|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Competence** | | **General objective** | | | **Month** | | | **Week** | | | **Main Topic** | | | **Sub-topic** | | | **Periods** | | | **Teaching Activities** | | | **Learning Activities** | | | **T/L Materials** | | | **References** | | | **Assessment** | | | **Remarks** | | |
| Demonstrating effects and application of waves | | Understand and the laws and principles of waves | | | JANUARY | | | 3 | | | WAVES | | | Introduction to waves | | | 2 | | | * Guide students to brainstorm the concept of waves while they are in groups. * Lead students to demonstrate the production of waves using rope, ripple tank and tuning fork. | | | * to sit in group and discuss the concept of waves. | | | * Rope, ripple tank, tuning fork. | | |  | | | * Through quiz ask students to explain the concept of waves, wavelength, frequency and velocity of wave. * Ask students to explain mechanical waves and electromagnetic waves. | | |  | | |
| * Using questions and answers technique to assist students to explain the terms wavelength (λ), frequency (f) and velocity (v) of the wave. * Guide students to identify the types of waves. | | | * to explain the terms wave length, frequency, and velocity of the wave . * to take notes. * students in groups to identify mechanical waves and electromagnetic waves. | | | * Charts showing graph of displacement against time. * C.R.O. * Helical spring * Drum * Light | | |
| **Competence** | **General objective** | | | **Month** | | | **Week** | | | **Main Topic** | | | **Sub-topic** | | | **Periods** | | | **Teaching Activities** | | | **Learning Activities** | | | **T/L Materials** | | **References** | | | | **Assessment** | | **Remarks** | | |
| -do- | -do- | | | JANUARY  /  FEB | | | 3  to  4 | | | WAVES | | | Behavior of waves | | | 4  2 | | | * using demonstration in class, guide students to explain the behavior of waves, reflection, diffraction and interference. * guide students to brainstorm on the applications of reflection, refraction, diffraction and interference of waves. * guide students to present the applications of behavior of waves. * assist students to sit in groups to demonstrate behavior of waves. | | | * to explain reflection, refraction and interference. * using think- pair – shave technique, students to mention the application of reflection, refraction, diffraction and interference of waves. * while in group students to demonstrate reflection, refraction, diffraction and interference of waves | | | * Ripple tank, rectangular prism, and vibrator. * Radio * TV * Mobile phone. * Ripple tank * Rectangular prisms. * Vibrator. | |  | | | | * Group students and give quiz to explain the behavior of waves. * Move around the groups and assess students performance on demonstrating the behavior of waves | |  | | |
| **Competence** | **General objective** | | **Month** | | | **Week** | | | **Main Topic** | | | **Sub-topic** | | | **Periods** | | | **Teaching Activities** | | | **Learning Activities** | | | **T/L Materials** | | | | **References** | | **Assessment** | | | | **Remarks** | | |
| -do- | -do- | | JANUARY / FEBRUARY | | | 5  6 | | | WAVES | | | Propagation of waves | | | 2 | | | * using question and answer technique to assist students to describe the propagation of mechanical waves. * guide students to demonstrate the propagation of mechanical waves. | | | * to sit in group to describe the propagation of mechanical waves. | | | * Slinky spring. * Tuning fork. * Ripple tank. * Rope. | | | |  | | * ask students to note down the criteria of propagation of mechanical waves. | | | |  | | |
| 2  2  4 | | | * through questions and answer technique explain the propagation of electromagnetic waves. * guide students to demonstrate the propagation of e.m. waves. * Guide students to determine the relationship between frequency, speed and wavelength. * Group students in two and guide them to determine the refractive index of glass. * Guide students to use the formula to find refractive index of different materials. | | | * to discuss the propagation of e.m. waves. * to describe frequency from equation * to state S. I. unit of frequency. * to determine the refractive index of a glass black and submit their results to the teacher. | | | * Chart showing the e.m. spectrum. * Chart showing the relationship between frequency, speed and wavelength. * Glass block. * Optical pins. * White sheet. * Protector. * Ruler. * Drawing board. | | | | * ask students to explain propagation of e.m.w. * ask students to state the S.I. unit of frequency. * assess students while they are doing practical. | | | |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Competence** | **General objective** | | **Month** | | **Week** | | **Main Topic** | | **Sub-topic** | | **Periods** | **Teaching Activities** | | | **Learning Activities** | | **T/L Materials** | | **References** | | **Assessment** | | **Remarks** | |
