|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| PHYSICS FORM 1 SCHEMES OF WORK – TERM 1 | | | | | | | | |
| WEEK | LESSON | TOPIC | SUB-TOPIC | LEARNING OBJECTIVES | TEACHING/LEARNINGACTIVITIES | TEACHING/LEARNINGRESOURCES | REFERENCES | REMARKS |
| **5** | **1-2** | INTRODUCTION TO PHYSICS | Physics as a science | By the end of the lesson, the learner should be able to   1. Explain what the study of physics involves 2. Relate physics to other subjects and to technology 3. Identify career opportunities related to physics | * Discussions of value and meaning of physics * Drawing flow charts of the braches of physics * Listing career opportunities related to physics | * Chart on definition of physics * Flow charts on branches of physics * Chart on scientific method * List of career related to physics | * Comprehensive secondary physics   Students Book 1 page 1-2  Teacher’s Book 1 pages 1-3   * Secondary Physics students Book 1 (KLB) pages 1-6 |  |
|  | **3-4** | INTRODUCTION TO PHYSICS | Basic laboratory rules | By the end of the lesson, the learner should be able to   1. State and explain the basic laboratory rules | * Discussions * Explanation of rules | * Chart on standard laboratory rules * Pictures showing dangers of not observing laboratory rules | * Comprehensive secondary physics   Students Book 1 page 1-2  Teacher’s Book 1 pages 1-3   * Secondary Physics students Book 1 (KLB) pages 6-7 |  |
| **6** | **1-2** | MEASUREMENTS | Measuring length, area volume and mass | By the end of the lesson, the learner should be able to:   1. Define length, area, volume, mass and state their symbols and SI units | * Conversions * Measuring * Experiment * Counting * Demonstrations | * Meter rule * Burette * Pipette * Measuring cylinder * Weighing balance * Rod * Shadow | * Comprehensive secondary physics   Students Book 1 page 4-8  Teacher’s Book 1 pages 4-6   * Secondary Physics students Book 1 (KLB) pages 8,22,14,33 * Golden tips physics pages 1-7 * Principles of Physics(M.Nelkon) pages 4-9 |  |
|  | **3-4** | MEASUREMENTS | Measuring instruments | By the end of the lesson, the learner should be able to:   1. Use measuring instrument accurately 2. Metre rule, tape measure, beam balance, stop clock, measuring cylinder, pipette and burette | * Demonstrations * Reading scales and correcting errors | * Meter rule * Pipettes * Burettes * Stop watches * Tape measure * Measuring cylinder, beam balance | * Comprehensive secondary physics   Students Book 1 page 6-7  Teacher’s Book 1 pages 5-6   * Secondary Physics students Book 1 (KLB) pages 10,28 * Golden tips physics pages 2 * Principles of Physics(M.Nelkon) pages 7-9 |  |
| **7** | **1-2** | MEASUREMENTS | Measuring density | By the end of the lesson, the learner should be able to:   1. Determine and mentally explain the density of substances 2. Work our density of mixtures 3. Solve numerical problems involving density | * Experiment * Working out answers to problems | * Measuring cylinder * Mass weighing balance * Density bottle | * Comprehensive secondary physics   Students Book 1 page 9-12  Teacher’s Book 1 pages 4-6   * Secondary Physics students Book 1 (KLB) pages 35-48 * Golden tips physics pages 7,10 |  |
|  | **3-4** | MEASUREMENTS | Measuring Time | By the end of the lesson, the learner should be able to   1. Determine experimentally, the measurement of time | * Experiments with pendulum * Timing events | * Pendulum * Clock * Watch | * Comprehensive secondary physics   Students Book 1 page 12-15  Teacher’s Book 1 pages 6   * Secondary Physics students Book 1 (KLB) pages 46-47 * Golden tips physics pages 8 * Principles of Physics(M.Nelkon) pages 23 |  |
| **8** | **1-2** | FORCES | Types of forces | By the end of the lesson, the learner should be able to   1. Define force and state its SI units 2. Describe types of forces 3. State the effects of force | * Discussions * Explaining * Demonstrations * Identifying effects of forces | * Charts of force * String * Elastic material * Magnets * Water * Greece * Oil spring balance | * Comprehensive secondary physics   Students Book 1 page 61-19  Teacher’s Book 1 pages 6-10   * Secondary Physics students Book 1 (KLB) pages 49-68 * Golden tips physics pages 11-12 * Principles of Physics(M.Nelkon) pages 64-65 |  |
|  | **3-4** | FORCES | Surface tension | By the end of the lesson, the learner should be able to:   1. Describe experiments to illustrate cohesion, adhesion and surface tension 2. State the factors affecting surface tension, its consequence and importance | * Discussions * Demonstrations * Explaining the effects of surface tensions | * Funnel * Water * Wire loop * Tap * Soap/detergent | * Comprehensive secondary physics   Students Book 1 page 19-22  Teacher’s Book 1 pages 6-10   * Secondary Physics students Book 1 (KLB) pages 63-70 * Golden tips physics pages 12 |  |
| **9** | **1-2** | FORCES | Mass and weight | By the end of the lesson, the learner should be able to:   1. State and explain the relationship between mass and weight 2. Define scalar and vector magnitude | * Demonstrations * Discussions * Problems solving on mass and weight | * Beam balance * Spring balance * Sponge * Store * Polythene | * Comprehensive secondary physics   Students Book 1 page 17-22  Teacher’s Book 1 pages 6-10   * Secondary Physics students Book 1 (KLB) pages 72-75 * Golden tips physics pages 7 * Principles of Physics(M.Nelkon) pages 40 |  |
|  | **3-4** | FORCES | Measuring Force | By the end of the lesson, the learner should be able to:   1. Measure weight using spring balance 2. Solve numerical problems on numerical forces | * Discussions * Experiments | * Spring balance * Chart on vectors and scalars | * Comprehensive secondary physics   Students Book 1 page 17-18  Teacher’s Book 1 pages 17-15 |  |
| **10** | **1-2** | FORCES | Pressure and force | By the end of the lesson, the learner should be able to:   1. Define pressure and state its SI units 2. Determine pressure exerted by solids | * Discussions * Demonstrations * Problem solving | * Block of wood * Spring balance * Meter rule | * Comprehensive secondary physics   Students Book 1 page 6-10  Teacher’s Book 1 pages 6-10   * Secondary Physics students Book 1 (KLB) pages 82-85 * Golden tips physics pages 44 * Principles of Physics(M.Nelkon) pages 119-121 |  |
|  | **3-4** | PRESSURE | Pressure in liquids | By the end of the lesson, the learner should be able to   1. Investigate experimentally the factors that affect pressure in liquids (Fluids) 2. Derive the formula for calculating pressure in fluids 3. State the principle of transmission of pressure in fluids | * Demonstrations * Working out problems * Discussions * Experiments | * Communication tubes * Tin with holes at different heights * Waters | * Comprehensive secondary physics   Students Book 1 page 27-30  Teacher’s Book 1 pages 12-15   * Secondary Physics students Book 1 (KLB) pages 49-68 * Golden tips physics pages 44-45 * Principles of Physics(M.Nelkom) pages 121-124 |  |
| **11** | **1-2** | PRESSURE | Pressure in gases | By the end of the lesson, the learner should be able to   1. Explain atmospheric pressure and its effects 2. State and explain how pressure is transmitted in fluids | * Demonstrations * Explanation of pressure transmission in fluids * discussions | * Water/oil * Syringe | * Comprehensive secondary physics   Students Book 1 page 25-26,30-32  Teacher’s Book 1 pages 12-15   * Secondary Physics students Book 1 (KLB) pages 115-116,93-100 * Golden tips physics pages 45-46 * Principles of Physics(M.Nelko) pages 124 |  |
|  | **3-4** | PRESSURE | Ganges and siphons | By the end of the lesson, the learner should be able to   1. Describe the working of siphon and pressure gauge | * Discussions * Explanations * Questions and answers | * Barometer * Bourdon gauge * Syringes | * Comprehensive secondary physics   Students Book 1 page 31-34  Teacher’s Book 1 pages 13-15   * Secondary Physics students Book 1 (KLB) pages 113,117 * Golden tips physics pages 44-45 * Principles of Physics(M.Nelko) pages 133 |  |
| **12** | **1-2** | PRESSURE | Application of pressure in liquids and gases | By the end of the lesson, the learner should be able to   1. Explain the working of a hydraulic, braking system of vehicle 2. Explain the working of mercury and forties barometer, bicycle pump and pressure gauges | * Explaining the application of pressure in liquids and gases * Class discussion on the principles of pressure in liquids * Experiments | * Chart showing the working of a hydraulic braking system * Model of hydraulic brake system * Barometer * Bicycle pump | * Comprehensive secondary physics   Students Book 1 page 30-39  Teacher’s Book 1 pages 13-15   * Secondary Physics students Book 1 (KLB) pages 96-112 * Golden tips physics pages 46-47 * Principles of Physics(M.Nelko) pages 124-132 |  |
|  | **3-4** | PRESSURE | Revision on question on the topic pressure | By the end of the lesson, the learner should be able to   1. Answer questions on pressure | * Questions and answers | Questions in students book 1 | * Comprehensive secondary physics   Students Book 1 page 39-41  Teacher’s Book 1 pages 13-15   * Secondary Physics students Book 1 (KLB) pages 119-123 * Golden tips physics pages 54-55 * Principles of Physics(M.Nelko) pages 138-140 |  |
|  | | | | | | | | |
| **PHYSICS FORM 1 SCHEMES OF WORK – TERM 2** | | | | | | | | |
| WEEK | LESSON | TOPIC | SUB-TOPIC | LEARNING OBJECTIVES | TEACHING/LEARNINGACTIVITIES | TEACHING/LEARNINGRESOURCES | REFERENCES | REMARKS |
| **1** | **1-2** | PARTICULATE NATURE OF MATTER | States of matter | By the end of the lesson, the learner should be able   1. to show that matter is made of up tiny particles | * Demonstration * Discussions of kinetic theory | * Beaker * Crystals * Solutes * Solvent | * Comprehensive secondary physics   Students Book 1 page 42  Teacher’s Book 1 pages 15-18   * Secondary Physics students Book 1 (KLB) pages 124-128 * Golden tips physics pages 68 * Principles of Physics(M.Nelko) pages 142 |  |
|  | **3-4** | PARTICULATE NATURE OF MATTER | The Brownian motion | By the end of the lesson, the learner should be able to:   1. Give evidence that matter is made up of tiny particles 2. Demonstrate the Brownian motion in liquids & gases 3. Explain the arrangement of particles in matter 4. Explain the state on matter in terms of particle movement | * Experiments * Observations * Discussions | * Chalk dust * Transparent lid * Pollen grains * Lens * Beaker * Smoke cell * Source of light | * Comprehensive secondary physics   Students Book 1 page 43-48  Teacher’s Book 1 pages 15-18   * Secondary Physics students Book 1 (KLB) pages 127-130 * Golden tips physics pages 68 * Principles of Physics(M.Nelko) pages 148-150 |  |
| **2** | **1-2** | PARTICULATE NATURE OF MATTER | Diffusion in liquid, gases and solids | By the end of the lesson, the learner should be able to   1. Explain diffusion in gases/liquids and solids | * Experiments * Discussions | * Promise gas * Jars * Potassium permanganate * Solvent * Hydrochloric acid * Ammonia * Glass tube cotton wool | * Comprehensive secondary physics   Students Book 1 page 46-49  Teacher’s Book 1 pages 15-18   * Secondary Physics students Book 1 (KLB) pages 132-136 * Golden tips physics pages 69 * Principles of Physics(M.Nelko) pages 146-147 |  |
|  | **3-4** | PARTICULATE NATURE OF MATTER | Revision on Particulate nature of matter | By the end of the lesson, the learner should be able to:   1. Answer questions in students Book 1 | * Discussion * Demonstrations * Asking questions * Answering questions |  | * Secondary Physics students Book 1 (KLB) pages 136-138 * Golden tips physics pages 69-70 * Principles of Physics(M.Nelko) pages 164 * Past Papers |  |
|  | **1-2** | THERMAL EXPANSION | Expansion of solids | By the end of the lesson, the learner should be able to:   1. Define temperature 2. Describe the functionally of various thermometers 3. Explain the expansion and contraction in solids 4. Explain forces due to expansion and contraction | * Experiments * Demonstration * Experiments | * Meter rule * Metal rods * Materials that conduct or do not conduct heat * Ball and ring apparatus * Bar gauge | * Comprehensive secondary physics   Students Book 1 page 50-52  Teacher’s Book 1 pages 18-21   * Secondary Physics students Book 1 (KLB) pages 139-144 * Golden tips physics pages 70-72 * Principles of Physics(M.Nelko) pages 168,175-176 |  |
