**PHYSICS SCHEMES OF WORK FORM 4**

**TERM 2**

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| **WK** | **LSN** | **TOPIC** | **SUB-TOPIC** | **OBJECTIVES** | **T/L ACTIVITIES** | **T/L AIDS** | **REFERENCE** | **REMARKS** |
| 1 | **Opening and Revision** | | | | | | | |
| 2 | 1 | Electromagnetic Spectrum | The electromagnetic spectrum | By the end of the lesson, the learner should be able to:    Describe a complete electromagnetic spectrum | Discussions on the charge in wave length of electromagnetic radiations explanations | charts showing the components of the electromagnetic spectrum | Comprehensive secondary physics students book 4 pages 37 teachers book 34pages 18-20 Secondary physics KLB students book 4 page 79 |  |
| 2 | Electromagnetic Spectrum | The properties of electromagnetic waves | By the end of the lesson, the learner should be able to:    State the properties of electromagnetic waves | Explaining the properties of each component of the electromagnetic spectrum | Charts showing the properties of electromagnetic waves | Comprehensive secondary physics students book 4 pages 37-38 teachers book 34pages 18-20 Secondary physics KLB students book 4 page 80-81 |  |
| 3 | Electromagnetic Spectrum | The properties of electromagnetic waves | By the end of the lesson, the learner should be able to:    State the properties of electromagnetic waves | Explaining the properties of each component of the electromagnetic spectrum | Charts showing the properties of electromagnetic waves | Comprehensive secondary physics students book 4 pages 37-38 teachers book 34pages 18-20 Secondary physics KLB students book 4 page 80-81 |  |
| 4-5 | Electromagnetic Spectrum | Detection of electromagnetic radiations | By the end of the lesson, the learner should be able to:    Describe the methods of detective electromagnetic radiations | Demonstrating and explaining how to detect electromagnetic radiations | Radiation detectors Charts showing detectors of electromagnetic radiation | Comprehensive secondary physics students book 4 pages 38-39 teachers book 34pages 18-20 Secondary physics KLB students book 4 page 81 Golden tips Physics pages  175-176 |  |
| 3 | 1 | Electromagnetic Spectrum | Applications of electromagnetic radiations | By the end of the lesson, the learner should be able to:    Describe the applications of electromagnetic radiations including green house effect | Discussions of application of electromagnetic radiations | Pictures and chart on application of electromagnetic radiations | Comprehensive secondary physics students book 4 pages 42-45 teachers book 34pages 18-20 Secondary physics KLB students book 4 page 82 |  |
| 2 | Electromagnetic Spectrum | Applications of electromagnetic radiations | By the end of the lesson, the learner should be able to:    Describe the applications of electromagnetic radiations including green house effect | Discussions of application of electromagnetic radiations | Pictures and chart on application of electromagnetic radiations | Comprehensive secondary physics students book 4 pages 42-45 teachers book 34pages 18-20 Secondary physics KLB students book 4 page 82 |  |
| 3 | Electromagnetic Spectrum | Applications of electromagnetic radiations | By the end of the lesson, the learner should be able to:    Describe the applications of electromagnetic radiations including green house effect | Discussions of application of electromagnetic radiations | Pictures and chart on application of electromagnetic radiations | Comprehensive secondary physics students book 4 pages 42-45 teachers book 34pages 18-20 Secondary physics KLB students book 4 page 82 |  |
| 4-5 | Electromagnetic Spectrum | Problems on C=FX | By the end of the lesson, the learner should be able to:    Solve numerical problems involving C=fx | Problem solving Discussions Explanations Questions and answers | Questions and answers exercises | Comprehensive secondary physics students book 4 pages 45 teachers book 34pages 20-21 Secondary physics KLB students book 4 page 80 |  |
| 4 | 1 | Electromagnetic Induction | Induced e.m.f | By the end of the lesson, the learner should be able to:    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 | Comprehensive secondary physics students book 4 pages 46-48 teachers book 34pages 21-25 Secondary physics KLB students book 4 page 86-91 |  |
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| 3 | Electromagnetic Induction | Faraday?s law and Lenz?s law | By the end of the lesson, the learner should be able to:    State Faraday?s law State Lenz?s law Illustrate Faraday law and Lens?s law | Discussions Experiments to illustrate Faraday?s law and Lenz?s law | Magnets Solenoid Source of current | Comprehensive secondary physics students book 4 pages 48-50 teachers book 34pages 21-25 Secondary physics KLB students book 4 page 91-93 |  |
| 4-5 | Electromagnetic Induction | Faraday?s law and Lenz?s law Fleming?s right hand rule | By the end of the lesson, the learner should be able to:    State Faraday?s law State Lenz?s law Illustrate Faraday law and Lens?s law   State Fleming?s right hand rule Apply Fleming?s right hand rule | Discussions Experiments to illustrate Faraday?s law and Lenz?s law  Explanation of the motor rule Discussion of the application of electromagnetic induction | Magnets Solenoid Source of current  Magnets Wire Source of current | Comprehensive secondary physics students book 4 pages 48-50 teachers book 34pages 21-25 Secondary physics KLB students book 4 page 91-93  Comprehensive secondary physics students book 4 pages 49-50 teachers book 34pages 21-25 Secondary physics KLB students book 4 page 93-97 |  |
| 5 | 1 | Electromagnetic Induction | Generators | By the end of the lesson, the learner should be able to:    Explain the working of an a.c generator Explain the working of a d.c generator | Drawing the arrangement for a.c and a d.c generators Demonstration of motor principle | Coil Pins Source of current magnets | Comprehensive secondary physics students book 4 pages 50-53 teachers book 34pages 21-25 Secondary physics KLB students book 4 page |  |
| 2 | Electromagnetic Induction | Generators | By the end of the lesson, the learner should be able to:    Explain the working of an a.c generator Explain the working of a d.c generator | Drawing the arrangement for a.c and a d.c generators Demonstration of motor principle | Coil Pins Source of current magnets | Comprehensive secondary physics students book 4 pages 50-53 teachers book 34pages 21-25 Secondary physics KLB students book 4 page |  |
| 3 | Electromagnetic Induction | Generators | By the end of the lesson, the learner should be able to:    Explain the working of an a.c generator Explain the working of a d.c generator | Drawing the arrangement for a.c and a d.c generators Demonstration of motor principle | Coil Pins Source of current magnets | Comprehensive secondary physics students book 4 pages 50-53 teachers book 34pages 21-25 Secondary physics KLB students book 4 page |  |
| 4-5 | Electromagnetic Induction | Eddy currents | By the end of the lesson, the learner should be able to:   Explain eddy currents Demonstrate the effects of eddy currents | Discussions Experiments Explanations | Pendulum Copper wire Magnets | Comprehensive secondary physics students book 4 pages 53-54 teachers book 4 pages 24 |  |
| 6 | 1 | Electromagnetic Induction | Mutual inductance | By the end of the lesson, the learner should be able to:    Describe simple experiments to illustrate mutual inductance | Discussions Experiments Explanations | Iron care with primary and secondary coil | Comprehensive secondary physics students book 4 pages 54-55 teachers book 34pages 21-25 Secondary physics KLB students book 4 pages 97-101  Golden tips Physics pages 158 |  |
| 2 | Electromagnetic Induction | Mutual inductance | By the end of the lesson, the learner should be able to:    Describe simple experiments to illustrate mutual inductance | Discussions Experiments Explanations | Iron care with primary and secondary coil | Comprehensive secondary physics students book 4 pages 54-55 teachers book 34pages 21-25 Secondary physics KLB students book 4 pages 97-101  Golden tips Physics pages 158 |  |
| 3 | Electromagnetic Induction | Transformers | By the end of the lesson, the learner should be able to:    Explain the working of a transformer | Discussions Experiments | Transformer Magnets Wires  Metallic rods | Comprehensive secondary physics students book 4 pages 54-59 teachers book 34pages 21-25 Secondary physics KLB students book 4 page 100-104 |  |
| 4-5 | Electromagnetic Induction | Transformers Applications of electromagnetic induction | By the end of the lesson, the learner should be able to:    Explain the working of a transformer   Explain the application of electromagnetic induction Solve problems on transformers | Discussions Experiments  Discussions Explanations Questions and answers | Transformer Magnets Wires  Metallic rods  Induction coil Moving coil/loud speaker | Comprehensive secondary physics students book 4 pages 54-59 teachers book 34pages 21-25 Secondary physics KLB students book 4 page 100-104  Comprehensive secondary physics students book 4 pages 54-59 teachers book 34pages 21-25 Secondary physics KLB students book 4 page 107-112 |  |
