

**MINISTRY OF GENERAL EDUCATION
SCHEMES OF WORK FOR SCIENCE 5124**

Subject: SCIENCE-Physics 5124 **Grade:** 10 **Term:** ONE **Year:** 20... **Teacher:** -----

WEEK	TOPIC	SUB - TOPIC	EXPECTED OUTCOMES	METHOD	SUGGESTED EXPERIMENTS	REFERENCE
1			<ul style="list-style-type: none"> Reporting and orientation 			
2	General physics	Length and time	<ul style="list-style-type: none"> Identify basic and derived units. 	Lecture Demonstration Investigation	Demonstrating how to use the rule, the vernier calipers and the micrometer screw gauge to measure small lengths.	Essentials of physics Explaining physics Tom Duncan Thinking process
25/01/16 3	General physics	Length and time	<ul style="list-style-type: none"> State the basic unit for length and time. 	Lecture Demonstration Investigation	Effects of changing mass of bob, amplitude and length of thread on frequency and periodic time of pendulum	Essentials of physics Explaining physics Tom Duncan Thinking process
	General	Length	<ul style="list-style-type: none"> Demonstrate use of scientific notation and significant figures. 	Lecture	Demonstrating	Essentials of

4	physics		<ul style="list-style-type: none"> Demonstrate the use of instruments for measuring length. 	Demonstration Investigation	how to use the beam balance and the spring balance to measure the weight and the mass of an object	physics Explaining physics Tom Duncan Thinking process
5	General physics	Time	<ul style="list-style-type: none"> Demonstrate use clocks and other devices for measuring an interval of time. Explain factors that affect period of oscillation of a pendulum Distinguish between mass and weight.	Lecture Demonstration Investigation	Demonstrating how to determine the centre of mass of an irregularly shaped plane lamina	Essentials of physics Explaining physics Tom Duncan
6	General physics	Mass and weight	<ul style="list-style-type: none"> Demonstrate use of appropriate balances to measure mass and weight 	Lecture Demonstration Investigation	Demonstrating how to measure volumes of liquids and solids	Essentials of physics Explaining physics
7	General physics	Mass and weight	<ul style="list-style-type: none"> Demonstrate how to determine the centre of mass of an object. 	Demonstration Investigation	Demonstrating how to measure densities of solids, liquids and gases	Essentials of physics Explaining physics
	General physics	Stability of objects	<ul style="list-style-type: none"> Describe qualitatively the effect of the position of the centre of 	Demonstration		Explaining physics

8			mass on the stability of an object	Investigation		
9	General physics	Volume and density	<ul style="list-style-type: none"> Demonstrate how to measure volume of different liquids and solids 	Demonstration Investigation	Interpreting velocity – time graphs	Explaining physics
10	General physics	Volume and density	<ul style="list-style-type: none"> Determine the density of liquids, regular and irregular solids 	Demonstration Investigation	Demonstrating how to use a ticker timer	Explaining physics
11	General physics	Volume and density	<ul style="list-style-type: none"> Demonstrate how to calculate density of different substances using appropriate formula. 	Demonstration Investigation	Consequences of over - speeding	Explaining physics
12	General physics	Volume and density	<ul style="list-style-type: none"> Explain relative density Demonstrate how to calculate relative density of air using the appropriate formula. Explain consequences of over speeding 	Lecture Demonstration Investigation	Demonstrating free fall acceleration	Essentials of physics Thinking process
13	Tests	Tests	Tests	Tests	Tests	Tests

**MINISTRY OF GENERAL EDUCATION
SCHEMES OF WORK FOR SCIENCE 5124**

Subject: SCIENCE-Physics 5124 **Grade:** 10 **Term:** TWO **Year:** 20... **Teacher:** -----