|  | **3-4** | THERMAL EXPANSION | Applications of expansion in solids | By the end of the lesson, the learner should be able to:   1. Explain the application of expansion and contraction | * Demonstrations * Discussions * Experiments | * Charts on the application of expansion * Rivets * Bimetallic strips | * Comprehensive secondary physics   Students Book 1 page 52-54  Teacher’s Book 1 pages 18-21   * Secondary Physics students Book 1 (KLB) pages 145,151-153 * Golden tips physics pages 73 * Principles of Physics(M.Nelko) pages 177-179 |  |
| **4** | **1-2** | THERMAL EXPANSION | Expansion and contraction of liquid and gases | By the end of the lesson, the learner should be able to:   1. Explain the expansion of liquid 2. Describe the anomalous expansion of water and its effect | * Discussions * Experiments * Demonstrations | * Water * Spirit * Alcohol * thermometer | * Comprehensive secondary physics   Students Book 1 page 54-56  Teacher’s Book 1 pages 18-21   * Secondary Physics students Book 1 (KLB) pages 149-155 * Golden tips physics pages 72-73 * Principles of Physics(M.Nelko) pages 182 |  |
|  | **3-4** | THERMAL EXPANSION | Thermometers | By the end of the lesson, the learner should be able to:   1. Explain the functioning of various thermometers 2. Describe the functioning of various thermometers | * Demonstrations * Discussions | * Liquid in glass thermometers * Clinical thermometers * Maximum and minimum thermometers | * Comprehensive secondary physics   Students Book 1 page 56-59  Teacher’s Book 1 pages 18-21   * Secondary Physics students Book 1 (KLB) pages 155-161 * Golden tips physics pages 70-72 * Principles of Physics(M.Nelko) pages 168-173 |  |
| **5** | **1-2** | THERMAL EXPANSION | Molecules and heat | By the end of the lesson, the learner should be able to   1. Explain the effect of heat on the molecules of solid, liquid and gases | * Discussions * Experiments * Demonstrations | * Solids * Liquids * Air * Source of heat * Containers | * Comprehensive secondary physics   Students Book 1 page 60-61  Teacher’s Book 1 pages 18-21   * Secondary Physics students Book 1 (KLB) pages 139-162 |  |
|  | **3-4** | THERMAL EXPANSION | Revision on thermal expansion | By the end of the lesson, the learner should be able to:   1. Answer questions involving thermal expansions | * Questions * answers | * Set questions | * Comprehensive secondary physics   Students Book 1 page 61-62  Teacher’s Book 1 pages 21   * Secondary Physics students Book 1 (KLB) pages 161-162 * Golden tips physics pages 85-86 * Principles of Physics(M.Nelko) pages 185 |  |
| **6** | **1-2** | HEAT TRANSFER | Heat and temperature | By the end of the lesson, the learner should be able to   1. define heat 2. State the difference between heat and temperature | * Definitions * Discussions * Experiments | * Materials that conduct heat and materials that do not conduct heat | * Comprehensive secondary physics   Students Book 1 page 63  Teacher’s Book 1 pages 22-24   * Secondary Physics students Book 1 (KLB) pages 163 * Golden tips physics pages 774 * Principles of Physics(M.Nelko) pages 168 |  |
|  | **3-4** | HEAT TRANSFER | Conduction of heat | By the end of the lesson, the learner should be able to:   1. State and explain modes of heat transfer 2. Explain factors affecting conduction |  | * Metal rods * Source of heat * Test tube * Water * Ice in gauge | * Comprehensive secondary physics   Students Book 1 page 63-67  Teacher’s Book 1 pages 22-24   * Secondary Physics students Book 1 (KLB) pages 163-186 * Golden tips physics pages 74-77 * Principles of Physics(M.Nelko) pages 234-242 |  |
| **7** | **1-2** | HEAT TRANSFER | Convection | By the end of the lesson, the learner should be able to   1. Demonstrate convection in liquids 2. Explain the working of hot water systems, car engine, cooling system and land sea breeze 3. Explain the molecular application of convection in fluids | * Experiments * Discussion | * Water * Potassium permanganate * Source of heat * Smoke cell apparatus * Chart on hot water system * Car engine | * Comprehensive secondary physics   Students Book 1 page 67-69  Teacher’s Book 1 pages 23   * Secondary Physics students Book 1 (KLB) pages 177-188 * Principles of Physics(M.Nelko) pages 238-2433 |  |
|  | **3-4** | HEAT TRANSFER | Radiation | By the end of the lesson, the learner should be able to   1. Compare absorption and emission of radiant heat 2. Explain the working of solar concentrators, heat taps and solar heaters 3. Explain the working of a thermos flask |  | * Experiments * Making comparisons * Discussions * Explanations | * Comprehensive secondary physics   Students Book 1 page 70-74  Teacher’s Book 1 pages 18-24   * Secondary Physics students Book 1 (KLB) pages 187-195 * Golden tips physics pages 75 * Principles of Physics(M.Nelko) pages 246 |  |
| **7** | **1-2** | RECTI-LINEAR PROPAGATION AND REFLECTION OF LIGHT ON PLANE SURFACES | Propagation of light | By the end of the lesson, the learner should be able to:   1. Define opaque, translucent and transparent objects 2. Describe the types of beams 3. Perform and describe experiments to show rectilinear propagation of light | * Discussions * Experiments * Descriptions * Explanations | * Opaque objects * Glass * Greased paper * Card board * Source of light * Screens | * Comprehensive secondary physics   Students Book 1 page 76-77  Teacher’s Book 1 pages 25-27   * Secondary Physics students Book 1 (KLB) pages 199-204 * Golden tips physics pages 75 * Principles of Physics(M.Nelko) pages 251-252 |  |
|  | **3-4** | RECTI-LINEAR PROPAGATION AND REFLECTION OF LIGHT ON PLANE SURFACES | ECLIPSE |  |  |  |  |  |
| **9** | **1-2** | RECTI-LINEAR PROPAGATION AND REFLECTION OF LIGHT ON PLANE SURFACES | The pin-hole camera | By the end of the lesson, the learner should be able to:   1. Explain the functions and principles involved in working of a pin-hole camera | * Experiments * Drawing * Discussion | * Pin hole camera * Source of light (candle) | * Comprehensive secondary physics   Students Book 1 page 77  Teacher’s Book 1 pages 25-27   * Secondary Physics students Book 1 (KLB) pages 211-219 * Golden tips physics pages 99 * Principles of Physics(M.Nelko) pages 252-255 |  |
|  | **3-4** | RECTI-LINEAR PROPAGATION AND REFLECTION OF LIGHT ON PLANE SURFACES | Shadows | By the end of the lesson, the learner should be able to:   1. Describe the formation of shadows 2. Describe the solar and linear eclipses | * Experiments * Discussions * Demonstrations * Explanations * Descriptions | * Opaque objects * Chart of the eclipse of earth and moon * Source of light * Screen | * Comprehensive secondary physics   Students Book 1 page 78-79  Teacher’s Book 1 pages 25-27   * Secondary Physics students Book 1 (KLB) pages 203-219 * Principles of Physics(M.Nelko) pages 254-257 |  |
| **10** | **1-2** | RECTI-LINEAR PROPAGATION AND REFLECTION OF LIGHT ON PLANE SURFACES | Reflection of light on plane surfaces | By the end of the lesson, the learner should be able to:   1. Verify experimentally the law of reflection | * Experiments * Descriptions * Explanations * Discussions | * Plane mirrors * Pins * White sheets of paper * Soft boards | * Comprehensive secondary physics   Students Book 1 page 80-82  Teacher’s Book 1 pages 25-27   * Secondary Physics students Book 1 (KLB) pages 222-228 * Golden tips physics pages 100 * Principles of Physics(M.Nelko) pages 260 |  |
|  | **3-4** | RECTI-LINEAR PROPAGATION AND REFLECTION OF LIGHT ON PLANE SURFACES | Image formation | By the end of the lesson, the learner should be able to:   1. Locate images in place mirrors and state their characteristics | * Experiments * Descriptions * Discussions | * Pins * Boards * Protractor * Mirror | * Comprehensive secondary physics   Students Book 1 page 83-84  Teacher’s Book 1 pages 25-27   * Secondary Physics students Book 1 (KLB) pages 228-230 * Golden tips physics pages 100-101 * Principles of Physics(M.Nelko) pages 264 |  |
| **11** | **1-2** | RECTI-LINEAR PROPAGATION AND REFLECTION OF LIGHT ON PLANE SURFACES | The application of plane mirrors | By the end of the lesson, the learner should be able to:   1. Explain the reflection of light on plane surfaces at an angle 2. Explain the working of a periscope and kaleidoscope | * Experiments * Explanations * Descriptions * Discussions | * Plane mirrors * Objects such as candles * Pipe * Card board | * Comprehensive secondary physics   Students Book 1 page 84-86  Teacher’s Book 1 pages 25-27   * Secondary Physics students Book 1 (KLB) pages 235-240 * Golden tips physics pages 101 |  |
|  | **3-4** | RECTI-LINEAR PROPAGATION AND REFLECTION OF LIGHT ON PLANE SURFACES | Revision | By the end of the lesson, the learner should be able to   1. solve problems involving the propagation and reflection of light on plane surfaces | * Problem solving * Questions and answers * Discussion | Set questions | * Comprehensive secondary physics   Students Book 1 page 87-88  Teacher’s Book 1 pages 28-29   * Secondary Physics students Book 1 (KLB) pages 241-244 * Golden tips physics pages 101-102 * Principles of Physics(M.Nelko) pages 266-267 |  |
| **12** | **END OF TERM EXAMINATIONS** | | | | | | | |
|  | | | | | | | | |
| **PHYSICS FORM 1 SCHEMES OF WORK – TERM 3** | | | | | | | | |
| **WEEK** | **LESSON** | **TOPIC** | **SUB - TOPIC** | **OBJECTIVES** | **LEARNING/TEACHING ACTIVITIES** | **LEARNING/TEACHING RESOURCES** | **REFERENCES** | **REMARKS** |
| **1** | **1-2** | ELECTROSTATICS | Charging materials by induction and contact | By the end of the lesson, the learner should be able to:   1. Explain the charging of materials by induction and contact 2. Describe origin of charge 3. State the law of charges | * Demonstrations * Discussions * Experiments | * Polythene bags * Thrust * Glass rod | * Comprehensive secondary physics   Students Book 1 page 89  Teacher’s Book 1 pages 29-32   * Secondary Physics students Book 1 (KLB) pages 245-250 * Golden tips physics pages 133-134 * Principles of Physics(M.Nelko) pages 264 |  |
|  | **3-4** | ELECTROSTATICS | Laws of charge | By the end of the lesson the learner should be able to:   1. Describe the electrostatic charge 2. Explain the electrostatic charge 3. State types of charge | * Experiments * Discussion * Observations | * Rubber * Piece of paper * Glass * Amber * Silk material * Fur * Electroscope | * Comprehensive secondary physics   Students Book 1 page 89-91  Teacher’s Book 1 pages 29-32   * Secondary Physics students Book 1 (KLB) pages 245-248 * Golden tips physics pages 133 * Principles of Physics(M.Nelko) pages 509-510 |  |
| **2** | **1-2** | ELECTROSTATICS | The leaf electroscope | By the end of the lesson, the learner should be able to   1. State the unit of charges and construct leaf electroscope | * Discussions * Constructing an electroscope * Experiment | * Leaf electroscope * Glass rod | * Comprehensive secondary physics   Students Book 1 page 91-92  Teacher’s Book 1 pages 29-32   * Secondary Physics students Book 1 (KLB) pages 251-252 * Golden tips physics pages 133 * Principles of Physics(M.Nelko) pages 511 |  |
|  | **3-4** | ELECTROSTATICS | Charging an electroscope by contract | By the end of the lesson, the learner should be able to   1. charge an electroscope by contact | * Demonstration * Discussions * Experiments | * Electroscope * Glass rod * Ebonite rod | * Comprehensive secondary physics   Students Book 1 page 94-96  Teacher’s Book 1 pages 29-32   * Secondary Physics students Book 1 (KLB) pages 249-250 * Golden tips physics pages 134 * Principles of Physics(M.Nelko) pages 512 |  |
| **3** | **1-2** | ELECTROSTATICS | Charging an electroscope by induction | By the end of the lesson, the learner should be able to   1. charge an electroscope by induction | * Demonstrations * Discussions * Experiments | * Electroscope * Glass rod * Ebonite rod | * Comprehensive secondary physics   Students Book 1 page 94-96  Teacher’s Book 1 pages 29-32   * Secondary Physics students Book 1 (KLB) pages 248-249 * Principles of Physics(M.Nelko) pages 513-515 |  |
|  | **3-4** | ELECTROSTATICS | Charging an electroscope by separation | By the end of the lesson, the learner should be able to   1. charge an electroscope by separation | * Discussions * Experiments * Descriptions | * Rods of conductors and no-conductors * Electroscope * Tiles | * Comprehensive secondary physics   Students Book 1 page 96-97  Teacher’s Book 1 pages 29-32   * Secondary Physics students Book 1 (KLB) pages 250-251 |  |
