normal laboratory thermometers		**Available**		3
			Calorimetry	**1.1** Calorimetry **1.2** Heat capacity and specific heat capacity, c **1.3** Measurement of specific heat capacity, c for solid and liquid Calculation involving Q = mcΔθ		**Available**		
	4		**Latent Heat**	**1.4** Latent Heat and specific Latent heat **1.5** Cooling effect		**Available**		3
			Heat transfer	**1.6** Heat Transfer -Conduction, Convection and Radiation		**Available**		
	5		**Expansion**	**1.7** Thermal Expansion -The bimetallic strip and its principles -Radiant energy converters		**Available**		3
	6		**Activity of Integration**					3
			EVALUATION					
			Correction and Remediation					
	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=fλ	- Use a slinky coil to produce transverse and longitudinal waves. - Use a ripple tank or water in a basin to produce water waves and demonstrate properties of 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		**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		**Activity of Integration**					3
			EVALUATION					
			Correction and Remediation					
SECOND	13		**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		**EM Spectrum**	- Relative positions of radiation on EM spectrum, in terms of wavelength and frequency - Methods of production and detection - Properties and used - Health hazards caused by EM waves		**Not yet**		3
	15	**MODULE 3 ELECTRICAL ENERGY**	**ELECTROSTATICS**	3.1 Charges and their origins 3.2 Types of charges and the Basic law of electrostatics 3.3 Coulomb's law 3.4 Testing for charge with electroscope 3.5 Charging and discharging 3.6 Separation of charges	- A balloon rubbed so that it sticks to a wall or ceiling when released to demonstrate charging by friction.	**Not yet**		3
	16		**The coulomb**	3.7 conductors and insulators		**Not yet**		3
	17			3.8 Force between charges Positive and negative charges Application of electrostatics industrially eg photocopying, painting		**Not yet**		3
			Activity of Integration					

	18		**EVALUATION**					3
			Correction and Remediation					
	19		**Current Electricity**	3.9 Introduction 3.10 Electricity and charge movement. Use of meters in electric circuits, how they are connected and reasons.		**Not yet**		3
	20		**Emf**	3.11 Emf and pd sources of emf		**Not yet**		3
	21		**Electric circuits**	3.12 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
	22			3.13 ELECTRIC CIRCUITS -components of a circuit network		**Not yet**		3
	23			3.14 Ohms' law and Resistance 3.15 Circuit network -Parallel and series connections Calculations in circuits		**Not yet**		3
	24			**Activity of Integration**				3
				EVALUATION				
				Correction and Remediation				

Term	**Week**	**Module**	**Chapters**	**Lesson title**		**Digitalisation of Teaching**		**№ 0f periods**
						Availability of Resources	**Resources Used**	
THIRD	25	**MODULE III ELECTRICAL ENERGY**	**Power in ac and dc**	3.16 DC and AC Definition Transportation of electric current 3.17 calculation of power dissipated		**Not yet**		3
	26			3.18 Calculation of power consumed at home (KWH)		**Not yet**		3
	27		**House wiring**	3.19 House wiring Ring circuit and linear circuit in house wiring		**Not yet**		3
	28			3.20 Fuse and selection Safety precaution		**Not yet**		3
	29		**CRO**	3.21 The cathode ray oscilloscope				3
	30		**Activity of Integration**					3
			EVALUATION					

			Correction and Remediation					
	31	**MODULE IV PROJECTS AND ELEMENTAY ENGENEERING**	**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 classroom containing the door and windows.	**Not yet**		3
	32		**Section view Building plans**	1.2. Cross section of an Object		**Not yet**		3
				List the various ways of viewing an object. e.g top – view				
	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 **Class: Form 5** **N^{o} of Periods per week: 3** **Annual Teaching Hours: 63**

School: …… **Teacher's Name: ……** **Qualification: ……**

Term	Week	Module	Chapters	Lesson title	Hands-on Activities	Digitalisation of Teaching		№ of Periods
						Availability of Resources	Resources Used	
FIRST		Module 1: FIELDS: MAGNETIC FIELDS AND THEIR EFFECTS	First contact with students and presentation of scheme of work					
	1		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
	2			**1.2** Law of magnetism - applications of magnets - Making magnets and care for magnets -Hard and soft magnetic materials		**Available**		3
	3			**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**		3
	4		Magnetic effect of current	**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**		3
	5			- Force on a current carrying conductor placed in a magnetic field - Factors which determine the size of the force. Principle of electric motor		**Available**		3
			Activity of Integration					

	6		**EVALUATION**					3
			Correction and Remediation					
	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		**Activity of Integration**					**3**
			EVALUATION					
			Correction and Remediation					
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. - Background radiation		**Available**		3
			Activity of Integration					