| -do- | -do- | | FEB  RUARY | | 6  7 | | WAVES | | Sound waves | | 2 | * Guide students to identify sources of sound waves. * Using questions and answer technique guide students to explain the concept of audibility range. | | | * Students to produce sound waves by using different sources of sound. * Students to explain the concept of audibility range. | | * Drum * Guitar * Whistle * Turning * Model of ear. * Table with audibility range. | |  | | * Ask students to explain different sources of sound waves. * Ask students to explain the concept of audibility range. | |  | |
| 2 | * Guide students to describe the perception of hearing. * Guide students to demonstrate the production of an echo and explain the concept of reverberation of sound. | | | * Students to describe the perception of hearing. * To explain the concept of echo and reverberation of sound. | | * Model of the human ear. * Tall wall * Hall/studio. * Sound absorbing materials (cloth, spongy material) | |  | | * Ask students to explain the concept of echo and reverberation of sound. | |
| 8 | | Speed of sound in air.  Musical sound | | 2  2 | * Using drum and stop watch, guide students to measure the speed of sound in air. * Using different musical instruments, guide students to explain the concept of musical sound. * Lead students to identify factors affecting loudness, pitch and quality of musical sound. | | | * Students to perform an experiment to measure the velocity of sound in air. * Students to give the meaning of music and noise. * Students to identify factors affecting loudness, pitch and quality of musical sound. | | * Stop watch * Drum * Tape measure * Guitar * Drum * Sonometer * Turning forks * Violin * Flute * Microphone * C.R.O. | |  | | * Assess students’ participation on measuring velocity of sound in air. * Give the class work asking students to explain factors affecting loudness, pitch and quality of musical sound. | |
| **Competence** | | **General objective** | | **Month** | | **Week** | | **Main Topic** | | **Sub-topic** | | | **Periods** | **Teaching Activities** | | **Learning Activities** | | **T/L Materials** | | **References** | | **Assessment** | | **Remarks** | |
| -do- | | -do- | | FEBRUARY /  MARCH | | 9 | | Musical sound | | Musical instrument.  Standing waves | | |  | * Organize the study strip to visit a musical band or studio to identify different types of musical instruments. * Lead students to explain the terms of standing (stationery) waves | | * By listening students to distinguish different musical instruments by the sound they produce. * Students to explain the terms nodes, antinodes, crest and trough as applied in stationery waves. | | * Pipes, string, membrane, and electronic instruments. * Helical spring. * Vibrator * Marker pen * White sheet * Motor and battery * Rubber band | |  | | * Ask students if they can identify the different musical instrument. * Give quiz on terms used in stationery waves | |  | |
| String instruments | | | 2 | * Guide students to perform an experiment to determine the factors which affect the frequency of a note by stretched string. | | * Students to carry out an experiment to determine factors which affect the frequency of a note produced by a stretched string. * Students to determine the frequency of a musical note. | | * String * Sonometer * Guitar * Turning fork | |  | | * Assess students’ performance and participation on finding the frequency of a stretched string. | |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Competence** | | **General objective** | | **Month** | | | **Week** | | | | **Main Topic** | | | | | | **Sub-topic** | | | | | **Periods** | | | | **Teaching Activities** | | | | | | **Learning Activities** | | | | | **T/L Materials** | | | | | | **References** | | | | **Assessment** | | | | | | **Remarks** | | | | |
| -do- | | -do- | | FEBRUARY  MARCH | | | 9 | | | | WAVES  Musical sound | | | | | | Pipe instruments  Electromagnetic spectrum | | | | | 2  2  2 | | | | * Lead students to distinguish between fundamental note and overtones. * Lead students to explain the concept of resonances as applied to sound. * With the guidance of an expert, support student to construct a simple musical instrument. * Guide students to explain the concept of the electromagnetic spectrum. * Guide students to draw and label the electromagnetic spectrum. * Guide students to detect infrared radiation, visible and u-v rays | | | | | | * Students to distinguish between fundamental note and overtones. * Students to explain the concept of resonance as applied to sound. * Students to initiate the construction of simple musical instruments. * Students to explain the concept of electromagnetic spectrum. * Students to identify bands of the lectromagnetic spectrum. * Students in groups to detect infrared rays, visible and U-V rays. | | | | | * Resonance tube/burette. * Turning fork. * String * Nails * Membrane * Metal can * Piece of wood. * Glass prism * Chart of rain bow. * Thermometer * Iron * Heater * Sun rays. | | | | | |  | | | | * Through questions and answers assess students on distinguish between fundamental note and overtones * Assess students work i.e. their musical instruments they made. * Ask students to identify the bands of electromagnetic spectrum. * Asses and record the participation of students on detecting those rays | | | | | |  | | | | |