| **4** | **1-2** | ELECTROSTATICS | Charging an electroscope by EHT source | By the end of the lesson, the learner should be able to   1. Charge electroscope by an EHT source | * Descriptions * Experiments * Discussions | * Rods of conductors and non-conductors * Electroscope * Tiles | * Comprehensive secondary physics   Students Book 1 page 97  Teacher’s Book 1 pages 29-32 |  |
|  | **3-4** | ELECTROSTATICS | Revision | By the end of the lesson, the learner should be able to   1. answer questions on electrostatics | * Questions and answers | Chalkboard  Text books | * Secondary Physics students Book 1 (KLB) pages 259-260 * Principles of Physics(M.Nelko) pages 527-530 * Golden tips physics pages 138-139 |  |
| **5** | **1-2** | CELLS AND SIMPLE CIRCUITS | Sources of continuous current | By the end of the lesson, the learner should be able to   1. state sources of continuous current | * Experiments * Discussions * Demonstration | * Cells * Acids * Fruits * Solar panels * Petroleum products | * Comprehensive secondary physics   Students Book 1 page 99-100  Teacher’s Book 1 pages 34-37   * Secondary Physics students Book 1 (KLB) pages 261-265 * Golden tips physics pages 140 * Principles of Physics(M.Nelko) pages 408-409 |  |
|  | **3-4** | CELLS AND SIMPLE CIRCUITS | Connecting an electric circuit | By the end of the lesson, the learner should be able to   1. Draw and set up a simple electric circuit 2. Identify circuit symbols | * Identifying circuit symbols * Discussions * Demonstrations * Experiments | * Cells * Wires * Bulbs * Charts on circuit symbols | * Comprehensive secondary physics   Students Book 1 page 99-101  Teacher’s Book 1 pages 34-37   * Secondary Physics students Book 1 (KLB) pages 266-273 * Golden tips physics pages 140 * Principles of Physics(M.Nelko) pages 408-409 |  |
| **6** | **1-2** | CELLS AND SIMPLE CIRCUIT | Connecting and electric circuit | By the end of the lesson the learner should be able to   1. Define electric current 2. Explain the working of a cell 3. Connect cells in series and parallel 4. Measure the effective e.m.f | * Measuring * Demonstrations * Discussions * Experiments | * Cells * Connecting wires * Bulbs | * Comprehensive secondary physics   Students Book 1 page 100-101  Teacher’s Book 1 pages 34-37   * Secondary Physics students Book 1 (KLB) pages 241-273 * Golden tips physics pages 140-143 |  |
|  | **3-4** | CELLS AND SIMPLE CIRCUITS | The measuring of E.M.F | By the end of the lesson, the learner should be able to measure e.m.f | * Experiments * Discussions * Measuring * Demonstrations | * Ammeter * Voltmeter * Switch | * Comprehensive secondary physics   Students Book 1 page 101-102  Teacher’s Book 1 pages 34-37   * Secondary Physics students Book 1 (KLB) pages 264 * Golden tips physics pages 143 * Principles of Physics(M.Nelko) pages 409 |  |
| **7** | **1-2** | CELLS AND SIMPLE CIRCUIT | Conductivity of materials | By the end of the lesson, the learner should be able to   1. Investigate the electrical conductivity of materials | * Calculating * Testing * Conductivity * Experiments | * Conductors * Non-conductors | * Comprehensive secondary physics   Students Book 1 page 101-103  Teacher’s Book 1 pages 34-37   * Secondary Physics students Book 1 (KLB) pages 273-275 * Principles of Physics(M.Nelko) pages |  |
|  | **3-4** | CELLS AND SIMPLE CIRCUITS | Measuring current in a circuit | By the end of the lesson, the learner should be able to measure current in a circuit | * Measuring * Experiments * Calculating | * Voltmeter * Ammeter * Switch | * Comprehensive secondary physics   Students Book 1 page 101-103  Teacher’s Book 1 pages 34-37   * Secondary Physics students Book 1 (KLB) pages 266-269 * Golden tips physics pages 142 |  |
| **8** | **1-2** | CELLS AND SIMPLE CIRCUITS | Primary cells | By the end of the lesson, the learner should be able to:   1. Describe the working of primary cells 2. Explain the defect s of primary cells 3. Explain how to care for a primary cell | * Discussions * Experiments * Explaining the defects of primary cells | * Primary cells | * Comprehensive secondary physics   Students Book 1 page 104-106  Teacher’s Book 1 pages 34-37   * Secondary Physics students Book 1 (KLB) pages 276-280 * Principles of Physics(M.Nelko) pages 409-414 |  |
|  | **3-4** | CELLS AND SIMPLE CIRCUITS | Measuring e.m.f in a primary cell | By the end of the lesson, the learner should be able to:   1. Measure e.m.f in a primary | * Experiments * Discussions * Demonstrations * Measuring | * Primary cells * Voltmeter * Switch | * Comprehensive secondary physics   Students Book 1 page 106  Teacher’s Book 1 pages 34-37   * Secondary Physics students Book 1 (KLB) pages 276-280 * Principles of Physics(M.Nelko) pages 409-414 |  |
| **9** | **1-2** | CELLS AND SIMPLE CIRCUITS | Secondary cells | By the end of the the lesson the learner should be able to:   1. Charge a secondary cell 2. Discharge a secondary cell 3. Take care of a secondary cell | * Explanation on charging and maintenance of simple cells | Secondary cells | * Comprehensive secondary physics   Students Book 1 page 106-109  Teacher’s Book 1 pages 34-37   * Secondary Physics students Book 1 (KLB) pages 280-284 * Golden tips physics pages 140 |  |
|  | **3-4** | REVISION |  | By the end of the lesson, the learner should be able to   1. Answer questions on cells 2. Answer questions on circuits | * Discussions * Demonstrations * Asking questions * Answering questions |  | * Secondary Physics students Book 1 (KLB) pages 287-288 * Golden tips physics pages 150-151 * Principles of Physics(M.Nelkon) pages 422-423 |  |
|  | | | | | | | | |
| **PHYSICS FORM 2 SCHEMES OF WORK – TERM 1** | | | | | | | | |
| **WEEK** | **LESSON** | **TOPIC** | **SUB - TOPIC** | **OBJECTIVES** | **LEARNING/TEACHING ACTIVITIES** | **LEARNING/TEACHING RESOURCES** | **REFERENCES** | **REMARKS** |
| **1** | **1-2** | MAGNETISM | Magnetism and magnetic materials | By the end of the lesson, the learner should be able to:   1. Identify magnetic and non-magnetic materials | * Observing attraction and repulsion of magnets * Identifying the test for magnetic materials * Describing natural and artificial materials * Carrying out experiments to identify magnetic and non-magnetic materials | * Magnets * Nails * Pins * Wood * Plastics * Tins * Spoons * Strings * Razor blade * Stand | * Comprehensive secondary physics students book 2 pages 1-2 * Comprehensive secondary physics teachers book 2 pages 1-5 * Secondary physics KLB students book 2 page * Principles of physics (M.Nelkom) pages 442-443 * Golden tips physics page 124 |  |
|  | **3-4** | MAGNETISM | Properties of magnets and the law of magnetism | By the end of the lesson, the learner should be able to   1. Describe the properties of magnets 2. State the logic law of magnetism | * Investigating properties of magnets * Stating the laws of magnetism | * Magnets * Charts on properties * Iron fillings * Strings * Stand | * Comprehensive secondary physics students book 2 pages 1-2 * Comprehensive secondary physics teachers book 2 pages 1-5 * Secondary physics KLB students book 2 page 1-4 * Principles of physics (M.Nelkom) pages 149 * Golden tips physics page 124 |  |
| **2** | **1-2** | MAGNETISM | The compass | By the end of the lesson, the learner should be able to   1. Construct simple compass | * Constructing a simple compass | * Pin/screw * Magnet * Cork * Glass top * Water trough * Piece of stiff paper * Razor blade * Glue | * Comprehensive secondary physics students book 2 pages 3-5 * Comprehensive secondary physics teachers book 2 pages 1-5 * Secondary physics KLB students book 2 page 5 * Principles of physics (M.Nelkom) pages 151 * Golden tips physics page 127 |  |
|  | **3-4** | MAGNETISM | Magnetic field patterns | By the end of the lesson, the learner should be able to:   1. Describe magnet field patterns | * Plotting the field of a bar magnet using a compass and iron filings | * A compass * Iron fillings * Bar magnets * Can with lid * Card board * Sheet of papers | * Comprehensive secondary physics students book 2 pages 3-5 * Comprehensive secondary physics teachers book 2 pages 1-5 * Secondary physics KLB students book 2 page 6-7 * Principles of physics (M.Nelkom) pages 444 * Golden tips physics page 124-125 |  |
| **3** | **1-2** | MAGNETISM | Making magnets by induction and stroking | By the end of the lesson, the learner should be able to make magnets by :   1. Induction 2. Stroking | * Demonstrating induction * Magnetizing a steel bar by stroking single and double strikes * Defining hard and soft magnets | * Bar magnets * Steel bars * Nails * Iron bars | * Comprehensive secondary physics students book 2 pages 6-7 * Comprehensive secondary physics teachers book 2 pages 1-5 * Secondary physics KLB students book 2 page 19-22 * Principles of physics (M.Nelkom) pages 441-442 * Golden tips physics page 125-126 |  |
|  | **3-4** | MAGNETISM | Making magnets by an electric current | By the end of the lesson, the learner should be able to:   1. Magnetize a material by an electric current | * Magnetizing a steel bar by an electric current | * Insulated wire * Battery cell * Steel bar | * Comprehensive secondary physics students book 2 pages 8 * Comprehensive secondary physics teachers book 2 pages 1-5 * Secondary physics KLB students book 2 page 23-24 * Principles of physics (M.Nelkom) pages 440 * Golden tips physics page 125-126 |  |
| **4** | **1-2** | MAGNETISM | Demagnetization and caring for magnets | By the end of the lesson, the learner should be able to   1. Describe the methods of demagnetizative 2. Describe how to care for magnets | * Describing ways of demagnetizing of magnet * Explaining how to care for magnets * Carrying out experiments to demagnetize and care for magnets | * Battery/cell * Keepers * Bar magnets * Chart on demagnetization and care for magnets | * Comprehensive secondary physics students book 2 pages 8-9 * Comprehensive secondary physics teachers book 2 pages 1-5 * Secondary physics KLB students book 2 page 25-26 * Principles of physics (M.Nelkom) pages 442 * Golden tips physics page 126-127 |  |
|  | **3-4** | MAGNETISM | Uses of magnets | By the end of the lesson, the learner should be able to   1. Describe the uses of magnets | * Describing uses of magnets * Discussions * Using magnets | * Magnets * Metallic bars * Non-metallic bars | * Comprehensive secondary physics students book 2 pages 9 * Comprehensive secondary physics teachers book 2 pages 1-5 * Secondary physics KLB students book 2 page 27 * Principles of physics (M.Nelkom) pages * Golden tips physics page 127 |  |
| **5** | **1-2** | MAGNETISM | The domain theory of magnetism | By the end of the lesson, the learner should be able to:   1. Explain the domain theory | * Describing the domain theory of magnetism * Explaining the application of the domain theory of magnetism | * Charts on domain theory * Bar magnets * Iron fillings * Test tubes * Cork | * Comprehensive secondary physics students book 2 pages 9-10 * Comprehensive secondary physics teachers book 2 pages 1-5 * Secondary physics KLB students book 2 page 17 * Principles of physics (M.Nelkom) pages * Golden tips physics page 127 |  |
|  | **3-4** | MAGNETISM | Revision | By the end of the lesson, the learner should be able to:   1. Answer questions on magnetism | * Questions and answers * Read more on magnetism | * Questions and project to the students book 2 | * Comprehensive secondary physics students book 2 pages 11-12 * Comprehensive secondary physics teachers book 2 pages 5-6 * Secondary physics KLB students book 2 page 27 * Principles of physics (M.Nelkom) pages * Golden tips physics page 131 |  |
| **6** | **1-2** | MEASUREMENT II | The vernire calipers | By the end of the lesson, the learner should be able to   1. Measure length using vernire calipers | * Measuring length and diameter of various objects using a venire calipers | * Vernire calipers * Circular containers * Nail * needles | * Comprehensive secondary physics students book 2 pages 13-15 * Comprehensive secondary physics teachers book 2 pages 6-11 * Secondary physics KLB students book 2 page 31-36 * Principles of physics (M.Nelkom) pages * Golden tips physics page 3-4 |  |
|  | **3-4** | MEASUREMENT II | The micrometer  Screw gauge | By the end of the lesson, the learner should be able to:   1. Measure length using the micrometer screw gauge | * Measuring small diameters and thickness using the screw gauge | * Micrometer screw gauge * Charts on how to read the scale of a screw gauge * Wires * paper | * Comprehensive secondary physics students book 2 pages 15-17 * Comprehensive secondary physics teachers book 2 pages 6-11 * Secondary physics KLB students book 2 page 36-40 * Principles of physics (M.Nelkom) pages * Golden tips physics page 4-5 |  |
