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| **PHYSICS FORM 4 SCHEMES OF WORK – TERM 1** | | | | | | | | |
| **WEEK** | **LESSON** | **TOPIC** | **SUB - TOPIC** | **OBJECTIVES** | **LEARNING/TEACHING ACTIVITIES** | **LEARNING/TEACHING RESOURCES** | **REFERENCES** | **REMARKS** |
| **1** | **1** | LENSES | Conveying and diverging lenses | By the end of the lesson the learner should be able to   1. Describe converging lenses 2. Describe diverging lenses | * Using light beams to distinguish between diverging and converging lenses | * Diverging lenses * Converging lenses * Source of light beam * screen | * Comprehensive secondary physics students book 4 pages 1-2   teachers book 3 pages 1-5   * Secondary physics KLB students book 4 page 1 * Principles of physics (M.Nelkon( pages 300-301 * Golden tips Physics pages 113-114 |  |
|  | 2-3 | LENSES | Parts of fair lenses | By the end of the lesson, the learner should be able to   1. Describe the principal focus using ray diagram 2. Describe the optical center using ray diagram 3. 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 | * Comprehensive secondary physics students book 4 pages 1-3   teachers book 3 pages 1-5   * Secondary physics KLB students book 4 page 6-7 * Principles of physics (M.Nelkon( pages 301-304 * Golden tips Physics pages 114-116 |  |
|  | **4-5** | LENSES | Focal length | By the end of the lesson, the learner should be able to   1. Determine experimentally the focal length of a converging lens 2. 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 | * Comprehensive secondary physics students book 4 pages 2-3   teachers book 3 pages 1-5   * Secondary physics KLB students book 4 page 17-20 * Principles of physics (M.Nelkon( pages 303 * Golden tips Physics pages 116 |  |
| **2** | **1** | LENSES | Images in fair lenses | By the end of the lesson, the learner should be able to:   1. Construct the principal rays for converging lens 2. Construct the principal rays for diverging lenses | * Constructing the principal rays for diverging lenses * Constructing the principal rays for converging lenses | * Converging lenses * Diverging lenses * Graph papers * Ruler | * Comprehensive secondary physics students book 4 pages 3-6   teachers book 3 pages 1-5   * Secondary physics KLB students book 4 page 7-12 * Principles of physics (M.Nelkon( pages 304-306 * Golden tips Physics pages 114-116 |  |
| **3** | **2-3** | LENSES | Images in converging lenses | By the end of the lesson, the learner should be able to:   1. Locate imaged formed by converging lenses using ray construction method 2. Describe the images formed in converging lenses | * Describing the characteristics of images formed in converging lenses | * Graph paper * Geometrical set * Converging lenses * screen | * Comprehensive secondary physics students book 4 pages 5-6   teachers book 3 pages 1-5   * Secondary physics KLB students book 4 page 7-10 * Principles of physics (M.Nelkon( pages 304-305 * Golden tips Physics pages 114-116 |  |
|  | **4-5** | LENSES | Images in diverging lenses | By the end of the lesson, the learner should be able to   1. Locate imaged formed by diverging lenses using ray construction method 2. Describe the images formed in diverging lenses | * Describe the characteristics of the formed in diverging lenses | * Graph paper * Geometrical set * Diverging lenses * Screen | * Comprehensive secondary physics students book 4 pages 5   teachers book 3 pages 1-5   * Secondary physics KLB students book 4 page 11 * Principles of physics (M.Nelkon( pages 307-308 * Golden tips Physics pages 114-116 |  |
| **4** | **1** | LENSES | The microscope | By the end of the lesson, the learner should be able to   1. Explain the working of a simple microscope 2. 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 | * Comprehensive secondary physics students book 4 pages 10-11   teachers book 4 pages 1-5   * Principles of physics 27-29(M.Nelkon) pages 320-323 * Golden tips Physics pages 119-120 |  |