| 1  10 | | | |
| **11 – 12 MIDTERM EXAM / MIDTERM BREAK** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Competence** | | | **General objective** | | | | | | | **Month** | | | | | **Week** | **Main Topic** | | | | | **Sub-topic** | | | | | | | | | **Periods** | **Teaching Activities** | | | | | **Learning Activities** | | | | | **T/L Materials** | | | | | **References** | | | | | **Assessment** | | | | **Remarks** | | | |
| do-  Demonstrating effects and application of electromagnetic induction | | | -do- | | | | | | | MARCH | | | | | 13 | WAVES | | | | | Application of e.m.w in daily life | | | | | | | | | 2 | * Guide students to identify the application of microwaves, radio waves, and infrared, γ-rays and x-rays. * Explain the importance of electromagnetic waves in Agriculture and climate. | | | | | * Through think-pair-share technique * Students to identify the applications of microwaves, radio-waves, infrared, γ-rays and x-rays. * Students to carryout project work on the importance of electromagnetic waves in agriculture and climate. | | | | |  | | | | |  | | | | | * Give test to check if students can identify the application of e.m.w in daily life. | | | |  | | | |
| Understand laws and principles of electromagnetic induction | | | | | | | MARCH | | | | |  | Electromagnetism | | | | | Magnetic field due to a current carrying conductor. | | | | | | | | | 2 | * Assist students to explain how electric current produce magnetic field. | | | | | * Students in group to perform an experiment to produce magnetic field due to current carrying wire. | | | | | * Wire * Source of electric current * Compass needle. | | | | |  | | | | | * Give a home asking students to write short notes on how electric current produce magnetic field and identify patterns of the field lines. | | | |
|  | * Guide students to carryout experiments to investigate the magnetic. * Fields associated with an electric current passing through a straight wire, loop and solenoid | | | | | * Students, in groups, to identify the patterns of the field lines. * Straight conductor, loop and solenoid. | | | | | * Cardboard * Iron fillings * Wire * Source of electric current. | | | | |
| **Competence** | **General objective** | | | | **Month** | | | **Week** | | | | | **Main Topic** | | | | | | **Sub-topic** | | | | **Periods** | | | | **Teaching Activities** | | | | | | **Learning Activities** | | | | | **T/L Materials** | | | | **References** | | | | | | **Assessment** | | | | **Remarks** | | | | |
|  |  | | | | MARCH | | | 14 | | | | | ELECTROMAGNETISMS | | | | | | Right hand grip rule and cork screw rule.  Magnetic field due to a current carrying conductor | | | | 2  2 | | | | * Guide students to state right hand rule and the cork screw rule. * With students determine the direction of magnetic field due to current flowing through straight wire, loop and solenoid. * Teacher and students to determine the direction of the force acting on a current carrying conductor placed at right-angle to a magnetic field. * Guide students to state Fleming’s left hand rule. * Guide students to determine the attraction and repulsion of current flowing through parallel wire. | | | | | | * To state the right hand rule and cork screw rule. * Students to identify the direction of the magnetic field due to current carrying conductor. * students to determine the direction of the force acting on a current carrying conductor. * students to state Fleming’s left hand rule. * to perform experiment to show the directions of repulsive and attractive force. | | | | | * Compass needle * Iron fillings. * Wire * U-shaped magnet * Wire * Meter rule * Source of electricity | | | |  | | | | | | * Ask students to state right hand rule and cork screw rule. * Assess students involvement on determining the direction of magnetic field produced. * Ask students to state Fleming’s left hand rule. * Assess students’ performance on doing experiment. | | | |  | | | | |
| **Competence** | | **General objective** | | | | **Month** | | | **Week** | | | | | **Main Topic** | | | | | | **Sub-topic** | | | | | **Periods** | | | | **Teaching Activities** | | | | | **Learning Activities** | | | | | | **T/L Materials** | | | | **References** | | | | | **Assessment** | | | | | | **Remarks** | | | |