| **7** | **1-2** | MEASUREMENT II | Decimal places, significant figures and standard form | By the end of the lesson, the learner should be able to:   1. State numbers in standard form, decimal places and significant figures | * Working out problems in decimals * Identifying the significant figures of a number * Writing numbers in standard form |  | * Comprehensive secondary physics students book 2 pages 17-19 * Comprehensive secondary physics teachers book 2 pages 6-11 * Secondary physics KLB students book 2 page 40-41 * Principles of physics (M.Nelkom) pages * Golden tips physics page 8-9 |  |
|  | **3-4** | MEASUREMENT II | Determining the size of a molecule | By the end of the lesson, the learner should be able to:   1. Estimate the diameter of a drop of oil | * Measuring the diameter of an molecule | * Oil * Burette * Wire * Trough * Water * Floor or pollen grain * strings | * Comprehensive secondary physics students book 2 pages 6-11 * Comprehensive secondary physics teachers book 2 pages 19-21 * Secondary physics KLB students book 2 page 42-44 * Principles of physics (M.Nelkom) pages * Golden tips physics page 9 |  |
| **8** | **1-2** | MEASUREMENT II | Revision | By the end of the lesson the learner should be able to:   1. Answer questions involving measurement | * Problem solving * Identifying values on appropriate scale * Carrying out a project work | * Questions and project the students book 2 * Questions work sheet | * Comprehensive secondary physics students book 2 pages 21-23 * Comprehensive secondary physics teachers book 2 pages 11 * Secondary physics KLB students book 2 page 46-49 * Principles of physics (M.Nelkom) pages * Golden tips physics page 10 |  |
|  | **3-4** | THE TURNING EFFECTS OF A FORCE | The moments of a force | By the end of the lesson, the learner should be able to:   1. Define moments of force about a point 2. State the SI units of moment of force | * Defining moments of force * Calculating moment | * Meter rule * Knife edge * Strings * Spring balance * Masses | * Comprehensive secondary physics students book 2 pages 24 * Comprehensive secondary physics teachers book 2 pages 12-14 * Secondary physics KLB students book 2 page 50-52 * Principles of physics (M.Nelkom) pages * Golden tips physics page 13 |  |
| **9** | **1-2** | THE TURNING EFFECTS OF A FORCE | Principles of moments | By the end of the lesson, the learner should be able to:   1. State and verify the principle of moment | * Stating the principle of moment of a force * Calculating moments | * Meter rule * Knife edge * Strings * Spring balance * Masses | * Comprehensive secondary physics students book 2 pages 24 * Comprehensive secondary physics teachers book 2 pages 12-14 * Secondary physics KLB students book 2 page 53-56 * Principles of physics (M.Nelkom) pages * Golden tips physics page 14-15 |  |
|  | **3-4** | THE TURNING EFFECTS OF A FORCE | Revision | By the end of the lesson, the learner should be able to   1. Solve problems involving moments | * Problems solving * Discussion of correct procedure * Questions and answers | * The exercise in the student book | * Comprehensive secondary physics students book 2 pages 27-28 * Comprehensive secondary physics teachers book 2 pages 13-14 * Secondary physics KLB students book 2 page 65-67 * Principles of physics (M.Nelkom) pages * Golden tips physics page 14-15 |  |
| **10** | **1-2** | TURNING EFFECTS OF A FORCE | Revision | By the end of the lesson, the learner should be able to:   1. Answer questions on the covered topics | * Answer questions in quiz or test form * Discussing answers | * Moderate a review questions * Marking schemes | * Comprehensive secondary physics students book 2 pages 1-28 * Comprehensive secondary physics teachers book 2 pages 1-14 * Secondary physics KLB students book 2 page 65-67 * Principles of physics (M.Nelkom) pages * Golden tips physics page 14-15 |  |
|  | **3-4** | EQUILIBRIUM AND CENTRE OF GRAVITY | Equilibrium | By the end of the lesson, the learner should be able to:   1. Identify and explain the states of equilibrium | * Identifying the states of equilibrium * Explaining the conditions of equilibrium | * Objects with stable, unstable and neutral equilibrium | * Comprehensive secondary physics students book 2 pages 33 * Comprehensive secondary physics teachers book 2 pages 15-17 * Secondary physics KLB students book 2 page 17-18 * Principles of physics (M.Nelkom) pages * Golden tips physics page 15-16 |  |
| **11** | **1-2** | Equilibrium and centre of gravity | Centre of gravity | By the end of the lesson, the learner should be able to   1. Define centre of gravity 2. Determine centre of gravity of lamina objects | * Defining centre of gravity * Determining centre of gravity of lamina objects | * Lamina objects * Plumb line * pencils | * Comprehensive secondary physics students book 2 pages 30 * Comprehensive secondary physics teachers book 2 pages 15-17 * Secondary physics KLB students book 2 page 68-76 * Principles of physics (M.Nelkom) pages * Golden tips physics page 15 |  |
|  | **3-4** | Equilibrium and centre of gravity | Stability | By the end of the lesson, the learner should be able to:   1. Explain and state the factors affecting stability of an object | * Identifying the factors affecting stability * Explaining how equilibrium is maintained | * Chart showing factors of stability | * Comprehensive secondary physics students book 2 pages 31-33 * Comprehensive secondary physics teachers book 2 pages 15-17 * Secondary physics KLB students book 2 page 78 * Principles of physics (M.Nelkom) pages * Golden tips physics page 16 |  |
| **12** | **1-2** | Equilibrium and centre of gravity | Stability | By the end of the lesson, the learner should be able to:   1. Explain where stability is applicable | * Explaining the application of stability * Discussions | * Pictures and charts showing applications of stability | * Comprehensive secondary physics students book 2 pages 15-17 * Comprehensive secondary physics teachers book 2 pages 33 * Secondary physics KLB students book 2 page 79-80 * Principles of physics (M.Nelkom) pages * Golden tips physics page 16 |  |
|  | **3-4** | Equilibrium and centre of gravity | Revision | By the end of the lesson, the learner should be able to:   1. Solve problems involving centre of gravity and moment of a force | * Problem solving * Discussionof solution * Questions and answers * Doing end of term examinations | * Moderate review questions * Marking schemes * Exercises in the students book 2 | * Comprehensive secondary physics students book 2 pages 34 * Comprehensive secondary physics teachers book 2 pages 17 * Secondary physics KLB students book 2 page 80-82 * Principles of physics (M.Nelkom) pages * Golden tips physics page 16 |  |
|  | | | | | | | | |
| **PHYSICS FORM 2 SCHEMES OF WORK – TERM 2** | | | | | | | | |
| **WEEK** | **LESSON** | **TOPIC** | **SUB - TOPIC** | **OBJECTIVES** | **LEARNING/TEACHING ACTIVITIES** | **LEARNING/TEACHING RESOURCES** | **REFERENCES** | **REMARKS** |
| **1** | **1-2** | REFLECTION AT CURVED SURFACES | Spherical mirrors | By the end of the lesson, the learner should be able to:   1. Describe concave, convex and parabolic reflectors | * Reflecting light at curved mirrors | * Concave mirrors * Convex mirrors * parabolic mirrors * Plane papers * Soft board, pins | * Comprehensive secondary physics students book 2 pages 35 * Comprehensive secondary physics teachers book 2 pages 18-22 * Secondary physics KLB students book 2 page 83 * Principles of physics (M.Nelkom) pages * Golden tips physics page 102 |  |
|  | **3-4** | REFLECTION AT CURVED SURFACES | Parts of spherical mirrors and parabolic surfaces | By the end of the lesson, the learner should be able to:   1. Describe using any diagram, the principle axes, principle focus, centre of curvature, radius of curvature and related terms | * Describing parts of a curved mirrors * Observing reflection at spherical mirrors | * Variety of a curved mirrors * Graph papers * Rulers | * Comprehensive secondary physics students book 2 pages 35-37 * Comprehensive secondary physics teachers book 2 pages 18-22 * Secondary physics KLB students book 2 page 85-87 * Principles of physics (M.Nelkom) pages * Golden tips physics page 102 |  |
| **2** | **1-2** | REFLECTION AT CURVED SURFACES | Locating images in curved mirrors and parabolic surfaces | By the end of the lesson, the learner should be able to:   1. Use ray diagram to locate images formed by plane mirrors | * Drawing ray diagrams * Describing image characteristics | * Graph papers * Soft boards * Plane papers * Pins | * Comprehensive secondary physics students book 2 pages 37-38 * Comprehensive secondary physics teachers book 2 pages 18-22 * Secondary physics KLB students book 2 page 86 * Principles of physics (M.Nelkom) pages * Golden tips physics page 103 |  |
|  | **3-4** | REFLECTION AT CURVED SURFACES | Characteristics of images formed by concave mirrors | By the end of the lesson, the learner should be able to   1. Determine experimentally the characteristics of images formed by concave mirrors | * Experimenting with concave mirrors * Describing the nature of images formed in concave mirror | * Concave mirrors | * Comprehensive secondary physics students book 2 pages 39-40 * Comprehensive secondary physics teachers book 2 pages 19-22 * Secondary physics KLB students book 2 page 95-100 * Principles of physics (M.Nelkom) pages 439-440 * Golden tips physics page 103 |  |
| **3** | **1-2** | REFLECTION AT CURVED SURFACES | Applications of curved reflecting surfaces and magnification | By the end of the lesson, the learner should be able to   1. Define magnification 2. State and explain the applications of curved mirrors 3. State the defects of spherical mirrors | * Explaining magnification and formula in curved mirrors * Describing the uses of curved mirrors * Asking questions | * Curved mirrors * Exercise in students book 2 | * Comprehensive secondary physics students book 2 pages 40-43 * Comprehensive secondary physics teachers book 2 pages 19-24 * Secondary physics KLB students book 2 page 104-120 * Principles of physics (M.Nelkom) pages * Golden tips physics page 105 |  |
|  | **3-4** | THE MAGNETIC EFFECT OF ELECTRIC CURRENT | Magnetic field due to current | By the end of the lesson, the learner should be able to   1. Perform and describe an experiment to determine the direction of a magnetic field round a current carrying conductor | * Observing and describing the direction of magnetic field round a current carrying a conductor * Carrying out experiments | * Compass * Wires * Battery * Ammeter * Compass needle * Cardboard * Screws * Iron fillings | * Comprehensive secondary physics students book 2 pages 44-47 * Comprehensive secondary physics teachers book 2 pages 25-28 * Secondary physics KLB students book 2 page 123-128 * Principles of physics (M.Nelkom) pages 439-440 * Golden tips physics page 128 |  |
| **4** | **1-2** | MAGNETIC EFFECT OF ELECTRIC CURRENT | Magnetic field pattern | By the end of the lesson, the learner should be able to:   1. Determining the magnetic field patterns on straight conductors and solenoid | * Constructing a simple electromagnetic | * Soft iron * Nails * Compass * Solenoid | * Comprehensive secondary physics students book 2 pages 47-48 * Comprehensive secondary physics teachers book 2 pages 25-28 * Secondary physics KLB students book 2 page 128 * Principles of physics (M.Nelkom) pages 439-440 * Golden tips physics page 129 |  |
|  | **3-4** | MAGNETIC FIELD OF ELECTRIC CURRENT | Electromagnetic field pattern | By the end of the lesson, the learner should be able to:   1. Construct a simple electromagnet | * Constructing a simple electromagnets | * Solenoid * Soft iron * Nails compass | * Comprehensive secondary physics students book 2 pages 47-48 * Comprehensive secondary physics teachers book 2 pages 25-28 * Secondary physics KLB students book 2 page 143 * Principles of physics (M.Nelkom) pages 439-440 * Golden tips physics page 130 |  |
| **5** | **1-2** | MAGNETIC EFFECTS OF ELECTRIC CURRENT | Strength of an electron-magnets | By the end of the lesson, the learner should be able to:   1. Explain the working of simple electronic motor and an electric bell | * Investigating the factors that affect the strength of an electromagnet | * Battery * Ammeter * Different magnetic materials | * Comprehensive secondary physics students book 2 pages 48-49 * Comprehensive secondary physics teachers book 2 pages 25-28 * Secondary physics KLB students book 2 page 131 * Principles of physics (M.Nelkom) pages * Golden tips physics page 130 |  |
