

PHYSICS, F4, 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
1	1-5	REPORTING AND REVISION OF LAST TERM'S EXAMS						
2	1	Main Electricity	Source of main electricity	State sources of main electricity Explain the sources of main electricity	Discussions Educational trips	Pictures and charts showing sources of main electricity	Secondary physics KLB students book 4 page 117 Golden tips Physics pages 160	
	2-3	Main Electricity	Power transmission	Describe the transmission of electric power from the generating station Explain the domestic wiring system	Discussions Questions and answers	Photos of power transmission Lines and power substations	Secondary physics KLB students book 4 page 117-122 Golden tips Physics pages 160-163	
	4-5	Main Electricity	Power consumption	Define kilowatt hour Determine the electrical energy consumption and cost	Discussions calculations	Charts on power consumptions	Secondary physics KLB students book 4 page 125-128 Golden tips Physics pages 164	
3	1-2	Mains Electricity	Domestic wiring	Explain the domestic wiring system	Discussions Demonstrations on	Fuses Wires	Secondary physics KLB students book 4 page 125-121-122	

				Describe the domestic wiring system	building wiring Drawing circuits	Switches Electrical appliances	Golden tips Physics pages 162	
	3	Mains Electricity	Domestic electrical appliances	: Explain the function of fuse in domestic wiring Explain the function of a two-way switch in domestic wiring	Discussions demonstration	domestic electrical appliances	Secondary physics KLB students book 4 page 125-122-124 Golden tips Physics pages 162	
	4-5	Mains Electricity	Revision	solve problems involving mains electricity	Problem solving Discussions Questions and answers	Questions from past papers Quizzes Exercises	Secondary physics KLB students book 4 page 125-128-130	

4	1	Lenses	Conveying and diverging lenses	Describe converging lenses Describe diverging lenses	Using light beams to distinguish between diverging and converging lenses	Diverging lenses Converging lenses Source of light beam screen	Secondary physics KLB students book 4 page 1	
	2-3	Lenses	Parts of fair lenses	Describe the principal focus using ray diagram Describe the optical center using ray diagram Describe the focal length of thin lenses using ray diagram	Description of principal focus, optical centre and focal length of a thin lens	Chart showing the parts of thin lens Graph paper Diverging lens Converging lens	Secondary physics KLB students book 4 page 6-7	
	4-5	Lenses	Focal length	Determine experimentally the focal length of a converging lens Determine the focal length of a converging lens using estimation method	Experiment to determine the focal length of a fair lens	Converging lenses Screen Pins candle	Secondary physics KLB students book 4 page 17-20	
5	1	Lenses	Images in fair lenses	: Construct the principal rays for converging lens Construct the principal	Constructing the principal rays for diverging lenses Constructing the principal rays for converging lenses	Converging lenses Diverging lenses Graph papers Ruler	Secondary physics KLB students book 4 page 7-12	

				rays for diverging lenses				
	2-3	Lenses	Images in converging lenses	Locate images formed by converging lenses using ray construction method Describe the images formed in converging lenses	Describing the characteristics of images formed in converging lenses	Graph paper Geometrical set Converging lenses screen	Secondary physics KLB students book 4 page 7-10	
	4-5	Lenses	Images in diverging lenses	Locate images formed by diverging lenses using ray construction method Describe the images formed in diverging lenses	Describe the characteristics of the images formed in diverging lenses	Graph paper Geometrical set Diverging lenses Screen	Secondary physics KLB students book 4 page 11	
6	1	Lenses	The microscope	Explain the working of a simple microscope Explain the working of a compound microscope	Drawing and labeling the parts of a microscope Describing the work of a microscope	Simple microscope Compound microscope Magnifying lens		
	2-3	Lenses	The telescope	Describe the structure of a telescope Describe the working of a telescope	Drawing and labeling the parts of a telescope Describing how a telescope works	Telescope Lenses Manilla paper		
	4-5	Lenses	The camera	Describe the parts of a camera Explain the working of a camera Explain the use of lenses in a camera	Describing the parts of a camera Explaining the use of lenses in a camera	Camera Charts showing the parts of a camera	Secondary physics KLB students book 4 page 33	
7	1	Lenses	Image formation in the human eye	Describe the parts of a human eye Explain the function of each part of the human eye	Describing the parts of the human eye Explaining the function of each part of the human eye	Chart showing the parts of human eye Model of the human eye	Secondary physics KLB students book 4 page 29-31	
	2-3	Lenses	Working of the human eye	Explain the image formation in the human eye	Explaining the image formation in the eye	Chart showing the image formation in the human eye	Secondary physics KLB students book 4 page 29-31	
	4-5	Lenses	Defects of vision	Describe the defects of the human eye	Describing the defects of the human eye	Charts showing eye defects and how they are	Secondary physics KLB students book 4 page 31-32	

