

# PHYSICS, F3, T1

REFERENCES: Secondary Physics KLB,

W K	LS N	TOPIC	SUB-TOPIC	OBJECTIVES;  By the end of the lesson, the learner should be able to:	L/ACTIVITIES	L/T AIDS	REFERENCE	REMARKS
<b>1</b>	<b>1-5</b>	<b>REPORTING AND REVISION OF LAST TERM'S EXAMS</b>						
2	1-3	Linear Motion	Introduction of linear motion	Define distance, displacement, speed, velocity and acceleration	Defining distance, speed, displacement, velocity and acceleration	Charts on motion Trolleys Inclined planes	Secondary physics KLB students book 2 page 1-7	
	4-5	Linear Motion	Determining velocity	Describe experiments to determine velocity	Describing experiments on velocity	Trolleys Stop watches Graph paper Ticker timer	Secondary physics KLB students book 3 page 4-6	
3	1-2	Linear Motion	Motion time graphs	Plot and explain motion time graphs	Plotting and interpreting motion-time graphs	Appropriate charts on velocity time and distance graphs Graph paper Data showing different distance, velocity and time	Secondary physics KLB students book 3 page 4-6	
	3-4	Linear Motion	Measuring speed, velocity and acceleration	Describe experiments to measure speed, velocity and acceleration	Describing experiments to measure speed, velocity and acceleration Solving problems	Trolleys Tapes Ticker timer Graphs	Secondary physics KLB students book 3 page 18-26	
	5	Linear Motion	Acceleration	Describe acceleration	Describing acceleration Problem solving	Charts on acceleration Graphs Data on velocity and time	Secondary physics KLB students book 3 page 7-8	
4	1-2	Linear Motion	Measuring speed, velocity and acceleration	Describe experiments to determine and measure speed, velocity and acceleration	Describing experiments to determine and measure speed, velocity & acceleration	Graphs Ticker timer Tapes Graphs	Secondary physics KLB students book 3 page 18-25	
	3-4	Linear Motion	Equations of motion	Derive and apply the equations of uniform acceleration	Stating the equations of motion Deriving the equations of motion	Graphs Worked examples on motion	Secondary physics KLB students book 3 page 26-29	

					Applying the equations of motion			
	5	Linear Motion	Revision	Solve problems involving uniform acceleration	Questions and answers Exercises	Test paper Marking scheme	Secondary physics KLB students book 3 page 37-39	
5	1-5	Linear Motion	Acceleration due to gravity	Determine acceleration due to gravity by free-fall and simple pendulum	Determining acceleration by free-fall and pendulum method	Pendulum bob String Stop watches Ticker-timer	Secondary physics KLB students book 3 page 29-36	
6	1-2	Refraction Of Light	The meaning of refraction	Describe simple experiments to illustrate refraction of light	Experiments demonstrating refraction of light	Beakers Water Stick or glass rod Basins Coins Glass blocks Pin	Secondary physics KLB students book 3 page 41-46	
	3-5	Refraction Of Light	Laws of refraction	State the laws of refraction and define refractive index	Discovering Snell's law of refraction through experiments Defining refractive index Stating the laws of refraction	Glass blocks Pins Soft board Plain paper Geometric set	Secondary physics KLB students book 3 page 47-61	
7	1-2	Refraction Of Light	Refractive index	Determine the refractive index of a given substance	Experiments to determine the refractive index of rates and glass by real and apparent depth method	Water Pins Plain papers Coins Beakers	Secondary physics KLB students book 3 page 61-68	
	3-5	Refraction Of Light	Total material reflection and its effect Critical angle	Describe an experiment to explain the total internal reflection and its effects Define critical angle	Experiments to explain the total internal reflection and its effects Defining critical angle Observations and discussions on critical angle Total internal reflection	Glass blocks Soft boards Pins Geometrical set Source of light	Secondary physics KLB students book 3 page 68-76	
8	<b>MID –TERM BREAK</b>							
9	1-3	Refraction Of Light	Application of a total internal reflection in a	Explain the working of a prisms and optical fibres among other applications	Making a periscope Discussion on working of an optical fibre	Charts on total internal reflection and applications	Secondary physics KLB students book 3 page 76-79	

			prism periscope, optical fibre					
	4-5	Refraction Of Light	Dispersion of white light and recombination of colors of the spectrum	Describe an experiment to illustrate the dispersion of light	Experiment on dispersion of light using glass prisms	Triangular glass prisms Source of light Screen	Secondary physics KLB students book 3 page 79-89	
11	1-5	Refraction Of Light	Problems of refractive index and critical angle	Solve problems involving the refractive index and critical angle	Discussions and problem solving in critical angle using the formulae $\sin C = \frac{i}{n}$ and $n = \frac{\sin i}{\sin r}$	Review questions Past exams Examples in the topic	Secondary physics KLB students book 3 page 82-86	
12	1-5	Newton's Law's Of Motion	Newton's Laws of motion	State the Newton's laws of motion State and explain the significance of a Newton's laws of motion Describe simple experiments to illustrate inertia	Discussion on Newton's laws Experiments to illustrate Newton's laws of motion	Inclined plane Trolley Marbles Spring balances	Secondary physics KLB students book 3 page 87-102	
13	1-3	Newton's Law Of Motion	Conservation of linear momentum Elastic collision Inelastic collision Recoil velocity	State the law of conservation of momentum Define elastic and inelastic collisions Determine recoil velocity	Discussions of the laws of conservation of linear momentum Determining recoil velocity	Marbles Trolleys Meter rules Stop watches Plasticine	Secondary physics KLB students book 3 page 103-108	
	4-5	Newton's Law Of Motion	Friction	Define friction State and explain types of frictions Describe and experiment to illustrate friction and state the applications of friction State laws of friction	Defining friction Stating and explaining types of frictions Describing an experiment to illustrate friction Stating the applications of the frictions Stating laws of friction	Block of wood Spring balance Pulley Flat surface	Secondary physics KLB students book 3 page 109-115	
14		<b>END OF TERM EXAMS PREPARATION OF REPORTS AND CLOSING</b>						

## PHYSICS, F3, T2

REFERENCES: Secondary Physics KLB,

W K	LS N	TOPIC	SUB-TOPIC	OBJECTIVES;  By the end of the lesson, the learner should be able to	L/ACTIVITIES	L/T AIDS	REFERENCE	REMARKS
<b>1</b>	<b>1-5</b>	<b>REPORTING AND REVISION OF LAST TERM'S EXAMS</b>						
2	1-3	Energy, Work, Power And Machines	Energy	Define energy Describe various forms of energy	Defining energy Stating the forms of energy Identifying and describing energy transformation	Chart on the forms of energy and transformation	Secondary physics KLB students book 3 page 121,122-125	
	4-5	Energy, Work, Power And Machines	Sources of energy Renewable Non-renewable	Describe renewable and non-renewable sources of energy	Discussion on the sources of energy Descriptions of renewable and non-renewable sources of energy	Chart on the sources of energy	Secondary physics KLB students book 3 page 121,122-125	
3	1-3	Energy, Work, Power And Machines	The law of conservation of energy	State the laws of conservation of energy Explain the applications of the laws of conservations of energy	Discussion on the law of conservation of energy	Chart on the laws of conservation of energy	Secondary physics KLB students book 3 page 132-134	
	4-5	Energy, Work, Power And Machines	Work	Define work Explain the concept of work and energy	Experiment on work done by moving objects through a distance Problem solving	Masses Wooden block Spring balance	Secondary physics KLB students book 3 page 125-132	
	1-2	Energy, Work, Power And Machines	Kinetic energy Potential energy power	define power explain the meaning of power potential and kinetic energies distinguish between kinetic energy and potential energy	Discussion and the meanings of kinetic energy and potential energy Defining power Distinguishing between kinetic energy and potential energy	Object that can be lifted Spring balance	Secondary physics KLB students book 3 page 126-132,134-136	
	3-4	Energy, Work, Power And Machines	Simple machines	State the mechanical advantage State the velocity ratio (V.R) of different machines	Discussions on the M.A and V.R of different machines Experiments in illustrate M.A and V.R of machines	Levers Pulleys Inclined planes Strings	Secondary physics KLB students book 3 page 126-132,134-136	