|  | **3-4** | MAGNETIC EFFECTS OF ELECTRIC CURRENT | Applications of electromagnets | By the end of the lesson, the learner should be able to:   1. Explain the working of a simple electric motor and an electric bell | * Discussing the use of an electric bell * Discussing the use of electric motor | * An electric bell * An electric motor | * Comprehensive secondary physics students book 2 pages 49-58 * Comprehensive secondary physics teachers book 2 pages 23-28 * Secondary physics KLB students book 2 page 143-151 * Principles of physics (M.Nelkom) pages * Golden tips physics page 130 |  |
| **6** | **1-2** | MAGNETIC EFFECTS OF ELECTRIC CURRENT | Construction of an electric bell | By the end of the lesson, the learner should be able to   1. Construct a simple electric bell | * Constructing an electric bell | * Materials for constructing an electric bell * Chart in electric bell | * Comprehensive secondary physics students book 2 pages 48-49 * Comprehensive secondary physics teachers book 2 pages 25-28 * Secondary physics KLB students book 2 page 131 * Principles of physics (M.Nelkom) pages * Golden tips physics page 131 |  |
|  | **3-4** | MAGNETIC EFFECTS OF ELECTRIC CURRENT | Motor effect | By the end of the lesson, the learner should be able to   1. Experimentally determine direction of a force on a conductor carrying current in a magnetic field | * Experiments on motor effects * Flemings rules illustrated | * Magnets * Wires * Pattery * Pins | * Comprehensive secondary physics students book 2 pages 52-53 * Comprehensive secondary physics teachers book 2 pages 25-28 * Secondary physics KLB students book 2 page 150-151 * Principles of physics (M.Nelkom) pages * Golden tips physics page 130 |  |
| **7** | **1-2** | THE MAGNETIC EFFECT OF ELECTRIC CURRENT | Factors affecting force on a current carrying conductor | By the end of the lesson, the learner should be able to:   1. State and explain factors affecting force on a current carrying conductors in a magnetic fields | * Rotation between current magnetism and force | * Battery * Magnets * Wires * Ferromagnetic materials | * Comprehensive secondary physics students book 2 pages 49-51 * Comprehensive secondary physics teachers book 2 pages 27 * Secondary physics KLB students book 2 page 131 * Principles of physics (M.Nelkom) pages * Golden tips physics page 130 |  |
|  | **3-4** | THE MAGNETIC EFFECT OF ELECTRIC CURRENT | Construction of a simple electric motor | By the end of the lesson, the learner should be able to;   1. Construct a simple electric motor | * Constructing an electronic motor | * Source of current * Wire * magnets | * Comprehensive secondary physics students book 2 pages 49-51 * Comprehensive secondary physics teachers book 2 pages 25-28 * Secondary physics KLB students book 2 page 150-151 * Principles of physics (M.Nelkom) pages * Golden tips physics page 130 |  |
| **8** | **1-2** | THE MAGNETIC EFFECT OF ELECTRO-CURRENT | Revision | By the end of the lesson, the learner should be able to   1. Answer questions on magnetic effects of an electric current | * Questions and answers * Doing research/projects | Information and exercise in the students book 2 | * Comprehensive secondary physics students book 2 pages 58-59 * Comprehensive secondary physics teachers book 2 pages 28-29 * Secondary physics KLB students book 2 page 152-153 * Principles of physics (M.Nelkom) pages * Golden tips physics page 131-132 |  |
| **9** | **1-2** | HOOK’S LAW | Hook’s law | By the end of the lesson, the learner should be able to:   1. State and derive the Hook’s law | * Defining Hook’s law * Deriving Hook’s law | * Wire springs * Masses * Spring balance * Graph paper | * Comprehensive secondary physics students book 2 pages 60-61 * Comprehensive secondary physics teachers book 2 pages 30-32 * Secondary physics KLB students book 2 page 158 * Principles of physics (M.Nelkom) pages 439-440 * Golden tips physics page 17 |  |
|  | **3-4** | HOOK’S LAW | Spring constant | By the end of the lesson, the learner should be able to:   1. Determine spring constant of a given spring | * Determining the spring constant of a given spring * Suspending masses of springs | * Springs * Meter rule * Graph papers * Masses | * Comprehensive secondary physics students book 2 pages 61-63 * Comprehensive secondary physics teachers book 2 pages 30-31 * Secondary physics KLB students book 2 page 158-164 * Principles of physics (M.Nelkom) pages * Golden tips physics page 18 |  |
| **10** | **1-2** | HOOK’S LAW | The spring balance | By the end of the lesson, the learner should be able to:   1. Construct and calibrate a spring balance | * Making and calibrating a spring balance | * Wires * Wood * Meter rule * Masses | * Comprehensive secondary physics students book 2 pages 63-65 * Comprehensive secondary physics teachers book 2 pages 30-32 * Secondary physics KLB students book 2 page 165 * Principles of physics (M.Nelkom) pages * Golden tips physics page 18 |  |
|  | **3-4** | HOOK’S LAW | Revision | By the end of the lesson, the learner should be able to:   1. Solve problems on Hook’s law | * Questions and answers * Problem solving | * Questions in the students book 2 | * Comprehensive secondary physics students book 2 pages 65-66 * Comprehensive secondary physics teachers book 2 pages 32-33 * Secondary physics KLB students book 2 page 166-169 * Principles of physics (M.Nelkom) pages * Golden tips physics page 19-20 |  |
| **11** | **1-2** | WAVES I | Pulses and waves | By the end of the lesson, the learner should be able to   1. Describe the information of pulses and waves | * Describing the formation of pulses and waves | * Strings/ropes * Ripple frank * Water * Stones * Basins | * Comprehensive secondary physics students book 2 pages 67 * Comprehensive secondary physics teachers book 2 pages 34-35 * Secondary physics KLB students book 2 page 173-176 * Principles of physics (M.Nelkom) pages * Golden tips physics page 87 |  |
|  | **3-4** | WAVES I | Transverse and longitudinal pulse and waves | By the end of the lesson, the learner should be able to   1. Describe transverse and longitudinal pulses and waves | * Distinguishing between transverse and longitudinal pulses and waves * Forming pulse and waves | * Sources of transverse and longitudinal waves | * Comprehensive secondary physics students book 2 pages 67-69 * Comprehensive secondary physics teachers book 2 pages 34-35 * Secondary physics KLB students book 2 page 170-173 * Principles of physics (M.Nelkom) pages * Golden tips physics page 87 |  |
| **12** | **1-2** | WAVES I | Characteristics of waves | By the end of the lesson, the learner should be able to:   1. Define amplitude (a), the wave length (l) the frequency (f) and the period (T) of a wave | * Describing and defining the characteristics of waves | * Ripple tank * Rollers * Springs * Chart showing the characteristics of waves | * Comprehensive secondary physics students book 2 pages 69-71 * Comprehensive secondary physics teachers book 2 pages 34-35 * Secondary physics KLB students book 2 page 174-183 * Principles of physics (M.Nelkom) pages * Golden tips physics page 89 |  |
|  | **3-4** | WAVES I | Revision | By the end of the lesson, the learner should be able to:   1. Derive and solve problems using the formula v=fx | * Deriving the equation v=fx * Solving problems using the formula v=fx | * Set questions | * Comprehensive secondary physics students book 2 pages 70-71 * Comprehensive secondary physics teachers book 2 pages 335 * Secondary physics KLB students book 2 page 183 * Principles of physics (M.Nelkom) pages * Golden tips physics page 96 |  |
|  | | | | | | | | |
| **PHYSICS FORM 2 SCHEMES OF WORK – TERM 3** | | | | | | | | |
| **WEEK** | **LESSON** | **TOPIC** | **SUB - TOPIC** | **OBJECTIVES** | **LEARNING/TEACHING ACTIVITIES** | **LEARNING/TEACHING RESOURCES** | **REFERENCES** | **REMARKS** |
| **1** | **1-2** | EVALUATION | Revision | By the end of the lesson, the learner should be able to:   1. Get the correct responses to the holiday assignments | * Discussions on correct answers to holiday assignment | * Marking scheme for holiday assignment | * Comprehensive secondary physics students book 2 pages 69-71 * Comprehensive secondary physics teachers book 2 pages 34-35 * Secondary physics KLB students book 2 page 183-185 * Principles of physics (M.Nelkom) pages * Golden tips physics page 89 |  |
|  | **3-4** | SOUNDS | Production of sounds | By the end of the lesson, the learner should be able to:   1. Demonstrate that sound is produced by vibrating objects | * Producing sound by vibrating strings, tins and bottles | * Strings * Tins * Bottles * Stick * Tuning forks * Nails * shakers | * Comprehensive secondary physics students book 2 pages 73 * Comprehensive secondary physics teachers book 2 pages 37-39 * Secondary physics KLB students book 2 page 186-189 * Principles of physics (M.Nelkom) pages * Golden tips physics page 93 |  |
| **2** | **1-2** | SOUNDS | Propagation of sounds | By the end of the the lesson, the learner should be able to:   1. Show that light does not travel in vacuum | * Demonstrating that sound requires a materials random for perpetration | * Bell jar * Vacuum pump * Electric bell | * Comprehensive secondary physics students book 2 pages 74 * Comprehensive secondary physics teachers book 2 pages 37-39 * Secondary physics KLB students book 2 page 190-193 * Principles of physics (M.Nelkom) pages * Golden tips physics page 94 |  |
|  | **3-4** | SOUNDS | Nature of sound waves | By the end of the lesson, the learner should be able to:   1. Describe the nature of sound waves | * Describing and observing the characteristics of sound waves using the echo methods to find the speed of sound * Discussions | * Open tube * Closed tube * Strings * bottles | * Comprehensive secondary physics students book 2 pages 74-76 * Comprehensive secondary physics teachers book 2 pages 37-39 * Secondary physics KLB students book 2 page 194 * Principles of physics (M.Nelkom) pages * Golden tips physics page 93 |  |
| **3** | **1-2** | SOUND | Speed of sound | By the end of the lesson, the learner should be able to:   1. Determine the speed of sound in air by echo methods | * Investigating the factors determining the speed of sound | * Stop clock/watch * Chart on procedure for formulating the speed of sound | * Comprehensive secondary physics students book 2 pages 77-78 * Comprehensive secondary physics teachers book 2 pages 37-39 * Secondary physics KLB students book 2 page 190-193 * Principles of physics (M.Nelkom) pages * Golden tips physics page 95 |  |
|  | **3-4** | SOUND | Factors affecting the speed of sound | By the end of the lesson, the learner should be able to:   1. State factors that affect the speed of sound | * Discussing how different aspects of nature affects the speed of sound | * Sources of sound * Solid * Water * Air | * Comprehensive secondary physics students book 2 pages 78-79 * Comprehensive secondary physics teachers book 2 pages 38-39 * Secondary physics KLB students book 2 page 193 * Principles of physics (M.Nelkom) pages * Golden tips physics page 95 |  |
| **4** | **1-4** | SOUND | Revision | By the end of the lesson, the learner should be able to:   1. Solve problems involving sound | * Questions and answers * Carrying out projects | * Exercise in the students book 2 | * Comprehensive secondary physics students book 2 pages 79-80 * Comprehensive secondary physics teachers book 2 pages 39 * Secondary physics KLB students book 2 page 198-203 * Principles of physics (M.Nelkom) pages * Golden tips physics page 96 |  |
| **5** | **1-2** | FLUID FLOW | Structure and turbulent flow | By the end of the lesson, the learner should be able to   1. Describe the streamline and turbulent flow | * Discussions * Observing and defining * Streamline and turbulent flow | * Water * Pipes of varying diameter * Sheet of paper | * Comprehensive secondary physics students book 2 pages 81 * Comprehensive secondary physics teachers book 2 pages 40-42 * Secondary physics KLB students book 2 page 204-208 * Principles of physics (M.Nelkom) pages * Golden tips physics page 48 |  |
|  | **3-4** | FLUID FLOW | Equation of continuity | By the end of the lesson, the learner should be able to   1. Derive the equation of continuity | * Deriving the equation of continuity * Discussions | * pipes of varying diameter * charts on equation of continuity | * Comprehensive secondary physics students book 2 pages 82 * Comprehensive secondary physics teachers book 2 pages 40-42 * Secondary physics KLB students book 2 page 210-215 * Principles of physics (M.Nelkom) pages * Golden tips physics page 49 |  |