|  | **2-3** | LENSES | The telescope | By the end of the lesson, the learner should be able to   1. Describe the structure of a telescope 2. Describe the working of a telescope | * Drawing and labeling the parts of a telescope * Describing how a telescope works | * Telescope * Lenses * Manilla paper | * Comprehensive secondary physics students book 4 pages 11   teachers book 4 pages 1-5   * Principles of physics (M.Nelkon( pages 322-323 * Golden tips Physics pages 121 |  |
|  | **4-5** | LENSES | The camera | By the end of the lesson, the learner should be able to:   1. Describe the parts of a camera 2. Explain the working of a camera 3. 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 | * Comprehensive secondary physics students book 4 pages 11-12   teachers book 4 pages 1-5   * Secondary physics KLB students book 4 page 33 * Principles of physics (M.Nelkon( pages 316-317 * Golden tips Physics pages 120-121 |  |
| **5** | **1** | LENSES | Image formation in the human eye | By the end of the lesson, the learner should be able to:   1. Describe the parts of a human eye 2. 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 | * Comprehensive secondary physics students book 4 pages 12-13   teachers book 34pages 1-5   * Secondary physics KLB students book 4 page 29-31 * Principles of physics (M.Nelkon) pages 313-314 * Golden tips Physics pages 120-121 |  |
|  | **2-3** | LENSES | Working of the human eye | By the end of the lesson, the learner should be able to   1. Explain the image formation in the human eye | * Explaining the image formation in the eye | * Chart showing the image formation in the human eye | * Comprehensive secondary physics students book 4 pages 13-14   teachers book 34pages 1-5   * Secondary physics KLB students book 4 page 29-31 * Principles of physics (M.Nelkon) pages 313-314 * Golden tips Physics pages 120-121 |  |
|  | **4-5** | LENSES | Defects of vision | By the end of the lesson, the learner should be able to:   1. Describe the defects of the human eye 2. Explain the corrections of human eye defects | * Describing the defects of the human eye * Explaining the eye defects are corrected | * Charts showing eye defects and how they are corrected | * Comprehensive secondary physics students book 4 pages 13-14   teachers book 34pages 1-5   * Secondary physics KLB students book 4 page 31-32 * Principles of physics (M.Nelkon) pages 315-316 * Golden tips Physics pages 118-119 |  |
| **6** | **1-2** | LENSES | Revision | By the end of the lesson, the learner should be able:   1. Describe the uses of lens in various optical devises 2. Solve problems involving thin lenses formula 3. Solve numerical problem involving the magnification formula | * Problem solving * Exercises * Assignments | * Questions from past papers | * Comprehensive secondary physics students book 4 pages 15-17   teachers book 34pages 5-10   * Secondary physics KLB students book 4 page 33-36 * Principles of physics (M.Nelkon) pages 310-312,326-327 * Golden tips Physics pages 121-123 |  |
|  | **3** | UNIFORM CIRCULAR MOTION | Circular motion | By the end of the lesson, the learner should be able to:   1. Define circular motion | 1. Observing and running a hoop 2. Rotate a stone tied to the end of a rope | * Hoop * String/rope * store | * Comprehensive secondary physics students book 4 pages 18   teachers book 34pages 10-12   * Secondary physics KLB students book 4 page 37-45 * Principles of physics (M.Nelkon) pages 42-44 * Golden tips Physics pages 34 |  |
|  | **4-5** | UNIFORM CIRCULAR MOTION | Radiant, angular displacement and angular velocity | By the end of the lesson, the learner should be able to:   1. Define the radiant measure 2. Define the angular displacement and velocity 3. Explain the angular displacement and velocity | * Discussions * Experiment | * Illustration of angular displacement and angular velocity on a chart | * Comprehensive secondary physics students book 4 pages 18-20   teachers book 34pages 10-12   * Secondary physics KLB students book 4 page 37-42 * Golden tips Physics pages 34-35 |  |