	18		**EVALUATION**					3
			Correction and Remediation					
	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** **3.4 Turning effect of forces** **-**Moments, couples and applications		**Not yet**		3
	23		**Motion**	**3.5 Linear motion** - Distance, displacement, Speed, velocity, acceleration -motion graphs		**Not yet**		3
	24			**Activity of Integration**				3
				EVALUATION				
				Correction and Remediation				
THIRD	25			**3.6 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**	**3.7 Linear momentum** -Interaction and conservation of momentum. -Principle of conservation of momentum and real life situations		**Not yet**		3
	27			**3.8 Newton's laws of motion**		**Not yet**		3

	28	Module 4: **PROJECTS AND ELEMENTARY ENGINEERING**	**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)				
	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 **Class: Lower Sixth Science** **N^{o} of Periods per week: 8** **Annual Teaching Hours: 270**

School: …… **Teacher's Name: ……** **Qualification: ……**

Term	Week	Module	Chapter	Lesson title	Digitalisation		Duration	Module	Chapter	Lesson title	Digitalisation		Duration
					Availability	Used					Availability	Used	
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						
	2			Dimensions, physical equations and homogeneity of physical equations.	YES		04H		**3.1 Temperature**	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 $a \alpha F$ and $a \alpha \frac{1}{m}$	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
				E**xplosions, head-on and oblique co**llisions.					**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	NO		04H			Resistor networks and the potential divider	NO		02H

				acceleration and centripetal force, consolidation examples									
				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 application**	**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			Wheatstone bridge circuit, consolidation exercise	NO		02H
	22			Elasticity and Young modulus energy stored in a stretched wire	NO		04H	**Option 1: Energy Resources and environmental Physics**	**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 molecular speeds, Real gases and Andrew's experiment	NO		04H		**3.4 Energy resources and environmental Physics**	Fossil fuels and nuclear fuel.	NO		02H
	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 **Class: Upper Sixth Science** **N° of Periods per week: 8** **Annual Teaching Hours: 270**

School: …… **Teacher's Name: ……** **Qualification: ……**

Term	Week	Module	Chapter	Lesson title	Digitalisation		Duration	Module	Chapter	Lesson title	Digitalisation		Duration
					Availability	Used					Availability	Used	
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		**ELECTROSTATICS + ELECTRIC FIELDS**	• Electric charge and current • Good and bad conductors of electricity. • Charging by friction, contact, induction and by chemical action. • Point action and the lightening conductor	YES		02H + 02 H			• Properties of Waves: Polarization- meaning and production of plane polarized waves.	NO		02H
	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**				**02**
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	NO		02H

				• Field patterns of current-carrying conductors (straight wire, plane circular coil, solenoid) • Force on a current-carrying conductor in a uniform magnetic field. • The direction of the force from Fleming's left hand rule						plane polarized em waves.			
	14		**5.4 MAGNETIC FIELDS**	• Forces on objects in cross-fields • Torque on a rectangular coil within a uniform magnetic field **(T = NAIB)** • **The principle of the electric motor (dc and ac types)**	NO		04H			• Light sources. • Optical transmission grating with normal incidence	NO		02H
	15			• Biot-Savart law • Ampere's law • Magnetic flux density within a long solenoid, long straight wire, and plane circular coil (**$B = \mu_o nI$, $B = \mu_o I/2r$, $B = \mu_o I/2\pi r$**). Force between two current-carrying conductors	NO		04H			• Multiple slit diffraction. • Reflection and refraction at plane interfaces	NO		02H
				CHRISTMAS BREAK						**CHRISTMAS BREAK**			
	16		**ELECTROMAGNETIC INDUCTION**	• Force on a moving charge in uniform magnetic field • Measurement of specific charge (e/m_o) • The Hall effect • dia, para- and ferro-magnetic materials • Magnetic Shielding • The Lorentz force	NO		04H			• Laws of refraction. • Refractive index	NO		02H
	17			• Faraday's and Lenz's laws of electromagnetic induction. • Induced e.m.f. across a conductor moving with	NO		04H		**3**	• Dispersion. • Total internal reflection and critical angle.	NO		02H

				velocity v, through uniform magnetic field. • Simple DC and AC generator principles.						• Lenses: principal focus, focal length.			
	18		**REVISION AND EVALUATION**				**04H**		**REVISION AND EVALUATION**				**04H**
	19		**ELECTRO MAGNETI C INDUCTIO N + ALTERNA TING CURRENT**	• 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**	• The atom, Rutherford's alpha scattering	NO		04H		**3.3**	Emission and absorption spectra.	NO		02H

			nucleus of the atom,	experiment and atomic model.						Energy levels. The electron volt.			
	24		**REVISION AND EVALUATION**				04H	**REVISION AND EVALUATION**					02H
III	**25**		**Radioactivity**	• Nuclear stability and radioactivity • Properties of radiations and applications	NO		04H	**Option 2: Communication**	**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			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			Semicoductors 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 amplfiers	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						04H						02H
	36		**GENERRAL REVISION**					**GENERRAL REVISION**					

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