| -do- | | -do- | | | | A  P  R  I  L | | |  | | | | | ELECTROMAGNETISM | | | | | | Electromagnetic induction. | | | | | 2  2 | | | | * Guide students to demonstrate the production of induced current using a coil and a magnet. * Guide students to explain the concept of electromagnetic induction. * Guide students to state and explain Faraday’s and Lenz’s laws of electromagnetic induction. * Group students to perform the experiment on electromagnetic induction. | | | | | * Students, in group, to demonstrate the production of induced current using coil and magnet. * Students to explain the concept of electromagnetic induction. * Students to explain Faraday’s and Lenz’s laws of electromagnetic induction. * Students to apply Faraday’s law and Lenz’s law of electromagnetic induction to demonstrate the factors affecting magnitude of induced electromagnetic force and direction of induced current | | | | | | * Magnet * Coil * Galvanometer   -do-  -do- | | | |  | | | | | * Assess students in group while they are demonstrating. * Ask students to state the laws of electromagnetic induction. * Ask students to note down the factors affecting electromagnetic induction. | | | | | |  | | | |
| 15 | | | | |
|  | | | | |
|  | |  | | | |  | | |  | | | | |  | | | | | |  | | | | |  | | | |  | | | | |  | | | | | |  | | | |  | | | | |  | | | | | |  | | | |
| **Competence** | **General objective** | | | **Month** | | | **Week** | | | | | **Main Topic** | | | | | | **Sub-topic** | | | | | | **Periods** | | | | **Teaching Activities** | | | | | | | **Learning Activities** | | | | **T/L Materials** | | | | | | **References** | | | | | **Assessment** | | | | **Remarks** | |
| -do- | -do- | | | A  P  R  I  L | | | 15 | | | | | -do- | | | | | | Self and mutual induction  a.c. and d.c generator | | | | | | 2  2 | | | | * Guide students to explain the concept of self induction and mutual induction * Using diagram describe the structure of the induction coil and how it works * Explain to the students the flow of a.c and d.c from a coil rotating in a magnetic field. * The teacher to explain the mode of action of a.c and d.c generators and how to convert a.c generator to d.c. | | | | | | | * Students to explain the concept of self and mutual induction. * Students to describe the mode of action of an induction coil. * To explain the flow of a.c and d.c from a coil rotating in a magnetic field. * Students to discuss the applications of a.c generator and the advantages of a.c generator over d.c generator. | | | | * Source of electricity * Iron ring * Coil * Galvanometer * Induction coil * Chart showing induction coil * Chart of a.c and d.c generator | | | | | |  | | | | | * Give a group work and ask students to write short notes on mode of action of induction coil. * In group work ask students to write the notes on the mode of action of a.c and d.c generator | | | |  | |
| 16 | | | | | transformers | | | | | | 4 | | | | * Describe the structure and mode of action of a transformer. * Using enquiry deductive technique guide students to develop the relation Es/Ep = Ns/Np * Guide students to apply the above formula. | | | | | | | * To explain the mode of action of a transformer. * Students to discuss the applications of a transformer. | | | | * Wire * Primary and Secondary coil. * Voltmeter. * Rectangular soft iron ring. | | | | | |  | | | | | * Ask students to construct simple step-up and step down transformer. | | | |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Competence** | | | | **General objective** | | | | | **Month** | | **Week** | **Main Topic** | | | **Sub-topic** | | | | | **Periods** | **Teaching Activities** | | | **Learning Activities** | | | **T/L Materials** | | **References** | | | **Assessment** | | **Remarks** | | |
| Recognizing the importance and hazards of radioactive emissions. | | | | Realize the importance and hazards of radioactive emission. | | | | | APR  I  L | | 17 | RADIOACTIVTY | | | The nucleus of an atom | | | | | 4 | * Guide students to discuss the   structure of the atoms while they sit in groups.   * Assist students to give the   meaning of atomic number, mass number and isotopes of elements.   * Assist students to mention the   existence of forces holding the nucleons. | | | * to sit in group and   discuss the structure of the atom.   * Using think-pair-share technique. * Students to discuss the   meaning of atomic number, mass number and isotopes of elements.   * Students in groups to   mention the forces holding the nucleus. | | | * Chart of atom * Model of atom. * Model   showing atomic no., mass no. of elements.   * Charts   showing electron and proton in an atom. | |  | | | * Ask each group to   describe the structure of the nucleus of an atom.   * Give class work   testing students on atomic no., mass no., and isotopes of element and forces holding nucleus. | |  | | |
|  | | | |  | | | | | APR  I  L | | 18 |  | | | Natural radioactivity | | | | | 2 | * The teacher to explain the concept of radioactivity. * The teacher to highlight the   properties of alpha (α) and Beta (β) and gamma (γ) radiations. | | | * Students to explain the concept of radioactivity. * While in groups,   students to describe the properties of radiations emitted by radioactive substances. | | | Periodic table. | |  | | | * Ask students to   write few sentences to explain the concept of radioactivity.   * Give a quiz on   properties of radiations emitted by radioactive substances. | |  | | |