| **6** | **1-2** | FLUID FLOW | Bernoulli’s effect | By the end of the lesson, the learner should be able to   1. Describe experiments to illustrate Benoullli’s effect | * Illustrating Bernoulli’s effect by experiments | * Paper funnel * Plane paper | * Comprehensive secondary physics students book 2 pages 83-84 * Comprehensive secondary physics teachers book 2 pages 40-42 * Secondary physics KLB students book 2 page 215-221 * Principles of physics (M.Nelkom) pages * Golden tips physics page 49 |  |
|  | **3-4** | FLUID FLOW | Application of Bernoulli’s effect | By the end of the lesson, the learner should be able to:   1. Describe where Bernoulli’s effect is applied such as in the Bunsen burner, spray gun, carburetor, aerofoil and spinning ball | * Describing the application of Bernoulli’s principle | * Bunsen burner | * Comprehensive secondary physics students book 2 pages 84-87 * Comprehensive secondary physics teachers book 2 pages 40-42 * Secondary physics KLB students book 2 page 221-231 * Principles of physics (M.Nelkom) pages * Golden tips physics page 49-50 |  |
| **7** | **1-4** | FLUID FLOW | Revision | By the end of the lesson the learner should be able to:   1. Solve problems involving the equilibrium of continuity | * Answering the questions * Discussing answers to assignment | * Exercise in the students’ book 2 * assignment | * Comprehensive secondary physics students book 2 pages 88 * Comprehensive secondary physics teachers book 2 pages 42 * Secondary physics KLB students book 2 page 231-234 * Principles of physics (M.Nelkom) pages * Golden tips physics page 50 |  |
|  | | | | | | | | |
| **PHYSICS FORM 3 SCHEMES OF WORK – TERM 1** | | | | | | | | |
| **WEEK** | **LESSON** | **TOPIC** | **SUB - TOPIC** | **OBJECTIVES** | **LEARNING/TEACHING ACTIVITIES** | **LEARNING/TEACHING RESOURCES** | **REFERENCES** | **REMARKS** |
| **1** | **1-3** | LINEAR MOTION | Introduction of linear motion | By the end of the lesson, the learner should be able to:   1. Define distance, displacement, speed, velocity and acceleration | * Defining distance, speed, displacement, velocity and acceleration | * Charts on motion * Trolleys * Inclined planes | * Comprehensive secondary physics students book 3 pages 1 * Comprehensive secondary physics teachers book 3 pages 1-3 * Secondary physics KLB students book 2 page 1-7 * Physics made easier vol. 2 pages 1-2 * Secondary physics (M.N Patel) pages 5-8 |  |
|  | **4-5** | LINEAR MOTION | Determining velocity | By the end of the lesson, the learner should be able to:   1. Describe experiments to determine velocity | * Describing experiments on velocity | * Trolleys * Stop watches * Graph paper * Ticker timer | * Comprehensive secondary physics students book 3 pages 2-3 * Comprehensive secondary physics teachers book 3 pages 1-3 * Secondary physics KLB students book 3 page 4-6 * Physics made easier vol. 2 pages 2 * Secondary physics (M.N Patel) pages 9-14 |  |
| **2** | **1-2** | LINEAR MOTION | Motion time graphs | By the end of the lesson, the learner should be able to   1. 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 | * Comprehensive secondary physics students book 3 pages 5-9 * Comprehensive secondary physics teachers book 3 pages 8-18 * Secondary physics KLB students book 3 page 4-6 * Physics made easier vol. 2 pages 3-5 * Secondary physics (M.N Patel) pages 21-25 |  |
|  | **3-4** | LINEAR MOTION | Measuring speed, velocity and acceleration | By the end of the lesson, the learner should be able to:   1. Describe experiments to measure speed, velocity and acceleration | * Describing experiments to measure speed, velocity and acceleration * Solving problems | * Trolleys * Tapes * Ticker timer * Graphs | * Comprehensive secondary physics students book 3 pages 2-3 * Comprehensive secondary physics teachers book 3 pages 1-3 * Secondary physics KLB students book 3 page 18-26 * Physics made easier vol. 2 pages 1-5 * Secondary physics (M.N Patel) pages 9-14 |  |
|  | **5** | LINEAR MOTION | Acceleration | By the end of the lesson, the learner should be able to:   1. Describe acceleration | * Describing acceleration * Problem solving | * Charts on acceleration * Graphs * Data on velocity and time | * Comprehensive secondary physics students book 3 pages 2-3 * Comprehensive secondary physics teachers book 3 pages 1-3 * Secondary physics KLB students book 3 page 7-8 * Physics made easier vol. 2 pages 1-5 * Secondary physics (M.N Patel) pages 7-8 |  |
| **3** | **1-2** | LINEAR MOTION | Measuring speed, velocity and acceleration | By the end of the lesson, the learner should be able to:   1. Describe experiments to determine and measure speed, velocity and acceleration | * Describing experiments to determine and measure speed velocity & acceleration | * Graphs * Ticker timer * Tapes * Graphs | * Comprehensive secondary physics students book 3 pages 2-3 * Comprehensive secondary physics teachers book 3 pages 1-3 * Secondary physics KLB students book 3 page 18-25 * Physics made easier vol. 2 pages 1-5 * Secondary physics (M.N Patel) pages 9-14 |  |
|  | **3-4** | LINEAR MOTION | Equations of motion | By the end of the lesson, the learner should be able to:   1. Derive and apply the equations of uniform acceleration | * Stating the equations of motion * Deriving the equations of motion * Applying the equations of motion | * Graphs * Worked examples on motion | * Comprehensive secondary physics students book 3 pages 7-9 * Comprehensive secondary physics teachers book 3 pages3-5 * Secondary physics KLB students book 3 page 26-29 * Physics made easier vol. 2 pages 6-7 * Secondary physics (M.N Patel) pages 25-27 |  |
|  | **5** | LINEAR MOTION | Revision | By the end of the lesson, the learner should be able to:   1. Solve problems involving uniform acceleration | * Questions and answers * Exercises | * Test paper * Marking scheme | * Comprehensive secondary physics students book 3 pages 9-10 * Comprehensive secondary physics teachers book 3 pages4-5 * Secondary physics KLB students book 3 page 37-39 * Physics made easier vol. 2 pages 12-14 * Secondary physics (M.N Patel) pages 30-36 |  |
| **4** | **1-5** | LINEAR MOTION | Acceleration due to gravity | By the end of the lesson, the learner should be able to;   1. Determine acceleration due to gravity by free-fall and simple pendulum | * Determining acceleration by tree-fall and pendulum method | * Pendulum bob * String * Stop watches * Ticker-timer | * Comprehensive secondary physics students book 3 pages 3-5 * Comprehensive secondary physics teachers book 3 pages1-3 * Secondary physics KLB students book 3 page 29-36 * Physics made easier vol. 2 pages 7-10 * Secondary physics (M.N Patel) pages 15-21 |  |
| **5** | **1-2** | REFRACTION OF LIGHT | The meaning of refraction | By the end of the lesson, the learner should be able to   1. Describe simple experiments to illustrate refraction of light | * Experiments demonstrating refraction of light | * Beakers * Water * Stick or glass rod * Basins * Coins * Glass blocks * Pin | * Comprehensive secondary physics students book 3 pages 11-12 * Comprehensive secondary physics teachers book 3 pages6-9 * Secondary physics KLB students book 3 page 41-46 * Physics made easier vol. 2 pages 15-16 * Secondary physics (M.N Patel) pages 37-40 |  |
|  | **3-5** | REFRACTION OF LIGHT | Laws of refraction | By the end of the lesson, the learner should be able to:   1. 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 | * Comprehensive secondary physics students book 3 pages 12-14 * Comprehensive secondary physics teachers book 3 pages6-9 * Secondary physics KLB students book 3 page 47-61 * Physics made easier vol. 2 pages 16-18 * Secondary physics (M.N Patel) pages 40-42 |  |
| **6** | **1-2** | REFRACTION OF LIGHT | Refractive index | By the end of the lesson, the learner should be able to:   1. 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 | * Comprehensive secondary physics students book 3 pages 14-15 * Comprehensive secondary physics teachers book 3 pages6-9 * Secondary physics KLB students book 3 page 61-68 * Physics made easier vol. 2 pages 17-19 * Secondary physics (M.N Patel) pages 42-45 |  |
|  | **3-5** | REFRACTION OF LIGHT | * Total material reflection and its effect * Critical angle | By the end of the lesson, the learner should be able to   1. Describe an experiment to explain the total internal reflection and its effects 2. 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 | * Comprehensive secondary physics students book 3 pages 16-17 * Comprehensive secondary physics teachers book 3 pages6-9 * Secondary physics KLB students book 3 page 68-76 * Physics made easier vol. 2 pages 19-20 * Secondary physics (M.N Patel) pages 46-49 |  |
| **7** | **1-3** | REFRACTION OF LIGHT | Application of a total internal reflection in a prism periscope, optical fibre | By the end of the lesson, the learner should be able to:   1. 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 | * Comprehensive secondary physics students book 3 pages 18-19 * Comprehensive secondary physics teachers book 3 pages6-9 * Secondary physics KLB students book 3 page 76-79 * Physics made easier vol. 2 pages 20-23 * Secondary physics (M.N Patel) pages 49-52 |  |
|  | **4-5** | REFRACTION OF LIGHT | Dispersion of white light and recombination of colors of the spectrum | By the end of the lesson, the learner should be able to:   1. Describe an experiment to illustrate the dispersion of light | * Experiment on dispersion of light using glass prisms | * Triangular glass prisms * Source of light * Screen | * Comprehensive secondary physics students book 3 pages 19-20 * Comprehensive secondary physics teachers book 3 pages6-9 * Secondary physics KLB students book 3 page 79-89 * Physics made easier vol. 2 pages 21-22 * Secondary physics (M.N Patel) pages 45-46 |  |
| **8** | **1-5** | REFRACTION OF LIGHT | Problems of refractive index and critical angle | By the end of the lesson, the learner should be able to:   1. Solve problems involving the refractive index and critical angle | * Discussions and problem solving in critical angle using the formulae sin C=i/n and n=sin i/sin r | Review questions  Past exams  Examples in the topic | * Comprehensive secondary physics students book 3 pages 21-22 * Comprehensive secondary physics teachers book 3 pages6-9 * Secondary physics KLB students book 3 page 82-86 * Physics made easier vol. 2 pages 24-25 * Secondary physics (M.N Patel) pages 53-55 |  |
| **9** | **1-5** | NEWTON’S LAW’S OF MOTION | Newton’s Laws of motion | By the end of the lesson, the learner should be able to   1. State the Newton’s laws of motion 2. State and explain the significance of a Newton’s laws of motion 3. Describe simple experiments to illustrate inertion | * Discussion on Newton’s laws * Experiments to illustrate Newton’s laws of motion | * Inclined plane * Trolley * Marbles * Spring balances | * Comprehensive secondary physics students book 3 pages 23-27 * Comprehensive secondary physics teachers book 3 pages 13-17 * Secondary physics KLB students book 3 page 87-102 * Physics made easier vol. 2 pages 26-27 * Secondary physics (M.N Patel) pages 56-65 |  |
| **10** | **1-3** | NEWTON’S LAW OF MOTION | * Conservation of linear momentum * Elastic collision * Inelastic collision * Recoil velocity | By the end of the lesson, the leaner should be able to:   1. State the law of conservation of momentum 2. Define elastic and inelastic collisions 3. Determine recoil velocity | * Discussions of the laws of conservation of linear momentum * Determining recoil velocity | * Marbles * Trolleys * Meter rules * Stop watches * Plasticine | * Comprehensive secondary physics students book 3 pages 28-30 * Comprehensive secondary physics teachers book 3 pages 13-17 * Secondary physics KLB students book 3 page 103-108 * Physics made easier vol. 2 pages 28-30 * Secondary physics (M.N Patel) pages 66-72 |  |
|  | **4-5** | NEWTON’S LAW OF MOTION | Friction | By the end of the lesson, the learner should be able to:   1. Define friction 2. State and explain types of frictions 3. Describe and experiment to illustrate friction and state the applications of friction 4. 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 | * Comprehensive secondary physics students book 3 pages 28-39 * Comprehensive secondary physics teachers book 3 pages 13-17 * Secondary physics KLB students book 3 page 109-115 * Physics made easier vol. 2 pages 30-31 * Secondary physics (M.N Patel) pages 73-76 |  |