WEEK	TOPIC	SUB - TOPIC	EXPECTED OUTCOMES	METHOD	SUGGESTED EXPERIMENT S	REFERENCE
1	General physics	speed – time graphs	<ul style="list-style-type: none"> Describe Explain the terms used in mechanics Demonstrate interpretation of graphical representation of distance -time, displacement - time, speed-time, velocity - time and acceleration – time 	Lecture Demonstration Investigation	Demonstrating how to get derived units from basic units	Essentials of physics Explaining physics Tom Duncan
2	General physics	speed – time graphs	<ul style="list-style-type: none"> Identify motion from the shape of a speed – time graph 	Lecture Demonstration Investigation	Demonstrating how to use the rule, the vernier calipers and the micrometer screw gauge to measure small lengths.	Essentials of physics Explaining physics Tom Duncan Thinking process
3	General physics	Equations of motion	<ul style="list-style-type: none"> Demonstrate the use of basic equations of uniformly accelerated motion of over speeding 	Lecture Demonstration Investigation	Demonstrating effects of changing mass of bob, amplitude and length of	Essentials of physics Explaining physics

					thread on frequency and period of pendulum	Tom Duncan Thinking process
4	General physics	Equations of motion	<ul style="list-style-type: none"> • Demonstrate the use of graphs to solve problems of motion. 	Lecture Demonstration Investigation	Demonstrating how to use the beam balance and the spring balance to measure the weight and the mass of an object	Essentials of physics Explaining physics Tom Duncan Thinking process
5	General physics	Free fall	<ul style="list-style-type: none"> • Describe qualitatively the motion of bodies falling in a uniform gravitational field with and without air resistance. • Demonstrate that the acceleration of free fall for a body near the earth is constant. 	Lecture Demonstration Investigation	Demonstrating how to determine the centre of mass of an irregularly shaped plane lamina	Essentials of physics Explaining physics Tom Duncan
6	General physics	Effects of force on objects	<ul style="list-style-type: none"> • Explain what force is. • Explain the effect of forces on bodies. 	Lecture Demonstration Investigation	Demonstrating measurement volumes of liquids and solids	Essentials of physics Explaining physics

7	General physics	Newton's 2 nd law of motion	<ul style="list-style-type: none"> • Demonstrate mass as a measure of inertia. • Demonstrate the relationship between force and acceleration 	Lecture Demonstration Investigation	Demonstrating measurement densities of solids, liquids and gases	Essentials of physics Explaining physics
8	General physics	Newton's 2 nd law of motion	<ul style="list-style-type: none"> • Demonstrate the relationship between mass and acceleration. 	Demonstration Investigation	Explaining Newton's 2 nd law of motion	Thinking process
9	General physics	Newton's 2 nd law of motion	<ul style="list-style-type: none"> • Perform calculations on force. 	Lecture Investigation	Interpreting velocity – time graphs	Essentials of physics
10	General physics	Hooke's law	<ul style="list-style-type: none"> • Demonstrate the effect of force on a spring. using the formula, Power = work done/ time 	Demonstration Investigation	Demonstrating how to use a ticker timer	Explaining physics
11	General physics	Friction	<ul style="list-style-type: none"> • Describe the effects of friction on the motion of a body. 	Lecture Investigation	Describing consequences of over - speeding	Tom Duncan Thinking process
12	General physics	Friction	<ul style="list-style-type: none"> • Describe qualitatively the motion in a curved path due to a perpendicular force 	Demonstration Investigation	Demonstrating free fall acceleration	Essentials of physics
13	Tests	Tests	Tests	Tests	Tests	Tests

**MINISTRY OF GENERAL EDUCATION
SCHEMES OF WORK FOR SCIENCE 5124**

Subject: SCIENCE-Physics 5124 **Grade:** 10 **Term:** THREE **Year:** 20.... **Teacher:** -----

WEEK	TOPIC	SUB - TOPIC	EXPECTED OUTCOMES	METHOD	SUGGESTED EXPERIMENTS	REFERENC E
1	General physics	Types of machines	<ul style="list-style-type: none"> • Explain what is meant by a simple machine. • Identify different types of simple machines 	Lecture Demonstration Investigation	Demonstrating how to get derived units from basic units	Essentials of physics Explaining physics
2	General physics	Simple machines	<ul style="list-style-type: none"> • Demonstrate how to calculate mechanical advantage (M.A), velocity ratio (V.R) and efficiency of machines. 	Lecture Demonstration Investigation	Demonstrating how to use the rule, the vernier calipers and the micrometer screw gauge to measure small lengths.	Essentials of physics Explaining physics Tom Duncan
3	General physics	Work, energy and power	<ul style="list-style-type: none"> • Explain the meaning of the terms work, energy and power. • Identify units of measurement for work, energy and power. 	Lecture Demonstration Investigation	Demonstrating effects of changing mass of bob, amplitude and length of thread on frequency and period of pendulum	Essentials of physics Explaining physics Tom Duncan Thinking process