| **Competence** | | **General objective** | | | | **Month** | | **Week** | | **Main Topic** | | | **Sub-topic** | | | **Periods** | | **Teaching Activities** | | | | **Learning Activities** | | | **T/L Materials** | | | | **References** | | **Assessment** | | **Remarks** | | |
| -do- | | -do- | | | | MAY | | 18  /  19 | | -do- | | | -do- | | | 4 | | * The teacher to highlight the nuclear changes due to the emission of α, β and γ radiations. * Guide students on the detection of α and β rays using G-M counters, spark chamber or Wilson Cloud Chamber. * Guide students to detect γ-rays using photographic plate. | | | | * Students to discuss in groups the nuclear change due to emission of α, β and γ radiations. * Students to follow the explanation and take note. | | | * Periodic emission. * Chart showing emission of α, β and γ radiations. * Chart showing the detectors. | | | |  | | * Ask students to explain the nuclear changes due to emission ofα, β and γ radiations. * Give students home work to write short notes on one of the detectors discussed. | |  | | |
| Half life of radioactive substance | | | 2 | | * Guide students to describe the meaning of half-life as applied to a radioactive substance highlight of background radiations. * Teacher to demonstrate on how to determine half-life using various methods. * Guide students to identify the applications of radio isotopes. | | | | * Students to demonstrate the half-life using dice. * While in groups, students to determine half-life of radioactive elements. * Students to identify the applications of Radioisotopes in agriculture, medicine and industry. | | | * Graph showing radioactivity. * Dice * Graph paper * Graph of count-rate against time * Graph paper * Pencil * Charts | | | |  | | * Students to do homework on determining the half-life of radioactive substances. * Students to be asked to write the applications of radio isotopes. | |
| **Competence** | **General objective** | | **Month** | | **Week** | | **Main Topic** | | | | | | | **Sub-topic** | | | **Periods** | | **Teaching Activities** | | | | **Learning Activities** | | | **T/L Materials** | | **References** | | **Assessment** | | | | | **Remarks** | | |
| -do- | -do- | | MAY | | 20 | | RADIOACTIVITY | | | | | | | Artificial Radioactivity | | | 4 | | * Guide students to distinguish between natural and artificial radioactive isotopes. * The teacher to describe the methods of producing artificial radioactive isotopes. * Guide students to mention the applications of artificial radioactivity. | | | | * Students to distinguish between natural and artificial radioactivity. * Students in groups to discuss methods of producing artificial radioactive isotopes. * Students to use library search technique to write down uses of artificial radioactivity. | | | * Periodic table * Chart of bomb adding elements. | |  | | * Ask students to distinguish between natural and artificial radioactivity. * Arrange students in group to write method of producing and applications of artificial radioactivity. | | | | |  | | |
| (**21 – 22) 2ND QUARTER** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  |  | | MAY | | 23 | |  | | | | | | | Radiation Hazards and safety | | | 2 | | * Teacher to explain the effects of nuclear radiations on human body. * The teacher to highlight about protection from the nuclear radiations. | | | | * Students in group to explain the effect of nuclear radiation on human body. * Students to demonstrate using role play on how to protect themselves from nuclear radiations. | | | * Chart showing the hazards of radiations * Pictures showing people working with radioactive materials. | |  | | * Ask students to explain effects of nuclear reactions of human body. | | | | |

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Competence** | **General objective** | **Month** | **Week** | **Main Topic** | **Sub-topic** | **Periods** | **Teaching Activities** | **Learning Activities** | **T/L Materials** | **References** | **Assessment** | **Remarks** |
| -do-  Recognizing the importance and hazards of x-rays. | -do-  Realize the importance and hazard of x-ray | MAY  JUNE | 23 | RADIOACTIVITY | Nuclear fission and fusion | 2 | * The teacher to assist the students to explain the concept of nuclear fission and fusion. * The teacher to explain the applications of nuclear fission and fusion. | * Students to explain the nuclear fission and fusion. * While in groups, students to mention the applications of nuclear fission and fusion. | * Chart of nuclear power station. |  | * Give a quiz on nuclear fission and fusion. * Each group to give their report and teacher to assess their presentation. |  |