| **11** | **1-5** | NEWTON’S LAWS OF MOTION | Viscosity | By the end of the lesson, the leaner should be able to:   1. Define viscosity 2. Explain the concept of terminal velocity | * Distinguishing viscous from- non-viscous liquids * Defining viscous liquids * Defining and explaining terminal viscosity | * Glycerin * Paraffin * Water * Ball bearings * Stat watches * Meter rule * Measuring cylinders | * Comprehensive secondary physics students book 3 pages33 * Comprehensive secondary physics teachers book 3 pages 13-17 * Secondary physics KLB students book 3 page 115-119 * Physics made easier vol. 2 pages 31-33 * Secondary physics (M.N Patel) pages 76-78 |  |
| **12** | **1-5** | NEWTON’S LAWS OF MOTION | Revision | By the end of the lesson, the learner should be able to:   1. Solve problems on Newton’s law of motion and law of conservation of linear momentum | * Discussions and problem solving | * Quizzes * Assignment * Review questions | * Comprehensive secondary physics students book 3 pages34-35 * Comprehensive secondary physics teachers book 3 pages 17-18 * Secondary physics KLB students book 3 page 119-120 * Physics made easier vol. 2 pages 34-38 * Secondary physics (M.N Patel) pages 78-82 |  |
| **END OF TERM ONE EXAMINATION** | | | | | | | | |
|  | | | | | | | | |
| **PHYSICS FORM 3 SCHEMES OF WORK – TERM 2** | | | | | | | | |
| **WEEK** | **LESSON** | **TOPIC** | **SUB - TOPIC** | **OBJECTIVES** | **LEARNING/TEACHING ACTIVITIES** | **LEARNING/TEACHING RESOURCES** | **REFERENCES** | **REMARKS** |
| **2** | **1-3** | ENERGY, WORK, POWER AND MACHINES | Energy | By the end of the lesson, the learner should be able to   1. Define energy 2. 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 | * Comprehensive secondary physics students book 3 pages34-35 * Comprehensive secondary physics teachers book 3 pages 17-18 * Secondary physics KLB students book 3 page 121,122-125 * Physics made easier vol. 2 pages 39 * Secondary physics (M.N Patel) pages 83-86 |  |
|  | **4-5** | ENERGY, WORK, POWER AND MACHINES | Sources of energy   * Renewable * Non-renewable | By the end of the lesson, the learner should be able to:   1. 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 | * Comprehensive secondary physics students book 3 pages41 * Comprehensive secondary physics teachers book 3 pages 19-21 * Secondary physics KLB students book 3 page 121,122-125 * Physics made easier vol. 2 pages 39 * Secondary physics (M.N Patel) pages 83,85-86 |  |
| **3** | **1-3** | ENERGY, WORK, POWER AND MACHINES | The law of conservation of energy | By the end of the lesson, the learner should be able to:   1. State the laws of conservation of energy 2. 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 | * Comprehensive secondary physics students book 3 pages 41-42 * Comprehensive secondary physics teachers book 3 pages 20-21 * Secondary physics KLB students book 3 page 132-134 * Physics made easier vol. 2 pages 39 * Secondary physics (M.N Patel) pages 86-88 |  |
|  | **4-5** | ENERGY, WORK, POWER AND MACHINES | Work | By the end of the lesson, the learner should be able to:   1. Define work 2. Explain the concept of work and energy | * Experiment on work done by moving objects through a distance * Problem solving | * Masses * Wooden block * Spring balance | * Comprehensive secondary physics students book 3 pages 42-43 * Comprehensive secondary physics teachers book 3 pages 18-22 * Secondary physics KLB students book 3 page 125-132 * Physics made easier vol. 2 pages 39-40 * Secondary physics (M.N Patel) pages 88-90 |  |
|  | **1-2** | ENERGY, WORK, POWER AND MACHINES | * Kinetic energy * Potential energy * power | By the end of the lesson, the learner should be able to   1. define power 2. explain the meaning of power potential and kinetic energies 3. 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 | * Comprehensive secondary physics students book 3 pages 43-45 * Comprehensive secondary physics teachers book 3 pages 18-22 * Secondary physics KLB students book 3 page 126-132,134-136 * Physics made easier vol. 2 pages 40-41 * Secondary physics (M.N Patel) pages 90-96 |  |
|  | **3-4** | ENERGY, WORK, POWER AND MACHINES | Simple machines | By the end of the lesson, the bearer should be able to:   1. State the mechanical advantage 2. 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 * Problem solving | * Levers * Pulleys * Inclined planes * Strings * Masses | * Comprehensive secondary physics students book 3 pages 41-45 * Comprehensive secondary physics teachers book 3 pages 18-22 * Secondary physics KLB students book 3 page 126-132,134-136 * Physics made easier vol. 2 pages 40-441 * Secondary physics (M.N Patel) pages 96-97 |  |
|  | **5** | ENERGY, WORK, POWER AND MACHINES | Simple machines | By the end of the lesson, the learner should be able to   1. 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 | * Comprehensive secondary physics students book 3 pages 45-51 * Comprehensive secondary physics teachers book 3 pages 18-22 * Secondary physics KLB students book 3 page 137-159 * Physics made easier vol. 2 pages 44-50 * Secondary physics (M.N Patel) pages 97-111 |  |
| **4** | **1-5** | ENERGY, WORK, POWER AND MACHINES | Revision | By the end of the lesson, the learner should be able to   1. 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 | * Comprehensive secondary physics students book 3 pages 52-53 * Comprehensive secondary physics teachers book 3 pages 23-24 * Secondary physics KLB students book 3 page 159-161 * Physics made easier vol. 2 pages 50-52 * Secondary physics (M.N Patel) pages 111-115 |  |
| **5** | **1-2** | CURRENT ELECTRICITY II | * Electric current * Scale reading | By the end of the lesson, the learner should be able to:   1. Define potential 2. Differentiate and state its SI units 3. 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 | * Comprehensive secondary physics students book 3 pages 54-55 * Comprehensive secondary physics teachers book 3 pages 24-28 * Secondary physics KLB students book 3 page 161-164 * Physics made easier vol. 2 pages 53 * Secondary physics (M.N Patel) pages 116-117 |  |
|  | **3-4** | CURRENT ELECTRICITY | Ammeters and voltmeters | By the end of the lesson, the learner should be able to:   1. 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 | * Comprehensive secondary physics students book 3 pages 54-55 * Comprehensive secondary physics teachers book 3 pages 24-28 * Secondary physics KLB students book 3 page 164-168 * Physics made easier vol. 2 pages 53 * Secondary physics (M.N Patel) pages 118-119 |  |
|  | 5 | CURRENTELECTRICITY II | Ohm’s Law | By the end of the lesson, the learner should be able to:   1. Derive and verify ohm’s law 2. State ohm’s law | * Experiments verifying ohm’s law   Stating ohm’s law | * Ammeter * Voltmeter * Rheostat * Wires * Dry cells | * Comprehensive secondary physics students book 3 pages 55-57 * Comprehensive secondary physics teachers book 3 pages 24-28 * Secondary physics KLB students book 3 page 168-171 * Physics made easier vol. 2 pages 53-54 * Secondary physics (M.N Patel) pages 120-124 |  |
| **6** | **1-2** | CURRENT ELECTRICITY | Voltage-current relationships | By the end of the lesson, the learner should be able to:   1. Define resistance and state its SI unit 2. Determine experientially the voltage current 3. 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 | * Comprehensive secondary physics students book 3 pages 57-59 * Comprehensive secondary physics teachers book 3 pages 26-28 * Secondary physics KLB students book 3 page 171-177 * Physics made easier vol. 2 pages 53-54 * Secondary physics (M.N Patel) pages 122-124 |  |
|  | **3-5** | CURRENT ELECTRICITY II | Measurement of resistance | By the end of the lesson, the learner should be able to:   1. 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 * Meter bridge * Wheatstone bridge * Resisters with known resistance | * Comprehensive secondary physics students book 3 pages 57-59 * Comprehensive secondary physics teachers book 3 pages 26-28 * Secondary physics KLB students book 3 page 177-180 * Physics made easier vol. 2 pages 54-55 * Secondary physics (M.N Patel) pages 122-124 |  |
| **7** | **1-3** | CURRENT ELECTRICITY | Effective resistance for registers in series and parallel | By the end of the lesson, the learner should be able to:   1. Derive effective resistance | * Discussions on deriving the effective resistance * Deriving effective resistance of registers in parallel and series | * Cells * Resistors * Ammeters * Voltmeters * wires | * Comprehensive secondary physics students book 3 pages 60-66 * Comprehensive secondary physics teachers book 3 pages 24-28 * Secondary physics KLB students book 3 page 180-189 * Physics made easier vol. 2 pages 56-57 * Secondary physics (M.N Patel) pages 124-131 |  |
|  | **4-5** | CURRENT ELECTRICITY | E.m.f and internal resistance (E=V+1r) | By the end of the lesson, the learner should be able to   1. Determine e.m.f 2. 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 | * Comprehensive secondary physics students book 3 pages 62-63 * Comprehensive secondary physics teachers book 3 pages 24-28 * Secondary physics KLB students book 3 page 190-195 * Physics made easier vol. 2 pages 56-59 * Secondary physics (M.N Patel) pages 124 |  |
| **8** | **1-5** | CURRENT ELECTRICITY | Revision | By the end of the lesson, the learner should be able to:   1. Solve numerical problems involving the ohm’s law 2. Resistors in series and parallel | * Problem solving * Questions and answers * 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 | * Comprehensive secondary physics students book 3 pages 64-66 * Comprehensive secondary physics teachers book 3 pages 24-28 * Secondary physics KLB students book 3 page 195-197 * Physics made easier vol. 2 pages 60-63 * Secondary physics (M.N Patel) pages 131-133 |  |
| **9** | **1-2** | WAVES II | Properties of waves | By the end of the lesson, the learner should be able to:   1. State and explain the properties of waves experimentally 2. Sketch wave fronts to illustrate the reflections | * Stating and explaining the properties of waves * Sketching wave fronts illustrate reflection | * Rope/wire * Various reflections | * Comprehensive secondary physics students book 3 pages 67-69 * Comprehensive secondary physics teachers book 3 pages 29-32 * Secondary physics KLB students book 3 page 198-203 * Physics made easier vol. 2 pages 64-65 * Secondary physics (M.N Patel) pages 134-142 |  |
|  | **3-5** | WAVES II | Diffraction, refraction and interference of waves | By the end of the lesson, the learner should be able to:   1. 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 | * Comprehensive secondary physics students book 3 pages 70-73 * Comprehensive secondary physics teachers book 3 pages 29-32 * Secondary physics KLB students book 3 page 203-212 * Physics made easier vol. 2 pages 65-66 * Secondary physics (M.N Patel) pages 142-144 |  |
| **10** | **1-2** | WAVES II | Constructive and distractive waves | By the end of the lesson, the learner should be able to:   1. Explain constructive and destructive interference | * Discussion on constructive and destructive interference * Experiments constructive and destructive interference | * Ripple tank * Rope/wire | * Comprehensive secondary physics students book 3 pages 73-74 * Comprehensive secondary physics teachers book 3 pages 29-32 * Secondary physics KLB students book 3 page 203-212 * Physics made easier vol. 2 pages 65-66 * Secondary physics (M.N Patel) pages 144-147 |  |
|  | **3-5** | WAVES II | Stationary waves | By the end of the lesson, the learner should be able to:   1. Describe experiments to illustrate stationary waves | * Demonstration and explaining ofstationery waves | * Wires under tension | * Comprehensive secondary physics students book 3 pages 74 * Comprehensive secondary physics teachers book 3 pages 29-32 * Secondary physics KLB students book 3 page 212-215 * Physics made easier vol. 2 pages 66-67 * Secondary physics (M.N Patel) pages 147-148 |  |
| **11** | **1-5** | WAVES II | Vibrating air columns | By the end of the lesson, the learner should be able to:   1. Describe and explain closed pipe and open pipe | * Describing vibrations in close and open pipes | * Open and closed pipes | * Comprehensive secondary physics students book 3 pages 74 * Comprehensive secondary physics teachers book 3 pages 29-32 * Secondary physics KLB students book 3 page 218-220 * Physics made easier vol. 2 pages 67-73 * Secondary physics (M.N Patel) pages 148-149 |  |
| **REVISION AND END TERM TWO EXAMINATIONS** | | | | | | | | |
|  | | | | | | | | |
| **PHYSICS FORM 3 SCHEMES OF WORK – TERM 3** | | | | | | | | |
| **WEEK** | **LESSON** | **TOPIC** | **SUB - TOPIC** | **OBJECTIVES** | **LEARNING/TEACHING ACTIVITIES** | **LEARNING/TEACHING RESOURCES** | **REFERENCES** | **REMARKS** |
| **1** | **1-2** | ELECTROSTATICS II | Electric field patterns | By the end of the lesson, the learner should be able to   1. Sketch electric field patterns around charged bodies | * Discussion on electric field patterns * Observing and plotting field patterns | * Charts on magnetic fields | * Comprehensive secondary physics students book 3 pages 76-77 * Comprehensive secondary physics teachers book 3 pages 34-39 * Secondary physics KLB students book 3 page 222-225 * Physics made easier vol. 2 pages 76-77 * Secondary physics (M.N Patel) pages 151-152 |  |
|  | **3-5** | ELECTROSTATICS II | Charge distribution on conductors | By the end of the lesson, the learner should be able to   1. Describe charge distribution on conductors: 2. Spherical and pear shaped conductors | * Discussions on charge distribution on conductors * Experiment is demonstrated/illustrate charge distribution on conductors | * Vande Graaf generator * Chart showing charge distribution on different conductors * Gold leaf electroscope | * Comprehensive secondary physics students book 3 pages 77-78 * Comprehensive secondary physics teachers book 3 pages 34-39 * Secondary physics KLB students book 3 page 225-228 * Physics made easier vol. 2 pages 77-78 * Secondary physics (M.N Patel) pages 153-154 |  |
| **2** | **1-2** | ELECTROSTATICS II | Lighting arrestor | By the end of the lesson, the learner should be able to:   1. Explain how lightning arrestor works | * Discussions on the lighting arrestor * Explanations on the lighting arrestor | * Improvised lighting arrestor * Photographs of lightning arrestor | * Comprehensive secondary physics students book 3 pages 79-80 * Comprehensive secondary physics teachers book 3 pages 34-39 * Secondary physics KLB students book 3 page 229-230 * Physics made easier vol. 2 pages 79 * Secondary physics (M.N Patel) pages 155 |  |
|  | **3-5** | ELECTROSTATICS II | Capacitance | By the end of the lesson, the learner should be able to:   1. Define capacitance and state its SI units 2. Describe the charging and discharging of a capacitor 3. 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 | * Comprehensive secondary physics students book 3 pages 80-82 * Comprehensive secondary physics teachers book 3 pages 34-39 * Secondary physics KLB students book 3 page 230-237 * Physics made easier vol. 2 pages 79-80 * Secondary physics (M.N Patel) pages 155-158 |  |
| **3** | **1-2** | ELECTROSTATICS II | Combinations of capacitors | By the end of the lesson, the learner should be able to:   1. 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 | * Comprehensive secondary physics students book 3 pages 80-82 * Comprehensive secondary physics teachers book 3 pages 34-39 * Secondary physics KLB students book 3 page 237-241 * Physics made easier vol. 2 pages 81-82 * Secondary physics (M.N Patel) pages 155-158 |  |
|  | **3** | ELECTROSTATICS II | Energy stored in a charged capacitor | By the end of the lesson, the learner should be able to:   1. Describe the energy stored in a charged capacitor | * Describing the energy stored in a charged capacitor | * Capacitors * Dry cells * Charts on capacitors used | * Comprehensive secondary physics students book 3 pages 82 * Comprehensive secondary physics teachers book 3 pages 34-39 * Secondary physics KLB students book 3 page 244 * Physics made easier vol. 2 pages 82 * Secondary physics (M.N Patel) pages 159-160 |  |
|  | **4** | ELECTROSTATICS | Application of capacitors | By the end of the lesson, the learner should be able to   1. 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 | * Comprehensive secondary physics students book 3 pages 82-84 * Comprehensive secondary physics teachers book 3 pages 34-39 * Secondary physics KLB students book 3 page 244 * Physics made easier vol. 2 pages 82-83 * Secondary physics (M.N Patel) pages 161 |  |
|  | **5** | ELECTROSTATICS II | Revision | By the end of the lesson, the learner should be able to solve numerical problems involving capacitors using the formulae   * Q= CV * C1=C1+C1 * 1/C1= 1/C1+1/C2 | * Problem solving | * Questions in the students Book 3 | * Comprehensive secondary physics students book 3 pages 84-87 * Comprehensive secondary physics teachers book 3 pages 38-39 * Secondary physics KLB students book 3 page 244-245 * Physics made easier vol. 2 pages 85-88 * Secondary physics (M.N Patel) pages 161 |  |
| **4** | **1-3** | THE HEATING EFFECT OF ELECTRIC CURRENT | Electric current heating effect | By the end of the lesson, the learner should be able to:   1. 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 | * Comprehensive secondary physics students book 3 pages 88 * Comprehensive secondary physics teachers book 3 pages 39-41 * Secondary physics KLB students book 3 page 246-247 * Physics made easier vol. 2 pages 89 * Secondary physics (M.N Patel) pages 162-165 |  |
|  | **4-5** | THE HEATING EFFECT OF AN ELECTRIC CURRENT | Factors affecting electric current | By the end of the lesson, the learner should be able to:   1. 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 | * Comprehensive secondary physics students book 3 pages 88-90 * Comprehensive secondary physics teachers book 3 pages 39-41 * Secondary physics KLB students book 3 page 247-255 * Physics made easier vol. 2 pages 89-90 * Secondary physics (M.N Patel) pages 165-166 |  |
| **5** | **1-2** | THE HEATING EFFECT OF ELECTRIC CURRENT | * Heating devices * fuses | By the end of the lesson, the learner should be able to:   1. 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 | * Comprehensive secondary physics students book 3 pages 90-91 * Comprehensive secondary physics teachers book 3 pages 39-41 * Secondary physics KLB students book 3 page 255-258 * Physics made easier vol. 2 pages 90-91 * Secondary physics (M.N Patel) pages 166-170 |  |
|  | **3-5** | THE HEATING EFFECT OF ELECTRIC CURRENT | Revision | By the end of the lesson, the learner should be able to   1. 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 | * Comprehensive secondary physics students book 3 pages 90-92 * Comprehensive secondary physics teachers book 3 pages 41 * Secondary physics KLB students book 3 page 246-258-259 * Physics made easier vol. 2 pages 92 * Secondary physics (M.N Patel) pages 171 |  |
| **6** | **1-2** | QUANTITY OF HEAT | * Heat capacity * Specific heat capacity * Units of heat capacity | By the end of the lesson the learner should be able to   1. 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 h eat capacity * Defining heat capacity and heat specific heat capacity | * Source of heat * Water * Lagged can * Thermometer | * Comprehensive secondary physics students book 3 pages 93-96 * Comprehensive secondary physics teachers book 3 pages 42-46 * Secondary physics KLB students book 3 page 246-260-271 * Physics made easier vol. 2 pages 93-94 * Secondary physics (M.N Patel) pages 172-174 |  |
|  | **3-4** | QUANTITY OF HEAT | Change of state | By the end of the lesson the learner should be able to 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 | * Comprehensive secondary physics students book 3 pages 96-97 * Comprehensive secondary physics teachers book 3 pages 42-46 * Secondary physics KLB students book 3 page 246-271-281 * Physics made easier vol. 2 pages 95-96 * Secondary physics (M.N Patel) pages 188-199 |  |
|  | **5** | QUANTITY OF HEAT | Boiling and melting | By the end of the lesson, the learner should be able to:   1. Distinguish between boiling and melting 2. State the factors affecting melting points and boiling points of a substance 3. 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 | * Comprehensive secondary physics students book 3 pages 97-101 * Comprehensive secondary physics teachers book 3 pages 42-46 * Secondary physics KLB students book 3 page 246-282-288 * Physics made easier vol. 2 pages 96-98 * Secondary physics (M.N Patel) pages 186-187 |  |
| **7** | **1-5** | QUANTITY OF HEAT | Revision | By the end of the lesson, the learner should be able to:   1. Solve problems involving quantity of heat | * Problem solving | * Quizzes * Past exams * Exercises * Calculators * Mathematical tables | * Comprehensive secondary physics students book 3 pages 101-102 * Comprehensive secondary physics teachers book 3 pages 42-46 * Secondary physics KLB students book 3 page 288-289 * Physics made easier vol. 2 pages 100-104 * Secondary physics (M.N Patel) pages 183-185, 200-202 |  |
| **8** | **1-2** | THE GAS LAWS | Pressure law | By the end of the lesson, the learner should be able to:   1. 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 | * Comprehensive secondary physics students book 3 pages 103-104 * Comprehensive secondary physics teachers book 3 pages 47-50 * Secondary physics KLB students book 3 page 299-302 * Physics made easier vol. 2 pages 106 * Secondary physics (M.N Patel) pages203-207 |  |
|  | **3-4** | THE GAS LAWS | Charles’s law | By the end of the lesson, the learner should be able to:   1. 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 | * Comprehensive secondary physics students book 3 pages 105-106 * Comprehensive secondary physics teachers book 3 pages 47-50 * Secondary physics KLB students book 3 page 295-298 * Physics made easier vol. 2 pages 107 * Secondary physics (M.N Patel) pages 203 |  |
|  | **5** | THE GAS LAWS | Boyle’s law | By the end of the lesson,the learner should be able to:   1. 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 | * Comprehensive secondary physics students book 3 pages 106-107 * Comprehensive secondary physics teachers book 3 pages 47-50 * Secondary physics KLB students book 3 page 290-294 * Physics made easier vol. 2 pages 107 * Secondary physics (M.N Patel) pages 203 |  |
| **9** | **1-2** | THE GAS LAW’S | The kinetic theory of gases | By the end of the lesson, the learner should be able to:   * Explain law absolute zero temperature may be obtained from pressure and temp. graphs | * Discussions on the absolute zero temperature from pressure using kinetic theory of gases | * Graph paper * Clinical thermometer * Working out sums | * Comprehensive secondary physics students book 3 pages 108-110 * Comprehensive secondary physics teachers book 3 pages 47-50 * Secondary physics KLB students book 3 page 303 * Physics made easier vol. 2 pages 107 * Secondary physics (M.N Patel) pages 207-209 |  |
|  | **3-4** | THE GAS LAWS | The kinetic theory of gases | By the end of the lesson, the learner should be able to   1. 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 | * Comprehensive secondary physics students book 3 pages 68-110 * Comprehensive secondary physics teachers book 3 pages 49 * Secondary physics KLB students book 3 page 303 * Physics made easier vol. 2 pages 107 * Secondary physics (M.N Patel) pages 209-210 |  |
|  | **5** | THE GAS LAWS | The kinetic theory of gases | By the end of the lesson, the learner should be able to:   1. 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 | * Comprehensive secondary physics students book 3 pages 110-111 * Comprehensive secondary physics teachers book 3 pages 50-51 * Secondary physics KLB students book 3 page 107 * Physics made easier vol. 2 pages 107 * Secondary physics (M.N Patel) pages 214 |  |
| **10** | **1-5** | THE GAS LAWS | Revision | By the end of the lesson, the learner should be able to:   1. 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 | * Comprehensive secondary physics students book 3 pages 110-111 * Comprehensive secondary physics teachers book 3 pages 50-51 * Secondary physics KLB students book 3 page 303-305 * Physics made easier vol. 2 pages 109-110 * Secondary physics (M.N Patel) pages 215-217 |  |
| **REVISION AND END OF TERM THREE EXAMINATIONS** | | | | | | | | |
|  | | | | | | | | |
| **PHYSICS FORM 4 SCHEMES OF WORK – TERM 1 2014-** | | | | | | | | |
| **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 |  |
|  | | | | | | | | |
| **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 |  |
|  | | | | | | | | |
| **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** | | | | | | | | |