				Explain the corrections of human eye defects	Explaining the eye defects are corrected	corrected		
8		MID –TERM BREAK						
9	1	Uniform Circular Motion	Revision	solve problems involving circular motion	Problem solving Questions and answers	Questions from past papers Exercises	Secondary physics KLB students book 4 page 55-45	
	2-3	Floating And Sinking	Archimedes' principle	State Archimedes' principle Verify Archimedes principle Use of Archimedes principle to solve problems	Experiments Discussions Calculations based on Archimedes Principle	Water Measuring cylinder Weighing balance Overflow can Objects denser than water	Secondary physics KLB students book 4 page 58-60	
	4-5	Floating And Sinking	The laws of floatation Relative density	State the law of floatation Define relative density	Discussions Measuring	Density bottle Overflow can Spring balance measuring cylinder	Secondary physics KLB students book 4 page 64-70	
10	1-3	Floating And Sinking	Applications of floating and sinking	Describe the applications of Archimedes Principle Describe the applications of relative density (hydrometer)	Discussions experiments	charts depicting the uses of Archimedes principle and the law of floatation A hydrometer	Secondary physics KLB students book 4 page 75-77	
	4-5	Floating And Sinking	Revision	Solve problems involving Archimedes principle Solve problems involving relative density	Questions and answers Discussions Exercises assignments	test papers questions from exercises	Secondary physics KLB students book 4 page 77-78	
11	1	Electromagnetic Spectrum	The electromagnetic spectrum	: Describe a complete electromagnetic spectrum	Discussions on the charge in wave length of electromagnetic radiations explanations	charts showing the components of the electromagnetic spectrum	Secondary physics KLB students book 4 page 79	
	2-3	Electromagnetic Spectrum	The properties of electromagnetic waves	State the properties of electromagnetic waves	Explaining the properties of each component of the electromagnetic spectrum	Charts showing the properties of electromagnetic waves	Secondary physics KLB students book 4 page 80-81	

	4-5	Electromagnetic Spectrum	Detection of electromagnetic radiations	Describe the methods of detective electromagnetic radiations	Demonstrating and explaining how to detect electromagnetic radiations	Radiation detectors Charts showing detectors of electromagnetic radiation	Secondary physics KLB students book 4 page 81	
12	1-2	Electromagnetic Spectrum	Applications of electromagnetic radiations	Describe the applications of electromagnetic radiations including greenhouse effect	Discussions of application of electromagnetic radiations	Pictures and chart on application of electromagnetic radiations	Secondary physics KLB students book 4 page 82	
	3-4	Electromagnetic Spectrum	Problems on $C=FX$	Solve numerical problems involving $C=fx$	Problem solving Discussions Explanations Questions and answers	Questions and answers exercises	Secondary physics KLB students book 4 page 80	
	5	Electromagnetic Spectrum	Revision	Solve problems involving electromagnetic spectrum	Problem solving Questions and answers	Exercises in students book 4 Past papers questions	Secondary physics KLB students book 4 page 81-85	
13	1-2	Electromagnetic Induction	Induced e.m.f	: Perform and describe simple experiments to illustrate electromagnetic induction State the factors affecting the magnitude of an induced e.m.f State the factors affecting the direction induced by e.m.f	Experiments discussions	magnets complete electric circuit	Secondary physics KLB students book 4 page 86-91	
	3-4	Electromagnetic Induction	Faraday's law and Lenz's law	State Faraday's law State Lenz's law Illustrate Faraday law and Lenz's law	Discussions Experiments to illustrate Faraday's law and Lenz's law	Magnets Solenoid Source of current	Secondary physics KLB students book 4 page 91-93	
	5	Electromagnetic Induction	Fleming's right hand rule	State Fleming's right hand rule Apply Fleming's right hand rule	Explanation of the motor rule Discussion of the application of	Magnets Wire Source of current	Secondary physics KLB students book 4 page 93-97	