| 24 | THERMIONIC EMISSION | Cathode rays. | 4 | * The teacher to explain the production of cathode rays. * The teacher to facilitate students to state the properties of cathode rays. * The teacher to assist students to state the applications of cathode ray tube in daily life. | * Students to explain the production of cathode rays. * Students to state properties of cathode rays. * Students to state the applications of cathode ray tube. | * Cathode ray tube. * Chart showing cathode ray tube. * TV * Computer monitor. * Charts of maltose cross and paddle wheel. |  | * Assess students on explaining the production of cathode rays. * Ask students to state the properties of cathode rays. |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Competence** | | **General objective** | | | **Month** | | **Week** | **Main Topic** | | **Sub-topic** | | **Periods** | | **Teaching Activities** | | **Learning Activities** | | **T/L Materials** | | **References** | | **Assessment** | **Remarks** | |
| Recognizing the importance and hazards of X-rays. | | Realize the importance and hazard of X-ray | | | J U N E | | 25 | THERMIONIC EMISSION | | X-rays | | 2 | | * Guide students to describe the structure and mode of action of the X-ray tube. * Through question and answer technique, the teacher to guide students to distinguish between X-rays and their production. * Guide students to review the position of X-rays in electromagnetic spectrum. * The teacher to arrange a study visit to the X-rays unit centre. | | * Students to describe the structure and mode of action of an X-ray tube. * Students to draw and label the diagram of the X-ray tube. * Students in group to distinguish between soft and hard X-rays. * Students to brainstorm on the properties of X-rays. * Students to discuss the applications of X-rays in daily life. * Students to write notes on their educational trip. | | * Chart showing X-rays tube. * X-rays unit centre. * X-ray photographic plate. | |  | | * Group students and ask them to note down the structure and mode of action of X-rays tube. * Give a quiz on soft and hard X-rays. * Let students write the applications of X-rays. |  | |
| **Competence** | **General objective** | | **Month** | **Week** | | **Main Topic** | | | **Sub-topic** | | **Periods** | | **Teaching Activities** | | **Learning Activities** | | **T/L Materials** | | **References** | | **Assessment** | | | **Remarks** | |
| Students to be able to design and implementing the simple electronic circuits | Students to understand basic building unit for electronic circuit  . | | JUNE | 25 | | ELECTRONICS | | | Semiconductors | | 2 | | * The teacher to guide students to explain the concept of energy bands in solids. * Guide students to distinguish between conductors, semiconductors and insulators. | | * Students to draw the energy bands in solids. * Students to distinguish between conductors, semiconductors and insulators. | | * Chart of energy bands in solids | |  | | * Test students on distinguish conductors, semiconductors and insulators using energy bands. | | |  | |
| JUNE | 26 | | 4 | | * Guide students on the effect of temperature on conductivity of conductors, semiconductors and insulators. * Guide students to identify types of semiconductors. * Guide students to describe the mechanisms of doping in intrinsic semiconductors. | | * Students to explain the effect of temperature on conductivity of solid. * Students to identify types of semiconductors. * Students to describe the mechanism of doping. | |  | |  | | * Test students to explain the effect of temperature on conductivity of solids. * Assess students to identify types of semiconductors. | | |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Competence** | **General objective** | | | | **Month** | | **Week** | | | | **Main Topic** | | | | | | | | | **Sub-topic** | | | | | **Periods** | | | **Teaching Activities** | | | | | | **Learning Activities** | | | | | **T/L Materials** | | | | | **References** | | | | | | | **Assessment** | | | | **Remarks** | | | |
| -do- | -do- | | | | JUNE  JUNE/JULY | | 27  28 | | | | ELECTRONICS | | | | | | | | | Diodes  Rectification.  Transistor | | | | | 2 | | | * The teacher to lead students to describe the constructions the construction of a P-N junction. * The teacher to display different types of diodes. | | | | | | * Students to explain the mode of action of a P-N junction. * Students to identify types of diodes. | | | | | * Diodes * Chart showing diodes. * P-N junction diode. * LED | | | | |  | | | | | | | * Ask students to explain mode of action of P-N junction. * Test the students on types of diodes. | | | |  | | | |
| 2  2 | | | * Guide students to discuss a circuit which shows half and full-wave rectification. * The teacher to display transistors and show a diagram of a transistor. * The teacher to display transistors. * Through question and answer technique the teacher to lead students to outline the application of transistors. | | | | | | * Students to construct circuits which show half-wave and full wave rectifications. * Students to describe the construction of a transistor. * Students to describe the structure of a transistor. * Students to identify types of transistors. * Students to outline the applications of transistors | | | | | * DC sources * Diodes. * Capacitor * Resistors * Connecting wires | | | | |  | | | | | | | * Ask students to construct half wave and full wave rectifier. * Let students to describe the construction of PNP junction and mode of action of PNP transistor. * Assess the students work on outlining the applications of transistors. | | | |