| 7 | 1 | Electromagnetic Induction | Eddy currents | By the end of the lesson, the learner should be able to:    Explain eddy currents Demonstrate the effects of eddy currents | Discussions Experiments Explanations | Pendulum Copper wire Magnets | Comprehensive secondary physics students book 4 pages 53-54 teachers book 34pages 24 Secondary physics KLB students book 4 pages,104 |  |
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| 4-5 | Main Electricity | Source of main electricity Power transmission | By the end of the lesson, the learner should be able to:    State sources of main electricity Explain the sources of main electricity  By the end of the lesson the learner should be able to Describe the transmission of electric power from the generating station Explain the domestic wiring system | Discussions Educational trips  Discussions Questions and answers | Pictures and charts showing sources of main electricity  Photos of power transmission Lines and power substations | Comprehensive secondary physics students book 4 pages 61 teachers book 3 pages 27-29 Secondary physics KLB students book 4 page 117  Comprehensive secondary physics students book 4 pages 62 teachers book 3 pages 27-29 Secondary physics KLB students book 4 page 117-122 |  |
| 8 | **Mid Term Exams and Break** | | | | | | | |
| 9 | 1 | Main Electricity | Power consumption | By the end of the lesson, the learner should be able to:    Define kilowatt hour Determine the electrical energy consumption and cost | Discussions calculations | Chats on power consumptions | Comprehensive secondary physics students book 4 pages 63-66 teachers book 3 pages 27-29 Secondary physics KLB students book 4 page 125-128 Principles of physics (M.Nelkon( pages 428 |  |
| 2 | Main Electricity | Power consumption | By the end of the lesson, the learner should be able to:    Define kilowatt hour Determine the electrical energy consumption and cost | Discussions calculations | Chats on power consumptions | Comprehensive secondary physics students book 4 pages 63-66 teachers book 3 pages 27-29 Secondary physics KLB students book 4 page 125-128 Principles of physics (M.Nelkon( pages 428 |  |
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| 4-5 | Mains Electricity | Domestic wiring | By the end of the lesson, the learner should be able to:    Explain the domestic wiring system Describe the domestic wiring system | Discussions Demonstrations on building wiring Drawing circuits | Fuses Wires Switches Electrical appliances | Comprehensive secondary physics students book 4 pages 66-69 teachers book 4 pages 27-29 Secondary physics KLB students book 4 page 125-121-122 |  |
| 10 | 1 | Mains Electricity | Domestic electrical appliances | By the end of the lesson, the learner should be able to:    Explain the function of fuse in domestic wiring Explain the function of a two-way switch in domestic wiring | Discussions  demonstration | domestic electrical appliances | Comprehensive secondary physics students book 4 pages 66-69 teachers book 4 pages 27-29 Secondary physics KLB students book 4 page 125-122-124 |  |
| 2 | Mains Electricity | Domestic electrical appliances | By the end of the lesson, the learner should be able to:    Explain the function of fuse in domestic wiring Explain the function of a two-way switch in domestic wiring | Discussions  demonstration | domestic electrical appliances | Comprehensive secondary physics students book 4 pages 66-69 teachers book 4 pages 27-29 Secondary physics KLB students book 4 page 125-122-124 |  |
| 3 | Cathode Rays | Production of cathode rays | By the end of the lesson, the learner should be able to:    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 | Comprehensive secondary physics students book 4 pages 72-73 teachers book 4 pages 30-32 Secondary physics KLB students book 4 page 131-133 |  |
| 4-5 | Cathode Rays | Production of cathode rays The cathode rays Oscilloscope | By the end of the lesson, the learner should be able to:    Describe the production of cathode rays State and explain the properties of cathode rays   Explain the functioning of the cathode ray oscilloscope Explain the functioning of a T.V tube | Describing the production of cathode rays Stating the properties of cathode rays  Discussions of parts and functions of C.R.O | Chart on the properties of cathode rays  Chart of parts and functions of C.R.O | Comprehensive secondary physics students book 4 pages 72-73 teachers book 4 pages 30-32 Secondary physics KLB students book 4 page 131-133  Comprehensive secondary physics students book 4 pages 73-75 teachers book 4 pages 30-32 Secondary physics KLB students book 4 page 133-134 |  |
| 11 | 1 | Cathode Rays | The cathode rays of Oscilloscope | By the end of the lesson, the learner should be able to:    Explain the uses of a C.R.O | Describing the working of a T.V tube | T.V tube | Comprehensive secondary physics students book 4 pages 73-75 teachers book 4 pages 30-32 Secondary physics KLB students book 4 page 139 |  |
| 2 | Cathode Rays | The cathode rays of Oscilloscope | By the end of the lesson, the learner should be able to:    Explain the uses of a C.R.O | Describing the working of a T.V tube | T.V tube | Comprehensive secondary physics students book 4 pages 73-75 teachers book 4 pages 30-32 Secondary physics KLB students book 4 page 139 |  |
| 3 | X-Rays | Production of X-rays | By the end of the lesson, the learner should be able to:    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 | Comprehensive secondary physics students book 4 pages 80-84 teachers book 4 pages 35-36 Secondary physics KLB students book 4 page 144-148 |  |
| 4-5 | X-Rays | Production of X-rays Dangers of x-rays | By the end of the lesson, the learner should be able to:    Explain the production of x-rays State and explain the properties of X-rays Distinguish between hard and soft x-rays   Explain and state the dangers of X-rays  Highlight the precautions to be undertaken when handling x-rays | Demonstrations Discussions Calculations involving x-rays  Discussions Explanations | X-ray tube Charts  Charts showing the dangers of x-rays Hospital with x-ray equipment | Comprehensive secondary physics students book 4 pages 80-84 teachers book 4 pages 35-36 Secondary physics KLB students book 4 page 144-148  Comprehensive secondary physics students book 4 pages 84 teachers book 4 pages 35-36 Secondary physics KLB students book 4 page 149 |  |
| 12 | 1 | X-Rays | Uses of x-rays | By the end of the lesson, the learner should be able to:   By the end of the lesson the learner should be able to State the uses of X-rays Explain the uses of X-rays | Discussions | Hospital with X-ray equipment | Comprehensive secondary physics students book 4 pages 84 teachers book 4 pages 35-36 Secondary physics KLB students book 4 page 148 |  |
| 2 | X-Rays | Uses of x-rays | By the end of the lesson, the learner should be able to:   By the end of the lesson the learner should be able to State the uses of X-rays Explain the uses of X-rays | Discussions | Hospital with X-ray equipment | Comprehensive secondary physics students book 4 pages 84 teachers book 4 pages 35-36 Secondary physics KLB students book 4 page 148 |  |
| 3 | X-Rays | Uses of x-rays | By the end of the lesson, the learner should be able to:   By the end of the lesson the learner should be able to State the uses of X-rays Explain the uses of X-rays | Discussions | Hospital with X-ray equipment | Comprehensive secondary physics students book 4 pages 84 teachers book 4 pages 35-36 Secondary physics KLB students book 4 page 148 |  |
| 4 | Photo Electric Effect | Photo electric emissions | By the end of the lesson, the learner should be able to:   By the end of the lesson ,the learner should be able to Perform simple experiments to illustrate photo electric effect Describe simple experiments to illustrate photoelectric effect | Experiments discussions | source of light Metallic surfaces Photo cell | Comprehensive secondary physics students book 4 pages 87-88 teachers book 4 pages 38-40 Secondary physics KLB students book 4 page 151-152 |  |
| 4-5 | Photo Electric Effect | Photo electric emissions | By the end of the lesson, the learner should be able to:   By the end of the lesson ,the learner should be able to Perform simple experiments to illustrate photo electric effect Describe simple experiments to illustrate photoelectric effect | Experiments discussions | source of light Metallic surfaces Photo cell | Comprehensive secondary physics students book 4 pages 87-88 teachers book 4 pages 38-40 Secondary physics KLB students book 4 page 151-152 |  |
| 13-14 | **End Term Exams and closing** | | | | | | | |