				electromagnetic induction				
14		END YEAR EXAMINATIONS						

PHYSICS, F4, 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
1	1-5	REPORTING AND REVISION OF LAST TERM'S EXAMS						
2	1-2	Electromagnetic Induction	Eddy currents	Explain eddy currents Demonstrate the effects of eddy currents	Discussions Experiments Explanations	Pendulum Copper wire Magnets		
	3	Electromagnetic Induction	Eddy currents	Explain eddy currents Demonstrate the effects of eddy currents	Discussions Experiments Explanations	Pendulum Copper wire Magnets	Secondary physics KLB students book 4 pages,104 Golden tips Physics pages 158	
	4-5	Electromagnetic Induction	Mutual inductance	Describe simple experiments to illustrate mutual inductance	Discussions Experiments Explanations	Iron core with primary and secondary coil	Secondary physics KLB students book 4 pages 97-101 Golden tips Physics pages 158	
3	1-2	Electromagnetic Induction	Transformers	Explain the working of a transformer	Discussions Experiments	Transformer Magnets Wires Metallic rods	Secondary physics KLB students book 4 page 100-104 Golden tips Physics pages 156-157	
	3-4	Electromagnetic Induction	Applications of electromagnetic induction	Explain the application of electromagnetic induction Solve problems on transformers	Discussions Explanations Questions and answers	Induction coil Moving coil/loud speaker	Secondary physics KLB students book 4 page 107-112 Golden tips Physics pages 158	
	5	Electromagnetic Induction	Revision	solve problems involving electromagnetic induction	Questions and answers Discussions	Questions from past papers	Secondary physics KLB students book 4 page 112-116 Golden tips Physics pages	

							159	
6	1-2	Cathode Rays	Production of cathode rays	Describe the production of cathode rays State and explain the properties of cathode rays	Describing the production of cathode rays Stating the properties of cathode rays	Chart on the properties of cathode rays	Secondary physics KLB students book 4 page 131-133 Golden tips Physics pages 166-167	
	3-4	Cathode Rays	The cathode rays Oscilloscope	Explain the functioning of the cathode ray oscilloscope Explain the functioning of a T.V tube	Discussions of parts and functions of C.R.O	Chart of parts and functions of C.R.O	Secondary physics KLB students book 4 page 133-134 Golden tips Physics pages 167-169	
	5	Cathode Rays	The cathode rays of Oscilloscope	Explain the uses of a C.R.O	Describing the working of a T.V tube	T.V tube	Secondary physics KLB students book 4 page 139 Golden tips Physics pages 169	
7	1-2	Cathode Rays	Revision	solve problems involving cathode rays	Problem solving discussions	Quizzes Exercises	Secondary physics KLB students book 4 page 142-143 Golden tips Physics pages 170-171	
	3-5	X-Rays	Production of X-rays	Explain the production of x-rays State and explain the properties of X-rays Distinguish between hard and soft x-rays	Demonstrations Discussions Calculations involving x-rays	X-ray tube Charts	Secondary physics KLB students book 4 page 144-148 Golden tips Physics pages 171-173	
8	MID-TERM BREAK							
9	1-2	X-Rays	Dangers of x-rays	Explain and state the dangers of X-rays Highlight the precautions to be undertaken when handling x-rays	Discussions Explanations	Charts showing the dangers of x-rays Hospital with x-ray equipment	Secondary physics KLB students book 4 page 149 Golden tips Physics pages 173	
							Secondary physics KLB	