| **7** | **1-2** | UNIFORM CIRCULAR MOTION | Centripetal force | By the end of the lesson, the learner should be able to   1. Describe simple experiment on centripetal force 2. Illustrate centripetal force 3. Determine the magnitude of centripetal force experimentally | * Experiments * Discussions * observations | * Pendulum * String * Stone * Round table * Ball/bob * Stop clock | * Comprehensive secondary physics students book 4 pages 20-21   teachers book 34pages 10-12   * Secondary physics KLB students book 4 page 42-47 * Principles of physics (M.Nelkon) pages 42-45 * Golden tips Physics pages 37 |  |
|  | **3-4** | UNIFORM CIRCULAR MOTION | Application of uniform circular motion | By the end of the lesson, the learner should be able to:   1. State various uniform circular motion 2. Explain various uniform circular motion | * Discussions * Explanations * Experiments | * String * Stone * Ruler | * Comprehensive secondary physics students book 4 pages 22-25   teachers book 34pages 10-12   * Secondary physics KLB students book 4 page 37 * Golden tips Physics pages 39-40 |  |
|  | **5** | UNIFORM CIRCULAR MOTION | Application of uniform circular motion | By the end of the lesson, the learner should be able to:   1. Explain centrifuge 2. Explain vertical and horizontal circles 3. Explain banked tracks | * Discussions * Explanations * Experiments | * String * Stone * Ruler | * Comprehensive secondary physics students book 4 pages 22-25   teachers book 34pages 10-12   * Secondary physics KLB students book 4 page 47-53 * Golden tips Physics pages 41 |  |
| **8** | **1** | UNIFORM CIRCULAR MOTION | Revision | By the end of the lesson, the learner should b e able to solve problems involving circular motion | * Problem solving * Questions and answers | * Questions from past papers * Exercises | * Comprehensive secondary physics students book 4 pages 26-27   teachers book 34pages 12-14   * Secondary physics KLB students book 4 page 55-45 * Principles of physics (M.Nelkon) pages 61-63 * Golden tips Physics pages 42-43 |  |
|  | **2-3** | FLOATING AND SINKING | Archimedes’ principle | By the end of the lesson, the learner should be able to   1. State Archimedes’ principle 2. Verify Archimedes principle 3. 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 | * Comprehensive secondary physics students book 4 pages 28-29   teachers book 34pages 14-17   * Secondary physics KLB students book 4 page 58-60 * Principles of physics (M.Nelkon) pages 106-108 * Golden tips Physics pages 53-54 |  |
|  | **4-5** | FLOATING AND SINKING | The laws of floatation  Relative density | By the end of the lesson, the learner should be able to   1. State the law of floatation 2. Define relative density | * Discussions * Measuring | * Density bottle * Overflow can * Spring balance * measuring cylinder | * Comprehensive secondary physics students book 4 pages 29-33   teachers book 34pages 14-17   * Secondary physics KLB students book 4 page 64-70 * Principles of physics (M.Nelkon) pages 101,108-110 |  |
| **9** | **1-3** | FLOATING AND SINKING | Applications of floating and sinking | By the end of the lesson, the learner should be able to:   1. Describe the applications of Archimedes Principle 2. Describe the applications of relative density (hydrometer) | * Discussions * experiments | * charts depicting the uses of Archimedes principle and the law of floatation * A hydrometer | * Comprehensive secondary physics students book 4 pages 33-35   teachers book 34pages 14-17   * Secondary physics KLB students book 4 page 75-77 * Principles of physics (M.Nelkon) pages 113-115 * Golden tips Physics pages 53 |  |
|  | **4-5** | FLOATING AND SINKING | Revision | By the end of the lesson, the learner should be able to:   1. Solve problems involving Archimedes principle 2. Solve problems involving relative density | * Questions and answers * Discussions * Exercises * assignments | * test papers * questions from exercises | * Comprehensive secondary physics students book 4 pages 35-36   teachers book 34pages 18   * Secondary physics KLB students book 4 page 77-78 * Principles of physics (M.Nelkon) pages 116-118 * Golden tips Physics pages 54-55 |  |
| **10** | **1** | ELECTROMAGNETIC SPECTRUM | The electromagnetic spectrum | By the end of the lesson, the learner should be able to:   1. 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 * Principles of physics (M.Nelkon) pages 345 * Golden tips Physics pages 174 |  |
|  | **2-3** | ELECTROMAGNETIC SPECTRUM | The properties of electromagnetic waves | By the end of the lesson, the learner should be able to   1. 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 * Principles of physics (M.Nelkon) pages 345 * Golden tips Physics pages 175 |  |
|  | **4-5** | ELECTROMAGNETIC SPECTRUM | Detection of electromagnetic radiations | By the end of the lesson, the learner should be able to:   1. 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 |  |
| **11** | **1-2** | ELECTROMAGNETIC SPECTRUM | Applications of electromagnetic radiations | By the end of the lesson, the learner should be able to   1. 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 * Principles of physics (M.Nelkon) pages 336 * Golden tips Physics pages 175-176 |  |
|  | **3-4** | ELECTROMAGNETIC SPECTRUM | Problems on C=FX | By the end of the lesson, the learner should be able to   1. 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 |  |
|  | **5** | ELECTROMAGNETIC SPECTRUM | Revision | By the end of the lesson, the learner should be able to:   1. Solve problems involving electromagnetic spectrum | * Problem solving * Questions and answers | * Exercises in students book 4 * Past papers questions | * Comprehensive secondary physics students book 4 pages 45   teachers book 34pages 20-21 |  |
| **12** | **1-2** | ELECTROMAGNETIC INDUCTION | Induced e.m.f | By the end of the lesson, the learner should be able to:   1. Perform and describe simple experiments to illustrate electromagnetic induction 2. State the factors affecting the magnitude of an induced e.m.f 3. 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 * Principles of physics (M.Nelkon) pages 478-479 * Golden tips Physics pages 152-154 |  |
|  | **3-4** | ELECTROMAGNETIC INDUCTION | Faraday’s law and Lenz’s law | By the end of the lesson, the learner should be able to   1. State Faraday’s law 2. State Lenz’s law 3. 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 * Principles of physics (M.Nelkon) pages 483-484 * Golden tips Physics pages 153 |  |
|  | **5** | ELECTROMAGNETIC INDUCTION | Fleming’s right hand rule | By the end of the lesson, the learner should be able to:   1. State Fleming’s right hand rule 2. Apply Fleming’s right hand rule | * Explanation of the motor rule * Discussion of the application of electromagnetic induction | * Magnets * Wire * Source of current | * Comprehensive secondary physics students book 4 pages 49-50   teachers book 34pages 21-25   * Secondary physics KLB students book 4 page 93-97 * Principles of physics (M.Nelkon) pages 481-482 * Golden tips Physics pages 153 |  |
| **13** | **1-2** | ELECTROMAGNETIC INDUCTION | Generators | By the end of the lesson, the learner should be able to   1. Explain the working of an a.c generator 2. Explain the working of a d.c generator | * Drawing the arrangement for a.c and 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 100-104 * Principles of physics (M.Nelkon) pages 488-490 * Golden tips Physics pages 156-157 |  |
|  | **3-4** | ELECTROMAGNETIC INDUCTION | Generators | By the end of the lesson, the learner should be able to   1. Explain the working of an a.c generator 2. 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 * Principles of physics (M.Nelkon) pages * Golden tips Physics pages 154 |  |
| **14** | **1-2** | ELECTROMAGNETIC INDUCTION | Eddy currents | By the end of the lesson, the learner should be able to   1. Explain eddy currents 2. 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 |  |