4	General physics	Conservation of energy	<ul style="list-style-type: none"> Describe the conservation of energy 	Lecture Demonstration Investigation	Demonstrating use of beam balance and the spring balance to measure weight and the mass of an object	Essentials of physics Explaining physics Tom Duncan
5	Thermal physics	Thermal properties	<ul style="list-style-type: none"> Explain the assumption of the kinetic theory. Describe qualitatively the molecular model of matter. Demonstrate the application of kinetic theory to explain rates of diffusion, Brownian motion, evaporation and cooling effect of evaporation. 	Lecture Demonstration Investigation	Demonstrating how to determine the centre of mass of an irregularly shaped plane lamina	Essentials of physics Explaining physics Tom Duncan
6	Thermal physics	Thermal properties	<ul style="list-style-type: none"> Demonstrate the kinetic theory to explain gas pressure. Demonstrate the effect of varying pressure on volume leading to Boyle's law. Describe temperature 	Lecture Demonstration Investigation	Demonstrating how to measure volumes of liquids and solids	Essentials of physics Explaining physics
7	Thermal physics	Thermal properties	<ul style="list-style-type: none"> Describe qualitatively the thermal expansion of solids, liquids and gases. Identify some of the everyday applications and consequences of thermal expansion. Explain how a physical property which varies with temperature may be used for the measurement 	Lecture Demonstration Investigation	Demonstrating how to measure densities of solids, liquids and gases	Essentials of physics Explaining physics Tom Duncan

			of temperature.			
8	Thermal physics	Thermal properties	<ul style="list-style-type: none"> • Demonstrate the construction of the laboratory and clinical thermometers. • Describe suitability of alcohol and mercury for use in liquid-in-glass thermometers. 	Lecture Demonstration Investigation		Essentials of physics Explaining physics
9	Thermal physics	Thermal properties	<ul style="list-style-type: none"> • Describe the relationship between the Celsius and Kelvin scales. • Describe the structure and use of a thermocouple thermometer. 	Lecture Demonstration	Demonstrating how to interpret velocity - time graphs	Essentials of physics
10	Thermal physics	Thermal properties	<ul style="list-style-type: none"> • Demonstrate the measurement of temperature using an appropriate thermometer. 	Lecture Demonstration	Demonstrating how to use a ticker timer	Essentials of physics
11	Thermal physics	Thermal properties	<ul style="list-style-type: none"> • Describe the relationship between temperature and volume. • Explain the Kelvin scale from the relationship between temperature and volume. 	Lecture Demonstration Investigation	Describing consequences of over - speeding	Essentials of physics Explaining physics
12	Thermal physics	Thermal properties	<ul style="list-style-type: none"> • Demonstrate use of the ideal gas equation to solve simple numerical problems 	Demonstration Investigation	Demonstrating free fall acceleration	Essentials of physics
13	Tests	Tests	Tests	Tests	Tests	Tests

MINISTRY OF GENERAL EDUCATION

SCHEMES OF WORK FOR SCIENCE 5124

Subject: SCIENCE-Physics 5124 **Grade:** 11 **Term:** ONE **Year:** 20.... **Teacher:** -----

WEEK	TOPIC	SUB - TOPIC	EXPECTED OUTCOMES	METHOD	SUGGESTED EXPERIMENTS	REFERENCE
1	THERMAL PHYSICS	Transfer of thermal energy	<ul style="list-style-type: none"> • Explain the assumption of the kinetic theory. • Describe qualitatively the molecular model of matter. 	Demonstration <input type="checkbox"/> Observation <input type="checkbox"/> Comparison <input type="checkbox"/> Identification	Dissolving of potassium permanganate in water	Essentials of Physics Explaining Physics Tom Duncan
2	THERMAL PHYSICS	Transfer of thermal energy	<ul style="list-style-type: none"> • Explain methods of heat transfer. Use kinetic theory to explain heat transfer. • Demonstrate heat conduction in different substances. 	Demonstration <input type="checkbox"/> Comparison <input type="checkbox"/> Identification	Heat conduction in different substances	Essentials of Physics Explaining Physics Tom Duncan
3	THERMAL PHYSICS	Transfer of thermal energy	<ul style="list-style-type: none"> • Demonstrate the uses of bad and good conductors of heat. • Demonstrate convection in liquids and gases. 	<input type="checkbox"/> Comparison <input type="checkbox"/> Identification Demonstration	Convection in water	Essentials of Physics Explaining Physics Tom Duncan
4	THERMAL PHYSICS	Transfer of thermal energy	<ul style="list-style-type: none"> • Demonstrate the differences between good and bad heat emitters. • Demonstrate the differences between bad and good absorbers of radiant energy. • 	<input type="checkbox"/> Comparison <input type="checkbox"/> Identification Demonstration	Compare the black and white surfaces	Essentials of Physics Explaining Physics Tom Duncan

5	THERMAL PHYSICS	Transfer of thermal energy	<ul style="list-style-type: none"> • Explain everyday applications of convection and radiation. • Describe the effect of radiations on human population. • 	Discussion Analysis		Essentials of Physics Explaining Physics Tom Duncan
6	WAVE PROPERTIES	Wave motion	<ul style="list-style-type: none"> • Explain what is meant by wave motion. • Describe longitudinal and transverse waves. 	Discussion Demonstration Laboratory	Demonstrating water waves in a ripple tank	Essentials of Physics Explaining Physics Tom Duncan
7	WAVE PROPERTIES	Wave motion	<ul style="list-style-type: none"> • Describe the terms associated with waves. • Demonstrate the use of the velocity formula in solving wave motion problems. 	Demonstration Discussion		Essentials of Physics Explaining Physics Tom Duncan
8	WAVE PROPERTIES	Wave motion	<ul style="list-style-type: none"> • Explain the use of waves in every day life. 	Demonstration Discussion Laboratory	Production of sound using drum, guitar and tuning forks	Essentials of Physics Explaining Physics Tom Duncan
9	WAVE PROPERTIES	Properties of sound	<ul style="list-style-type: none"> • Explain how sound is produced. • Describe the longitudinal nature of sound wave. • Describe rarefactions and compressions. 	Demonstration	Demonstrating production of waves using Helical spring	Essentials of Physics Explaining Physics Tom Duncan
10	WAVE PROPERTIES	Properties of Sound	<ul style="list-style-type: none"> • State the approximate range of audible frequencies. • Demonstrate that sound requires a material medium for transmission 	Demonstration and laboratory	Demonstrating using a bell Jar bell and vacuum	Essentials of Physics Explaining Physics

			sound waves.		pump.	Tom Duncan
11	WAVE PROPERTIES	Properties of Sound	<ul style="list-style-type: none"> Describe a simple method of determining the speed of sound in air. Describe the relative speed of sound in solid, liquid and gas. 	Demonstration Calculations Analysis	Demonstrating using starting pistol and stop watch	Essentials of Physics Explaining Physics Tom Duncan
12	WAVE PROPERTIES	Properties of Sound	<ul style="list-style-type: none"> Describe relation of loudness of sound waves to amplitude and the pitch to the frequency. Describe the factors which influence the quality of sound. 	Discussion Demonstration investigation	Demonstrating using CRO	Essentials of Physics Explaining Physics Tom Duncan
13			END OF	TERM	TEST	

**MINISTRY OF GENERAL EDUCATION
SCHEMES OF WORK FOR SCIENCE 5124**

Subject: SCIENCE-Physics 5124 **Grade:** 11 **Term:** TWO **Year:** 20... **Teacher:** -----

WEEK	TOPIC	SUB - TOPIC	EXPECTED OUTCOMES	METHOD	SUGGESTED EXPERIMENTS	REFERENCE
1	WAVE PROPERTIES	Properties of Sound	<ul style="list-style-type: none"> Define ultra sound. Describe the uses of ultra sound. Describe sound pollution and measures to minimise it. 	Discussion Demonstration		Essentials of Physics Explaining Physics Tom Duncan
2	WAVE PROPERTIES	Light	<ul style="list-style-type: none"> Describe the rectilinear propagation of light. 	Demonstration Discussion		Essentials of Physics Explaining Physics Tom Duncan
3	WAVE PROPERTIES	Light	<ul style="list-style-type: none"> Demonstrate the formation of shadows and eclipse. Describe reflection of light as being regular and diffuse 	Demonstration Discussion	Demonstrating reflection using plane mirrors and a ray box	Essentials of Physics Explaining Physics Tom Duncan
5	WAVE PROPERTIES	Light	<ul style="list-style-type: none"> Demonstrate reflection of light. Demonstrate the verification of the laws of reflection. 	Demonstration Laboratory calculations	Demonstrating reflection using plane mirrors and a ray box	Essentials of Physics Explaining Physics Tom Duncan

6	WAVE PROPERTIES	Light	<ul style="list-style-type: none"> • Demonstrate the formation of images by plane mirror. • Demonstrate the position of an image by construction. 	Observation, Laboratory Demonstration	Formation of images using mirrors	Essentials of Physics Explaining Physics Tom Duncan
7	WAVE PROPERTIES	Light	<ul style="list-style-type: none"> • Describe refraction of light. • Demonstrate the refraction of light. 	Observation Demonstration	Demonstrating refraction using glass blocks and optical pins	Essentials of Physics Explaining Physics Tom Duncan
8	WAVE PROPERTIES	Light	<ul style="list-style-type: none"> • Demonstrate laws of refraction of light. • Demonstrate the passage of light through parallel sided transparent material. 	Demonstration Observation	Demonstrating refraction using glass blocks and optical pins	Essentials of Physics Explaining Physics Tom Duncan
9	WAVE PROPERTIES	Light	<ul style="list-style-type: none"> • Describe refractive index. • Demonstrate the refractive index of a glass block. 	Discussion Demonstration	Demonstrating refraction using glass blocks and a ray box	Essentials of Physics Explaining Physics
10	WAVE PROPERTIES	Light	<ul style="list-style-type: none"> • Demonstrate refractive index (n) in terms of real and apparent depth. • Describe different types of lenses. 	Observation Demonstration	Using a trough of water	Essentials of Physics Explaining Physic
10	WAVE PROPERTIES	Light	<ul style="list-style-type: none"> • Describe the action of a thin converging and diverging lens on a beam of light. 	Observation Demonstration	Using a ray box and lenses	Essentials of Physics Explaining Physics Tom Duncan

11	WAVE PROPERTIES	Light	<ul style="list-style-type: none"> • How to determine the focal point, focal length, optical centre and principal axis. • Demonstrate how to determine the power of a converging lens. 	Demonstration Construction Calculation	Constructing of ray diagrams	Essentials of Physics Explaining Physics Tom Duncan
12	WAVE PROPERTIES	Light	<ul style="list-style-type: none"> • Demonstrate how to obtain the position, size and nature of images formed by converging lenses, thin convex lens. 	Construction Calculation	Constructing of ray diagrams	Essentials of Physics Explaining Physics Tom Duncan
13			END OF	TERM	TEST	

**MINISTRY OF GENERAL EDUCATION
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Subject: SCIENCE-Physics 5124 **Grade:** 11 **Term:** THREE **Year:** 20.... **Teacher:** -----

WEEK	TOPIC	SUB - TOPIC	EXPECTED OUTCOMES	METHOD	SUGGESTED EXPERIMENTS	REFERENCE
1	WAVE PROPERTIES	Light	<ul style="list-style-type: none"> Describe the main components of the electromagnetic spectrum. Describe the properties electromagnetic spectrum. 	Discussion Comparison		Essentials of Physics Explaining Physics Tom Duncan
2	WAVE PROPERTIES	Light	<ul style="list-style-type: none"> Identify the sources of each of the rays in the electromagnetic radiation spectrum. Describe the method of detection of each of the following: Gamma, Xrays, infrared, ultra violet and radio waves. 	Discussion Observation Comparison Identification		Essentials of Physics Explaining Physics Tom Duncan
3	WAVE PROPERTIES	Electromagnetic wave	<ul style="list-style-type: none"> Describe the use of electromagnetic spectrum waves in everyday life. 	Discussion Comparison Problem solving		Essentials of Physics Explaining Physics Tom Duncan
4	ELECTRICITY AND MAGNETISM	Simple phenomena of	<ul style="list-style-type: none"> ✓ State the properties of magnets. ✓ Distinguish between magnetic and nonmagnetic materials. ✓ 	Demonstration Observation Comparison	Use of magnets, non-magnetic materials and	Essentials of Physics Explaining Physics

		magnetism			iron filings	Tom Duncan
5	ELECTRICITY AND MAGNETISM	Simple phenomena of magnetism	<ul style="list-style-type: none"> ✓ Demonstrate induced magnetism. ✓ Demonstrate the methods of magnetisation and demagnetization. ✓ Demonstrate the plotting of magnetic field lines. 	Demonstration Observation Laboratory	Magnetisation and Demagnetisation	Essentials of Physics Explaining Physics Tom Duncan
6	ELECTRICITY AND MAGNETISM	Simple phenomena of magnetism	<ul style="list-style-type: none"> ✓ Distinguish between the magnetic properties of iron and steel. ✓ Explain the use of magnetic screening and magnetic keepers. ✓ Describe the uses of magnets. 	Comparison Discussion Demonstration	Comparing iron and steel	Essentials of Physics Explaining Physics Tom Duncan
7	ELECTRICITY AND MAGNETISM	Electricity	<ul style="list-style-type: none"> ✓ Demonstrate the existence of static charges. 	Demonstration Observation Comparison	Demonstrating existence of static charges using Perspex	Essentials of Physics Explaining Physics Tom Duncan
8	ELECTRICITY AND MAGNETISM	Electricity	<ul style="list-style-type: none"> ✓ Demonstrate detection, interaction and nature of electric charges. ✓ Describe the terms associated with electricity. 	Demonstration <input type="checkbox"/> Observation <input type="checkbox"/> Comparison	Demonstrating charges using electroscope-Gold leaf	Essentials of Physics Explaining Physics
9	ELECTRICITY AND MAGNETISM	Electricity	<ul style="list-style-type: none"> ✓ Identify the units of electric charge and electric current. ✓ Demonstrate the measure of electric current. 	Calculation Comparison Laboratory	Uses of circuit boards, voltmeters and ammeters	Essentials of Physics Explaining Physics
10	ELECTRICITY AND		<ul style="list-style-type: none"> ✓ Describe the concept that the e.m.f. is measured by the energy 	Comparison	Uses of circuit boards,	Essentials of Physics

	MAGNETISM	Electricity	dissipated by a current in driving charge round the circuit.	Calculations	voltmeters and ammeters	Explaining Physics Tom Duncan
11	ELECTRICITY AND MAGNETISM	Electricity	<ul style="list-style-type: none"> ✓ Describe the volt. ✓ Differentiate between potential difference (p.d) and electromotive force (emf). 	Discussion Calculation Comparison		Essentials of Physics Explaining Physics Tom Duncan
12	ELECTRICITY AND MAGNETISM	Electricity	<ul style="list-style-type: none"> ✓ Demonstrate the measuring of potential difference and e.m.f. Explain the meaning of the term resistance. 	Demonstration <input type="checkbox"/> Observation <input type="checkbox"/> Comparison	Uses of circuit boards, voltmeters and ammeters	Essentials of Physics Explaining Physics Tom Duncan
13			END OF	YEAR	TEST	