	3	X-Rays	Uses of x-rays	State the uses of X-rays Explain the uses of X-rays	Discussions	Hospital with X-ray equipment	students book 4 page 148 Golden tips Physics pages 174	
	4-5	X-Rays	Revision	By the end of the lesson, the learner should be able to: Solve problems involving X-rays	Discussions Problem solving	Quizzes Exercise Past papers questions	Secondary physics KLB students book 4 page 146-147 Golden tips Physics pages 172-173	
10	1-2	Photo Electric Effect	Photo electric emissions	Perform simple experiments to illustrate photo electric effect Describe simple experiments to illustrate photoelectric effect	Experiments discussions	source of light Metallic surfaces Photo cell	Secondary physics KLB students book 4 page 151-152 Golden tips Physics pages 177	
	3	Photo-Electric	Factors effecting photoelectric emissions	State the factors affecting photo-electric emission Explain the factors affecting the photoelectric emissions	Discussions Demonstrations	charts	Secondary physics KLB students book 4 page 156-158 Golden tips Physics pages 179	
	4-5	Photo-Electric	Plank's constant	Define plank's constant threshold frequency work function and photoelectric effect Explain threshold frequency, work function and photoelectric effect	Discussions Demonstration	charts	Secondary physics KLB students book 4 page 153-156 Golden tips Physics pages 177-179	
11	1-5	Photo-Electric	The quantum theory of light	Determine the energy of p photos Apply the equation $E=hf$ to calculate the energy of photos Explain photoelectric effect using Einstein's equation= $hf+\frac{1}{2}mv^2$	Discussions Calculations	Chart on the use of Einstein's equation	Secondary physics KLB students book 4 page 153-156 Golden tips Physics pages 178-180	
12	1-3	Photo-Electric	Application of photoelectric	Explain the working of a Photo emissive cell Photo conductive cell	Demonstrations Discussions	Charts on the photo cell and how it works	Secondary physics KLB students book 4 page 160-	

			effect	Photo voltaic cell		Solar panels Watch cells	163 Golden tips Physics pages 180-181	
	4-5	Photo-Electric Effect	Revision	Solve problems involving photo-electric effect	Questions and answers	Set questions Projects Questions from past papers	Secondary physics KLB students book 4 page 163- 165 Golden tips Physics p Questions from past papers	
13	1-2	Radio Activity	Types of radiation	Describe the three types of radiations produced by radioactive elements	Discussions	Radiation detectors	Secondary physics KLB students book 4 page 167- 171 Golden tips Physics pages 184-185	
	3-4	Radio-Activity	Detecting nuclear radiations	explain how to detect radio-active emissions	Demonstrations Discussions	Radiation detectors	Secondary physics KLB students book 4 page 172- 175 Golden tips Physics pages 185-186	
	5	Radio-Activity	Detecting nuclear radiations	explain how a diffusion cloud chamber works	Demonstrations discussions	Radiation detectors	Secondary physics KLB students book 4 page 173- 174 Golden tips Physics pages 189	
14		MID YEAR EXAMS PREPARATION OF REPORTS AND CLOSING						

PHYSICS, F4, T3

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
1	1-5	REPORTING AND REVISION OF LAST TERM'S EXAMS						
2	1-2	Radio-Activity	Radio-active decay	define radio-active decay and half life	discussion	Charts on radio-active decay	Secondary physics KLB students book 4 page 176-181 Golden tips Physics pages 186-187	
	3-5	Radioactivity	Nuclear fission and fusion	Define nuclear fission and nuclear fusion Write balanced nuclear equations State the application of radioactivity	Discussions Problem solving	Periodic table	Secondary physics KLB students book 4 page 181-184 Golden tips Physics pages 190	
3	1-3	Radio-Activity	Hazards of radioactivity	Explain the dangers of radioactive emissions	discussions	diffusion cloud chamber	Secondary physics KLB students book 4 page 182 Golden tips Physics pages 190	
	4-5	Radio-Activity	Revision	solve problems involving radioactivity and half life	Questions and answers	Set questions Past papers questions Exercises	Secondary physics KLB students book 4 page 184-185 Golden tips Physics pages 191	
4	1-2	Electronics	Conductors and semi-conductors	Differentiate between conductors and semi-conductors	Discussions Experiments	Some semi-conductors Some insulator	Secondary physics KLB students book 4 page 187-189 Golden tips Physics pages 192-193	
	3-5	Electronics	Intrinsic and	Explain doping in semi-	Discussions	Samples of semi-	Secondary physics KLB students book 4 page 189-	

			extrinsic semi-conductors	conductors Explain the working of p-n junction diode Distinguish between intrinsic and extrinsic semi-conductors	Experiments	conductors Complete circuit Transistors Junction diode	194 Golden tips Physics pages 193-196	
5	1-5	Electronics	Characteristics of p-n junction	sketch the current voltage characteristics for a diode	experiments	junction diode	Secondary physics KLB students book 4 page 189-194 Golden tips Physics pages 194-196	
6	1-5	Electronics	Applications of diodes	explain the application of diodes in rectifications	Discussions Questions and answers	Chart showing the application of diode	Secondary physics KLB students book 4 page 198-201 Golden tips Physics pages 196-198	
7	REVISION FOR KCSE							
8	KCSE EXAMS							