|  | **3** | ELECTROMAGNETIC INDUCTION | Eddy currents | By the end of the lesson, the learner should be able to   1. Explain eddy currents 2. 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 * Principles of physics (M.Nelkon) pages 483-484 * Golden tips Physics pages 158 |  |
|  | **4-5** | ELECTROMAGNETIC INDUCTION | Mutual inductance | By the end of the lesson, the learner should be able to   1. 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 |  |
| **15** | **1-2** | ELECTROMAGNETIC INDUCTION | Transformers | By the end of the lesson, the learner should be able to   1. 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 * Principles of physics (M.Nelkon) pages 488-490 * Golden tips Physics pages 156-157 |  |
|  | **3-4** | ELECTROMAGNETIC INDUCTION | Applications of electromagnetic induction | By the end of the lesson, the learner should be able to   1. Explain the application of electromagnetic induction 2. Solve problems on transformers | * Discussions * Explanations * Questions and answers | * 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 107-112 * Principles of physics (M.Nelkon) pages 468,473 * Golden tips Physics pages 158 |  |
|  | **5** | ELECTROMAGNETIC INDUCTION | Revision | By the end of the lesson the learner should be able to solve problems involving electromagnetic induction | * Questions and answers * Discussions | * Questions from past papers | * Comprehensive secondary physics students book 4 pages 59-60   teachers book 34pages 26-27   * Secondary physics KLB students book 4 page 112-116 * Principles of physics (M.Nelkon) page 494-495 * Golden tips Physics pages 159 |  |
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| **PHYSICS FORM 4 SCHEMES OF WORK – TERM 2** | | | | | | | | |
| **WEEK** | **LESSON** | **TOPIC** | **SUB - TOPIC** | **OBJECTIVES** | **LEARNING/TEACHING ACTIVITIES** | **LEARNING/TEACHING RESOURCES** | **REFERENCES** | **REMARKS** |
| **1** | **1** | MAIN ELECTRICITY | Source of main electricity | By the end of the lesson, the learner should be able to:   1. State sources of main electricity 2. Explain the sources of main electricity | * Discussions * Educational trips | * Pictures and charts showing sources of main electricity | * Comprehensive secondary physics students book 4 pages 61   teachers book 3 pages 27-29   * Secondary physics KLB students book 4 page 117 * Golden tips Physics pages 160 |  |
|  | **2-3** | MAIN ELECTRICITY | Power transmission | By the end of the lesson the learner should be able to   1. Describe the transmission of electric power from the generating station 2. Explain the domestic wiring system | * Discussions * Questions and answers | Photos of power transmission  Lines and power substations | * Comprehensive secondary physics students book 4 pages 62   teachers book 3 pages 27-29   * Secondary physics KLB students book 4 page 117-122 * Principles of physics (M.Nelkon( pages 433-434 * Golden tips Physics pages 160-163 |  |
|  | **4-5** | MAIN ELECTRICITY | Power consumption | By the end of the lesson, the learner should be able to:   1. Define kilowatt hour 2. 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 * Golden tips Physics pages 164 |  |
| **2** | **1-2** | MAINS ELECTRICITY | Domestic wiring | By the end of the lesson, the learner should be able to   1. Explain the domestic wiring system 2. 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 * Principles of physics (M.Nelkon( pages 433-435 * Golden tips Physics pages 162 |  |
|  | **3** | MAINS ELECTRICITY | Domestic electrical appliances | By the end of the lesson, the learner should be able to:   1. Explain the function of fuse in domestic wiring 2. 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 * Principles of physics (M.Nelkon( pages 433,435 * Golden tips Physics pages 162 |  |
|  | **4-5** | MAINS ELECTRICITY | Revision | By the end of the lesson, the learner should be able to solve problems involving mains electricity | * Problem solving * Discussions * Questions and answers | * Questions from past papers * Quizzes * Exercises | * Comprehensive secondary physics students book 4 pages 70-71   teachers book 4 pages 29-30   * Secondary physics KLB students book 4 page 125-128-130 * Principles of physics (M.Nelkon) pages 436-438 * Golden tips Physics pages 164-165 |  |
| **3** | **1-2** | CATHODE RAYS | Production of cathode rays | By the end of the lesson, the learner should be able to:   1. Describe the production of cathode rays 2. 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 * Principles of physics (M.Nelkon) pages 532,535-536 * Golden tips Physics pages 166-167 |  |
|  | **3-4** | CATHODE RAYS | The cathode rays Oscilloscope | By the end of the lesson, the learner should be able to   1. Explain the functioning of the cathode ray oscilloscope 2. 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 | * Comprehensive secondary physics students book 4 pages 73-75   teachers book 4 pages 30-32   * Secondary physics KLB students book 4 page 133-134 * Principles of physics (M.Nelkon) pages 541-545 * Golden tips Physics pages 167-169 |  |
|  | **5** | CATHODE RAYS | The cathode rays of Oscilloscope | By the end of the lesson, the learner should be able to   1. 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 * Principles of physics (M.Nelkon) pages 541-544 * Golden tips Physics pages 169 |  |
| **4** | **1-2** | CATHODE RAYS | Revision | By the end of the lesson, the learner should be able to solve problems involving cathode rays | * Problem solving * discussions | * Quizzes * Exercises | * Comprehensive secondary physics students book 4 pages 77-79   teachers book 4 pages 32-34   * Secondary physics KLB students book 4 page 142-143 * Principles of physics (M.Nelkon) pages 554-555 * Golden tips Physics pages 170-171 |  |
|  | **3-5** | X-RAYS | Production of X-rays | By the end of the lesson, the learner should be able to:   1. Explain the production of x-rays 2. State and explain the properties of X-rays 3. 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 * Principles of physics (M.Nelkon) pages 545-547 * Golden tips Physics pages 171-173 |  |
| **5** | **1-2** | X-RAYS | Dangers of x-rays | By the end of the lesson, the learner should be able to:   1. Explain and state the dangers of X-rays 2. Highlight the precautions to be undertaken when handling x-rays | * Discussions * Explanations | * Charts showing the dangers of x-rays * 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 149 * Principles of physics (M.Nelkon) pages 546 * Golden tips Physics pages 173 |  |
|  | **3** | X-RAYS | Uses of x-rays | By the end of the lesson the learner should be able to   1. State the uses of X-rays 2. 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 * Golden tips Physics pages 174 |  |
|  | **4-5** | X-RAYS | Revision | By the end of the lesson, the learner should be able to:   1. Solve problems involving X-rays | * Discussions * Problem solving | * Quizzes * Exercise * Past papers questions | * Comprehensive secondary physics students book 4 pages 85-86   teachers book 4 pages 36-37   * Secondary physics KLB students book 4 page 146-147 * Golden tips Physics pages 172-173 |  |
| **6** | **1-2** | PHOTO ELECTRIC EFFECT | Photo electric emissions | By the end of the lesson ,the learner should be able to   1. Perform simple experiments to illustrate photo electric effect 2. 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 * Principles of physics (M.Nelkon) pages 547 * Golden tips Physics pages 177 |  |
|  | **3** | PHOTO-ELECTRIC | Factors effecting photoelectric emissions | By the end of the lesson, the learner should be able to   1. State the factors affecting photo-electric emission 2. Explain the factors affecting the photoelectric emissions | * Discussions * Demonstrations | * charts | * Comprehensive secondary physics students book 4 pages 88-90   teachers book 4 pages 38-40   * Secondary physics KLB students book 4 page 156-158 * Golden tips Physics pages 179 |  |
|  | **4-5** | PHOTO-ELECTRIC | Plank’s constant | By the end of the lesson, the learner should be able to   1. Define plank’s constant threshold frequency work function and photoelectric effect 2. Explain threshold frequency, work function and photoelectric effect | * Discussions * Demonstration | * charts | * Comprehensive secondary physics students book 4 pages 90-91   teachers book 4 pages 38-40   * Secondary physics KLB students book 4 page 153-156 * Golden tips Physics pages 177-179 |  |
| **7** | **1-5** | PHOTO-ELECTRIC | The quantum theory of light | By the end of the lesson, the learner should be able to:   1. Determine the energy of p photos 2. Apply the equation E=hf to calculate the energy of photos 3. Explain photoelectric effect using Einstein’s equation=hf+1/2mv2 | * Discussions * Calculations | * Chart on the use of Einstein’s equation | * Comprehensive secondary physics students book 4 pages 90-92   teachers book 4 pages 38-40   * Secondary physics KLB students book 4 page 153-156 * Golden tips Physics pages 178-180 |  |
| **8** | **1-3** | PHOTO-ELECTRIC | Application of photoelectric effect | By the end of the lesson, the learner should be able to   1. Explain the working of a  * Photo emissive cell * Photo conductive cell * Photo voltaic cell | * Demonstrations * Discussions | * Charts on the photo cell and how it works * Solar panels * Watch cells | * Comprehensive secondary physics students book 4 pages 92-93   teachers book 4 pages 38-40   * Secondary physics KLB students book 4 page 160-163 * Golden tips Physics pages 180-181 |  |
|  | **4-5** | PHOTO-ELECTRIC EFFECT | Revision | By the end of the lesson, the learner should be able to:   1. Solve problems involving photo-electric effect | * Questions and answers | * Set questions * Projects * Questions from past papers | * Comprehensive secondary physics students book 4 pages 94-95   teachers book 4 pages 40-42   * Secondary physics KLB students book 4 page 163-165 * Golden tips Physics p * Questions from past papers |  |
| **9** | **1-2** | RADIO ACTIVITY | Types of radiation | By the end of the lesson, the learner should be able to   1. Describe the three types of radiations produced by radioactive elements | * Discussions | * Radiation   detectors | * Comprehensive secondary physics students book 4 pages 96-100   teachers book 4 pages 42-45   * Secondary physics KLB students book 4 page 167-171 * Principles of physics (M.Nelkon) pages 556-564 * Golden tips Physics pages 184-185 |  |
|  | **3-4** | RADIO-ACTIVITY | Detecting nuclear radiations | By the end of the lesson, the learner should be able to explain how to detect radio-active emissions | * Demonstrations * Discussions | Radiation detectors | * Comprehensive secondary physics students book 4 pages 96-100   teachers book 4 pages 42-45   * Secondary physics KLB students book 4 page 172-175 * Principles of physics (M.Nelkon) pages 556-564   Golden tips Physics pages 185-186 |  |
|  | **5** | RADIO-ACTIVITY | Detecting nuclear radiations | By the end of the lesson, the learner should be able to explain how a diffusion cloud chamber works | * Demonstrations * discussions | Radiation detectors | * Comprehensive secondary physics students book 4 pages 100   teachers book 4 pages 42-45   * Secondary physics KLB students book 4 page 173-174 * Principles of physics (M.Nelkon) pages 557-558 * Golden tips Physics pages 189 |  |
| **10** | **1-2** | RADIO-ACTIVITY | Radio-active decay | By the end of the lesson, the learner should be able to define radio-active decay and half life | * discussion | * Charts on radio-active decay | * Comprehensive secondary physics students book 4 pages 100-102   teachers book 4 pages 42-45   * Secondary physics KLB students book 4 page 176-181 * Principles of physics (M.Nelkon) pages 566-568 * Golden tips Physics pages 186-187 |  |
|  | **3-5** | RADIOACTIVITY | Nuclear fission and fusion | By the end of the lesson, the learner should be able to   1. Define nuclear fission and nuclear fusion 2. Write balanced nuclear equations 3. State the application of radioactivity | * Discussions * Problem solving | * Periodic table | * Comprehensive secondary physics students book 4 pages 100-108   teachers book 4 pages 42-45   * Secondary physics KLB students book 4 page 181-184 * Principles of physics (M.Nelkon) pages 573-578 * Golden tips Physics pages 190 |  |
| **11** | **1-3** | RADIO-ACTIVITY | Hazards of radioactivity | By the end of the lesson, the learner should be able to   1. Explain the dangers of radioactive emissions | * discussions | * diffusion cloud chamber | * Comprehensive secondary physics students book 4 pages 105-106   teachers book 4 pages 42-45   * Secondary physics KLB students book 4 page 182 * Principles of physics (M.Nelkon) pages 565-566 * Golden tips Physics pages 190 |  |
|  | **4-5** | RADIO-ACTIVITY | Revision | By the end of the lesson, the learner should be able to solve problems involving radioactivity and half life | * Questions and answers | * Set questions * Past papers questions * Exercises | * Comprehensive secondary physics students book 4 pages 105-106   teachers book 4 pages 45-48   * Secondary physics KLB students book 4 page 184-185 * Principles of physics (M.Nelkon) pages 579-581 * Golden tips Physics pages 191 |  |
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| **PHYSICS FORM 4 SCHEMES OF WORK – TERM 3** | | | | | | | | |
| **WEEK** | **LESSON** | **TOPIC** | **SUB - TOPIC** | **OBJECTIVES** | **LEARNING/TEACHING ACTIVITIES** | **LEARNING/TEACHING RESOURCES** | **REFERENCES** | **REMARKS** |
| **1** | **1-2** | ELECTRONICS | Conductors and semi-conductors | By the end of the lesson, the learner should be able to   1. Differentiate between conductors and semi-conductors | * Discussions * Experiments | * Some semi-conductors * Some insulator | * Comprehensive secondary physics students book 4 pages 110-111   teachers book 4 pages 45-48   * Secondary physics KLB students book 4 page 187-189 * Golden tips Physics pages 192-193 |  |
|  | **3-5** | ELECTRONICS | Intrinsic and extrinsic semi-conductors | By the end of the lesson, the learner should be able to:   1. Explain doping in semi-conductors 2. Explain the working of p-n junction diode 3. Distinguish between intrinsic and extrinsic semi-conductors | * Discussions * Experiments | * Samples of semi-conductors * Complete circuit * Transistors * Junction diode | * Comprehensive secondary physics students book 4 pages 111-112   teachers book 4 pages 48-52   * Secondary physics KLB students book 4 page 189-194 * Principles of physics (M.Nelkon) pages 547-550 * Golden tips Physics pages 193-196 |  |
| **2** | **1-5** | ELECTRONICS | Characteristics of p-n junction | By the end of the lesson, the learner should be able to   1. sketch the current voltage characteristics for a diode | * experiments | * junction diode | * Comprehensive secondary physics students book 4 pages 161-117   teachers book 4 pages 48-52   * Secondary physics KLB students book 4 page 189-194 * Golden tips Physics pages 194-196 |  |
| **3** | **1-5** | ELECTRONICS | Applications of diodes | By the end of the lesson, the learner should be able to   1. explain the application of diodes in rectifications | * Discussions * Questions and answers | * Chart showing the application of diode | * Comprehensive secondary physics students book 4 pages 117-120   teachers book 4 pages 48-52   * Secondary physics KLB students book 4 page 198-201 * Principles of physics (M.Nelkon) pages 198-201 * Golden tips Physics pages 196-198 |  |
| **4** | **1-5** |  | Revision and exams | By the end of the lesson, the learner should be able to   1. ensure that he/she is well prepared to sit for the national exams | * Discussions * Questions and answers technical questions * Problem solving * Assignment and tests | * Revision exercises * Test papers * Mock examinations * Marking schemes | * Comprehensive secondary physics students book form 1-4   teachers book 4 form 1-4   * Secondary physics KLB students book 4 page 1-4 * Principles of physics (M.Nelkon) pages 198-201 * Golden tips Physics pages * Past papers (mocks) |  |
| **5-9 REVISION FOR THE FINAL EXAMINATIONS** | | | | | | | | |