|  | |  | | |  | | | | | |  | | | | | |
| -do- | -do- | | | | * Chart showing a transistors. * Transistors * PNP and NPN transistors. * Radio * TV * Voltage amplifier. | | | | |  | | | | | | |
| **Competence** | | | **General objective** | | | | | | **Month** | | | | | **Week** | | **Main Topic** | | | | | **Sub-topic** | | | | | | **Periods** | | | | **Teaching Activities** | | | | | **Learning Activities** | | | | | **T/L Materials** | | | | | | | | **References** | | | | **Assessment** | | | | **Remarks** | | | | |
| -do- | | | -do- | | | | | | JUNE  /  JULY | | | | |  | | ELECTRONICS | | | | | Single stage amplifier | | | | | | 4 | | | | * The teacher to explain the analogue signal. * Assist students to explain the concept of digital signals. * Guide students to design single stage amplifier. | | | | | * Students to explain the concept of analogue signal. * Students to explain the concept of digital signals. * Students in groups to design single state amplifier. | | | | | * Chart showing analogy signal. * Mobile phone (analogy) * Chart showing digital signal. * Mobile phone (digital) * Watch * Transistor * Resistors * Oscilloscope | | | | | | | |  | | | | * Assess students on explaining analogue and digital signal. * Give work students to design a single stage amplifier. | | | |  | | | | |
| 32 & 33 | | | | | | | | | | | | | | | |  | | | | |  | | | | | |  | | | |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Students to be able to describe the solar system and other celestial bodies | | | Promote knowledge on the solar system and relationship with other celestial bodies | | | | | | JULY | | | | | 29 | | ELEMENTARY ASTRONOMY | | | | | Introduction to astronomy | | | | | | 2 | | | | * Guide students to explain the concept of astronomy. * Arrange students in groups and guide students to explain the importance of astronomy. | | | | | * Students, using think-pair-share technique to explain the concept of astronomy. * Students in groups to discuss on importance of astronomy in daily life. | | | | | * Model of universe. * Chart of universe. * Clear sky * Chart of heavenly bodies. | | | | | | | |  | | | |  | | | |  | | | | |
| **Competence** | | **General objective** | | | | **Month** | | **Week** | | | | | **Main Topic** | | | | | | **Sub-topic** | | | | | | | **Periods** | | | | **Teaching Activities** | | | | | **Learning Activities** | | | | | **T/L Materials** | | | | | | **References** | | | | **Assessment** | | | | | | **Remarks** | | | | |
| -do- | | -do- | | | | JULY | |  | | | | | -do- | | | | | | Solar system | | | | | | | 2 | | | | * Guide students to distinguish between star and planet. * Guide students to explain the concept of force of gravitation which maintains bodies in their orbits. | | | | | * Students in group to give the difference between star and planet. * Students in groups to explain the concept of force of gravitation which maintain bodies in their orbits. | | | | | * Venus * Jupiter * Binoculars * Chart of earth * Earth and moon | | | | | |  | | | | * Ask students to distinguish star from planet. * Ask students to explain the concept of gravitation. | | | | | |  | | | | |
| 30 | | | | | ELEMENTARY ASTRONOMY | | | | | | Constellations | | | | | | | 2 | | | | * Guide students to explain the concept of constellation. * Guide students to identify kinds of constellations. * Guide students to discuss the uses of constellations in navigation and seasons prediction. | | | | | * Students to explain the concept of constellations. * Students to identify and name common constellations. * Students to discuss with teachers the uses of constellations. | | | | | * Chart of different constellations. * Chart showing seasons. | | | | | |  | | | | * Ask students to explain the concept of constellation. * Test students on the kind and uses of constellations. | | | | | |
| -do- | | | | | | The earth and the moon | | | | | | | 2 | | | | * The teacher to guide students to describe the surface features and temperature of the moon. * Teacher to guide students to explain the causes of ocean tides. Students can visit the coast of sea to observe the effects of water tides. | | | | | * Students to describe the surface features and temperature of the moon. * Students to write down the observations they made on effects of water tides | | | | | * Chart of the moon and of the earth. * Chart of ocean tides | | | | | |  | | | | * Give a group work for students to describe the surface features and temperature of the moon and give the effects of water tides. | | | | | |