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WORK FOR SCIENCE 5124**

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WEEK	TOPIC	SUB - TOPIC	EXPECTED OUTCOMES	METHOD	SUGGESTED EXPERIMENTS	REFERENCE
1	ELECTRICITY AND MAGNETISM	Electricity	<ul style="list-style-type: none"> ✓ Demonstrate relationship between current and potential difference in metal conductors ✓ State that resistance = p.d. / current and use the equation $R = V/I$ 	Demonstration Analysis Construction Comparison	Uses of circuit boards, voltmeters and ammeters	Essentials of Physics Explaining Physics Tom Duncan
2	ELECTRICITY AND MAGNETISM	Electric circuits	<ul style="list-style-type: none"> ✓ Demonstrate how to determine resistance in a simple circuit. ✓ Demonstrate how to construct circuit diagrams.. 	Demonstration Construction	Uses of circuit boards, voltmeters and ammeters	Essentials of Physics Explaining Physics Tom Duncan
3	ELECTRICITY AND MAGNETISM	Electric circuits	<ul style="list-style-type: none"> ✓ Describe the amount of current passing through at every point in a series and parallel circuit. ✓ Explain the fact that the sum of the p.d.'s in a series circuit is equal to the p.d. across the whole circuit. 	Demonstration Analysis Construction Calculation Comparison	Uses of circuit boards, voltmeters and ammeters	Essentials of Physics Explaining Physics Tom Duncan

4	ELECTRICITY AND MAGNETISM	Electric circuits	<ul style="list-style-type: none"> ✓ Demonstrate how to calculate the combined resistance of two or more resistors in series and in parallel. ✓ Describe the uses of electricity in heating and lighting 	Demonstration Calculation Analysis Construction Comparison		Essentials of Physics Explaining Physics Tom Duncan
5	ELECTRICITY AND MAGNETISM	Electric circuits	<ul style="list-style-type: none"> ✓ Demonstrate how to calculate electrical energy. ✓ Demonstrate how to calculate the cost of using electrical Energy. ✓ Describe the hazards of using electricity. 	Demonstration Calculations		Essentials of Physics Explaining Physics Tom Duncan
6	ELECTRICITY AND MAGNETISM	Electric circuits	<ul style="list-style-type: none"> ✓ Describe the use of switches, fuses, earthing and the three pin-plugs. ✓ Explain the need for earthing metal cases and for double insulation. ✓ Demonstrate wiring of a mains plug live, neutral and earth. 	Comparison Discussion Identification Demonstration Observation		Essentials of Physics Explaining Physics Tom Duncan
7	ELECTRICITY AND MAGNETISM	Electric circuits	<ul style="list-style-type: none"> ✓ Demonstrate that a changing magnetic field can induce an e.m.f. in a circuit. ✓ Describe the factors affecting the magnitude of the induced e.m.f. 	Demonstration Observation Analysis Construction Comparison	Use of solenoids of different number of turns	Essentials of Physics Explaining Physics Tom Duncan
8	ELECTRICITY AND MAGNETISM	Electric circuits	<ul style="list-style-type: none"> ✓ Describe a simple form of generator ✓ Demonstrate a graph of voltage output against time for a simple a.c. generator. 	Construction Discussion Demonstration		Essentials of Physics Explaining Physics Tom Duncan

9	ELECTRICITY AND MAGNETISM	Electric circuits	<ul style="list-style-type: none"> ✓ Describe potential difference. ✓ Demonstrate that the direction of the induced e.m.f. opposes the change producing it. ✓ Describe a simple form of generator. 	Discussion Demonstration		Essentials of Physics Explaining Physics Tom Duncan
10	ELECTRICITY AND MAGNETISM	Electric circuits	<ul style="list-style-type: none"> ✓ Demonstrate a graph of voltage output against time for a simple a.c. generator. ✓ Describe the structure and principle of operation of a basic iron-cored transformer. 	Discussion Construction Demonstration Observation Calculations		Essentials of Physics Explaining Physics Tom Duncan
11	ELECTRICITY AND MAGNETISM	Electric circuits	<ul style="list-style-type: none"> ✓ Demonstrate the of numerical problems involving ideal transformers ✓ Calculate the efficiency of a transformer given data. 	Demonstration Calculations Problem solving		Essentials of Physics Explaining Physics Tom Duncan
12	ELECTRICITY AND MAGNETISM	Electric circuits	<ul style="list-style-type: none"> ✓ Describe the role of transformers in transmission of electricity. ✓ Explain advantages of high alternating p.d. power transmission. 	Field trip Discussion Observation	Power generation	Essentials of Physics Explaining Physics Tom Duncan
13			END OF	TERM	TEST	

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WEEK	TOPIC	SUB - TOPIC	EXPECTED OUTCOMES	METHOD	SUGGESTED EXPERIMENTS	REFERENCE
1	ELECTRICITY AND MAGNETISM	Electric circuits	<ul style="list-style-type: none"> ✓ Describe the implications of underground power transmission compared to overhead lines. ✓ Describe the effects of improper management of transformers. 	Field trip Discussion Observation		Essentials of Physics Explaining Physics Tom Duncan
2	ELECTRICITY AND MAGNETISM	Introductory Electronics	<ul style="list-style-type: none"> ✓ Explain that electrons are emitted from hot metals. ✓ Describe properties of electrons. 	Discussion Demonstration		Essentials of Physics Explaining Physics Tom Duncan
3	ELECTRICITY AND MAGNETISM	Introductory Electronics Introductory Electronics	<ul style="list-style-type: none"> ✓ Distinguish between the flow of electrons and conventional current. ✓ Describe the basic structure and action of cathode ray oscilloscope (CRO). ✓ Describe the use of CRO 	Discussion Demonstration Observation	Use of CRO	Essentials of Physics Explaining Physics Tom Duncan
4	ATOMIC PHYSICS	Nuclear atom	<ul style="list-style-type: none"> ✓ Describe the structure of the atom. ✓ Describe the composition of 	Discussion		Essentials of Physics

			<p>the nucleus in terms of protons and neutrons.</p> <ul style="list-style-type: none"> ✓ Explain mass (Nucleon) number, A, and atomic (proton), number, Z. 	Problem solving		<p>Explaining Physics</p> <p>Tom Duncan</p>
5	ATOMIC PHYSICS	Radioactivity	<ul style="list-style-type: none"> ✓ Describe the nature of radioactivity. ✓ Describe the characteristics of the three kinds of radioactive radiations: alpha, beta and gamma. 	<p>Calculation</p> <p>Discussion</p>		<p>Essentials of Physics</p> <p>Explaining Physics</p> <p>Tom Duncan</p>
6	ATOMIC PHYSICS	Radioactivity	<ul style="list-style-type: none"> ✓ Describe methods of detecting radioactive emissions. ✓ Explain radioactive decay and nuclear reaction. 	<p>Calculation</p> <p>Discussion</p>		<p>Essentials of Physics</p> <p>Explaining Physics</p> <p>Tom Duncan</p>
7	ATOMIC PHYSICS	Radioactivity	<ul style="list-style-type: none"> ✓ Explain the origin and effects of background radiations. ✓ Demonstrate how to determine half life of a radioactive material 	<p>Discussion</p> <p>Demonstration</p> <p>Calculation</p>		<p>Essentials of Physics</p> <p>Explaining Physics</p> <p>Tom Duncan</p>
8	ATOMIC PHYSICS	Radioactivity	<ul style="list-style-type: none"> ✓ Explain the uses of radioactive substances. ✓ Describe the safety precautions necessary when handling, using or storing radioactive substances ✓ 	<p>Discussion</p> <p>Demonstration</p>		<p>Essentials of Physics</p> <p>Explaining Physics</p> <p>Tom Duncan</p>
9	ATOMIC PHYSICS	Radioactivity	<ul style="list-style-type: none"> ✓ Explain the effects of radioactive substances on the environment and health. ✓ Investigate management 	<p>Discussion</p> <p>Demonstration</p>		<p>Essentials of Physics</p> <p>Explaining Physics</p>

			practices which safeguard the environment from radioactive contamination	Investigation		Tom Duncan
10			MOCK EXAM			
11			MOCK EXAM			
12			MOCK EXAM			
13			MOCK EXAM			