					Problem solving	Masses		
	5	Energy, Work, Power And Machines	Simple machines	State and describe the efficiency of various machines	Discussion on efficiency of different machines Experiments to illustrate efficiency of various machines Problem solving	Levers Pulleys Inclined planes Strings Masses	Secondary physics KLB students book 3 page 137-159	
4	1-5	Energy, Work, Power And Machines	Revision	Solve problems involving work, energy, power and machines	Problems solving Questions and answers Discussion on the problems involving work, power, energy and machines	Quizzes Exercises Project work	Secondary physics KLB students book 3 page 159-161	
5	1-2	Current Electricity Ii	Electric current Scale reading	Define potential Differentiate and state its SI units Measure potential difference and current in a circuit	Defining potential difference Measuring P.d Discussion on p.d and current Experiments to illustrate p.d and current	Ammeter Voltmeter Battery Connecting wires	Secondary physics KLB students book 3 page 161-164	
	3-4	Current Electricity	Ammeters and voltmeters	Measure potential difference and current in a circuit using the ammeters	Scale reading Converting units of measurements Discussing simple electric circuits	Ammeters Voltmeters Battery Wires Rheostat	Secondary physics KLB students book 3 page 164-168	
	5	Current Electricity Ii	Ohm's Law	Derive and verify ohm's law State ohm's law	Experiments verifying ohm's law Stating ohm's law	Ammeter Voltmeter Rheostat Wires Dry cells	Secondary physics KLB students book 3 page 168-171	
6	1-2	Current Electricity	Voltage-current relationships	Define resistance and state its SI unit Determine experientially the voltage current Relationship for resistance in series and parallel	Defining resistance Experiments to determine the relationship between voltage-current	Resistance wire Rheostat Battery Voltmeter Ammeter Connecting wires	Secondary physics KLB students book 3 page 171-177	
	3-5	Current Electricity Ii	Measurement of resistance	Describe experiment to measure resistance using – voltmeter method The Wheatstone bridge method The meter bridge	Experiments to measure resistance of materials	Ammeters Voltmeters Rheostats Connecting wires Resistance wire Dry cells Switches	Secondary physics KLB students book 3 page 177-180	

						Meter bridge Wheatstone bridge Resisters with known resistance		
7	1-3	Current Electricity	Effective resistance for registers in series and parallel	Derive effective resistance	Discussions on deriving the effective resistance Deriving effective resistance of registers in parallel and series	Cells Resistors Ammeters Voltmeters wires	Secondary physics KLB students book 3 page 180-189	
	4-5	Current Electricity	E.m.f and internal resistance ( $E=V+Ir$ )	Determine e.m.f Explain the internal resistance of a cell	Explanation on internal resistance Demonstration on e.m.f and internal resistance Discussion on e.m.f	Voltmeters Ammeter Cells Connecting wires	Secondary physics KLB students book 3 page 190-195	
8	<b>MID – TERM BREAK</b>							
9	1-5	Current Electricity	Revision	Solve numerical problems involving the ohm's law Resistors in series and parallel	Problem solving Questions and answers asked Discussions on the questions asked Experiments to solve questions of sound	Exercise in the students book 3 Marking scheme Past paper containing questions on current electricity	Secondary physics KLB students book 3 page 195-197	
10	1-2	Waves II	Properties of waves	State and explain the properties of waves experimentally Sketch wave fronts to illustrate the reflections	Stating and explaining the properties of waves Sketching wave fronts illustrate reflection	Rope/wire Various reflections	Secondary physics KLB students book 3 page 198-203	
	3-5	Waves II	Diffraction, refraction and interference of waves	Sketch various wave fonts to illustrate their diffraction, refraction and interference	Sketching various wave fonts Experiments to illustrate refraction, diffraction and interference	Water Basin Ripple Tank	Secondary physics KLB students book 3 page 203-212	
11	1-2	Waves II	Constructive and distractive waves	: Explain constructive and destructive interference	Discussion on constructive and destructive interference Experiments constructive and destructive interference	Ripple tank Rope/wire	Secondary physics KLB students book 3 page 203-212	
	3-5	Waves II	Stationary waves	Describe experiments to illustrate stationary waves	Demonstration and explaining of stationery waves	Wires under tension	Secondary physics KLB students book 3 page 212-215	

12	1-5	Waves II	Vibrating air columns	By the end of the lesson, the learner should be able to: Describe and explain closed pipe and open pipe	Describing vibrations in close and open pipes	Open and closed pipes	Secondary physics KLB students book 3 page 218-220	
<b>12 13</b>	<b>TOPICAL REVISION END OF TERM EXAMS</b>							

## PHYSICS, F3, T3

**REFERENCES:** Secondary Physics KLB,

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				By the end of the lesson, the learner should be able to					
<b>1</b>	<b>1-5</b>	<b>REPORTING AND REVISION OF LAST TERM'S EXAMS</b>							
2	1-2	Electrostatics Ii	Electric field patterns	Sketch electric field patterns around charged bodies	Discussion on electric field patterns Observing and plotting field patterns	Charts on magnetic fields	Secondary physics KLB students book 3 page 222-225		
	3-5	Electrostatics Ii	Charge distribution on conductors	Describe charge distribution on conductors: Spherical and pear shaped conductors	Discussions on charge distribution on conductors Experiment is demonstrated/illustrate charge distribution on conductors	Chart showing charge distribution on different conductors Gold leaf electroscope	Secondary physics KLB students book 3 page 225-228		
3	1-2	Electrostatics Ii	Lighting arrestor	Explain how lightning arrestor works	Discussions on the lighting arrestor Explanations on the lighting arrestor	Improvised lighting arrestor Photographs of lightning arrestor	Secondary physics KLB students book 3 page 229-230		
	3-5	Electrostatics Ii	Capacitance	Define capacitance and state its SI units Describe the charging and discharging of a capacitor State and explain the factors that affect the capacitance of a parallel plate capacitor	Experiments on charging and discharging capacitor Discussion on factors affecting capacitance Defining capacitance	Complete circuits capacitors	Secondary physics KLB students book 3 page 230-237		
4	1-2	Electrostatics Ii	Combinations of capacitors	Derive the effective capacitance of capacitors in series and parallel	Deriving effective capacitance of capacitors in series and parallel Solving problems Discussion in the effective capacitance	Capacitors in series and parallel connections Charts showing complete circuits	Secondary physics KLB students book 3 page 237-241		



	3	Electrostatics Ii	Energy stored in a charged capacitor	Describe the energy stored in a charged capacitor	Describing the energy stored in a charged capacitor	Capacitors Dry cells Charts on capacitors used	Secondary physics KLB students book 3 page 244	
	4	Electrostatics	Application of capacitors	State and explain the applications of capacitors	Discussions on applications of capacitors Stating and explaining applications of capacitors	Charts on the use of capacitors capacitors	Secondary physics KLB students book 3 page 244	
	5	Electrostatics Ii	Revision	solve numerical problems involving capacitors using the formulae  $Q = CV$ $C_1 = C_1 + C_1$ $1/C_1 = 1/C_1 + 1/C_2$	Problem solving	Questions in the students Book 3	Secondary physics KLB students book 3 page 244-245	
5	1-3	The Heating Effect Of Electric Current	Electric current heating effect	Perform and describe experiments to illustrate the heating effect of electric current	Experiments to illustrate heating effect of electric current Discussions on heating effect of electric current	Complete circuit Water in a beaker Metallic rod Thermometer	Secondary physics KLB students book 3 page 246-247	
	4-5	The Heating Effect Of An Electric Current	Factors affecting electric current	State and explain the factors affecting electrical energy	Discussions on the factors affecting electrical energy Experiments on electrical energy Stating and explaining factors affecting the electrical energy	Complete circuit Wires Rheostat Ammeter battery	Secondary physics KLB students book 3 page 247-255	
6	1-2	The Heating Effect Of Electric Current	Heating devices fuses	describe the working of electric iron, bulb filament and an electric water	discussion on electric devices observations and experiments on heating devices	electric irons electric bulb electric kettle electric heater fuses	Secondary physics KLB students book 3 page 255-258	
	3-5	The Heating Effect Of Electric Current	Revision	Solve problems involving electrical energy and electric power	Problem solving Exercises assignment Discussion on problems involving electrical energy and electrical power	Set questions Marking scheme	Secondary physics KLB students book 3 page 246-258-259	
7	1-2	Quantity Of Heat	Heat capacity Specific heat capacity Units of heat	Define heat capacity and specific heat capacity and derive their SI units	Experiments on heat capacity and specific heat capacity Discussion on heat capacity and specific heat capacity	Source of heat Water Lagged can Thermometer	Secondary physics KLB students book 3 page 246-260-271	

			capacity		Defining heat capacity and heat specific heat capacity			
	3-4	Quantity Of Heat	Change of state	define and explain latent heat of fusion, specific latent heat of fusion Define and explain latent heat of vaporization, specific latent heat of vaporization State the SI units of latent heat of fusion and latent heat of vaporization	Experiments on latent heat of fusion and latent heat of vaporization Discussion on latent heat of fusion and latent heat of vaporization	File Water Thermometer Weighing balance Source of heat	Secondary physics KLB students book 3 page 246-271-281	
	5	Quantity Of Heat	Boiling and melting	Distinguish between boiling and melting State the factors affecting melting points and boiling points of a substance Describe the working of a pressure cooker and a refrigerator	Distinguishing between boiling and melting points Stating factors affecting boiling and melting points Experiments to illustrate boiling and melting point	Pressure cooker Refrigerator Charts on melting and boiling points Ice Heat Sufuria water	Secondary physics KLB students book 3 page 246-282-288	
8	1-5	Quantity Of Heat	Revision	Solve problems involving quantity of heat	Problem solving	Quizzes Past exams Exercises Calculators Mathematical tables	Secondary physics KLB students book 3 page 288-289	
9	1-2	The Gas Laws	Pressure law	State and verify the gas laws for an ideal gas experimentally	Experiments to verify pressure law Demonstrations on pressure law Discussion on pressure law	Water Thermometer Measuring cylinder Syringe Narrow glass tube	Secondary physics KLB students book 3 page 299-302	
	3-4	The Gas Laws	Charles's law	State and verify Charles's law experimentally	Experiments to verify Charles's law Discussion on Charles's law	Water Thermometer Measuring cylinder Syringe Narrow glass tube	Secondary physics KLB students book 3 page 295-298	
	5	The Gas Laws	Boyle's law	State and verify Boyle's law experimentally	Experiments verifying and explain Boyle's law Discussion on Boyle's law	Water Thermometer Syringe Measuring cylinder Narrow glass tube	Secondary physics KLB students book 3 page 290-294	
10	1-2	The Gas Law's	The kinetic theory	Explain law absolute zero	Discussions on the absolute	Graph paper	Secondary physics KLB	

			of gases	temperature may be obtained from pressure and temp. graphs	zero temperature from pressure using kinetic theory of gases	Clinical thermometer Working out sums	students book 3 page 303	
	3-4	The Gas Laws	The kinetic theory of gases	Explain the gas laws using the kinetic theory of gases	Discussion on gas laws using kinetic theory of gases Working out sums	Graph papers Clinical thermometers	Secondary physics KLB students book 3 page 303	
	5	The Gas Laws	The kinetic theory of gases	Convert Celsius scales to Kelvin scale of temperature and state basic assumptions of kinetic theory of gases	Discussion on basic assumptions of kinetic theory of gases Conversion of Celsius to Kelvin scales	Graph paper Clinical thermometer	Secondary physics KLB students book 3 page 107	
11	1-5	The Gas Laws	Revision	Solve numerical problems involving gas laws	Solving problems involving gas laws Discussion on the problems involving gas laws	Quizzes Past examination Exercise in the Book 3	Secondary physics KLB students book 3 page 303-305	
<b>12</b>		<b>END OF YEAR EXAMS</b>						