| **Competence** | | | | **General objective** | | | | | | **Month** | | | | | **Week** | | **Main Topic** | | | | | **Sub-topic** | | | | | | | **Periods** | | | **Teaching Activities** | | | | | **Learning Activities** | | | | | **T/L Materials** | | | | | | **References** | | | | **Assessment** | | | | | | **Remarks** | | | | |
| Describing the occurrence of environmental disaster | | | | Develop knowledge on the occurrence of environmental disaster | | | | | | JULY | | | | | 31 | | GEOPHYSICS | | | | | Structure and composition of the Earth | | | | | | | 2 | | | * The teacher to guide students to describe the structure of the earth. * The teacher to guide students to describe the composition of the layers of the earth. * Guide the students to explain the importance of the layers of the earth. | | | | | * Students to describe the structure of the earth. * Students in groups to describe the composition of the layers of the earth. * Students in groups to explain the importance of the layers of the earth. | | | | | * Chart of the structure of the earth. * Minerals. | | | | | |  | | | | * Give a quiz which covers all these areas. | | | | | |  | | | | |
| **32 – 37 LONG VACATION** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | | | |  | | | | | | SEPTEMBER | | | | | 38 | |  | | | | | The Green house effect and global warming | | | | | | | 2 | | | * Guide students to explain the green house effect. * The teachers to lead students to identify sources of green house. | | | | | * Students in groups to explain the green house effect. * Students to identify sources of green house. | | | | | * Chart of green house. * Chart of ozone layer. * Green house gases | | | | | |  | | | | * Ask students to tell about green house effect and identify sources of green house | | | | | |
| 2 | | | * Guide students to explain the occurrence of global warming. * Guide students to state the consequences of global warming. | | | | | * Students in groups to explain the occurrence of global warming. * Students to state the consequence of global warming. | | | | | * Chart of effect of global warming. * Pictures of effects of global warming * Melting ice caps. | | | | | |  | | | | * Ask students to explain the occurrence of global warming and state the consequences of global warming. | | | | | |
| **Competence** | | **General objective** | | | | **Month** | | **Week** | | | | **Main Topic** | | | | | | **Sub-topic** | | | | | **Periods** | **Teaching Activities** | | | | | | | | | **Learning Activities** | | | | | **T/L Materials** | | | | | **References** | | | | **Assessment** | | | | | | | **Remarks** | | | | | |
| -do- | | -do- | | | | SEPTEMBER | | 39 | | | | -do- | | | | | | Earthquakes and volcanoes | | | | | 2 | * The teacher to guide students to explain the origin of volcanoes. * Guide students to describe the effects of volcanoes. * Group students and guide them to explain the concept of the earthquake. | | | | | | | | | * Students to explain the origin of volcanoes. * Students to describe the effects of volcanoes. * Students in groups to explain the origin of earthquake. | | | | | * Charts of volcanoes. * Pictures showing effects of volcanoes. * Chart of earthquake. * Picture of earthquake. | | | | |  | | | | * Give a quiz on origin and effects of volcanoes. * Ask students to explain the origin of earthquake. | | | | | | |  | | | | | |
| 2 | * The teacher to describe the principle of measurement of earthquakes. * Assist students to identify the hazards, precautions against earthquake hazards. | | | | | | | | | * Students to discuss in groups how to record the measurement of earthquake. * Students in groups to identify the precautions against earthquake and hazards. | | | | | * Seismometer chart. * Seismometer. * Animal signs. * Meteorology report. | | | | |  | | | | * Ask students to describe the principle of measuring earthquake. * Test students on identifications against earthquake hazards. | | | | | | |
| SEPTEMBER | | 40 | | | |  | | | | | | Structure and composition of the atmosphere | | | | | 2 | * Lead students to describe the vertical structure of the atmosphere. * Guide students to describe the compositions of the atmosphere. * Guide students to describe the importance of various layers of the atmosphere. | | | | | | | | | * Students to describe the vertical structure of the atmosphere. * Students using think-pair-technique to describe the composition of atmosphere. * Students to explain t he importance of various layers of the atmosphere. | | | | | * Chart of structure of atmosphere showing the layer. * Communication system. | | | | |  | | | | * Ask students to describe the vertical structure of the atmosphere. * Ask students to describe the composition and the importance of various layers of the atmosphere. | | | | | | |
| 41 – 43 R E V I S I O N | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 44 – 47 **N EC T A E X A M I N A T I O N S** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |