**BAUCHI STATE MINISTRY OF EDUCATION,**
**QUALITY ASSURANCE DIRECTORATE,**
**REVISED HARMONIZED SCHEME OF WORK 2023.**

**SUBJECT:**Physics **CLASS:** SS 1 **TERM:** First Term

| WEEKS | TOPIC | CONTENT |
|---|---|---|
| 1 | Introduction to physics | i. Definition of physics<br>ii. Application of physics in:<br>a. Automobile<br>b. Communication.<br>c. Space/aeronautics.<br>d. Medicine etc.<br>iii. Career prospects in physics |
| 2 | Fundamental and derived quantities and their units. | 1. Concept of fundamental and derived quantities.<br>2. Fundamental and derived quantities units.<br>3. Differences between Fundamental and derived quantities unit |
| 3 | Position, distance and displacement. | 1. Definition of position and displacement.<br>2. Measurement of distance.<br>3. Concept of direction<br>4. Concept of position and position coordinate.<br>5. Bearing of position |
| 4 | Time. | 1. Concept of time.<br>2. Way of measuring time in lab.<br>3. Practical clock and its units.<br>4. First C.A test. |
| 5 | Motion (i) | 1. Definition of motion<br>2. Graphical presentation of motion.<br>3. Types of motion:<br>a. Random motion<br>b. Oscillatory /vibration motion<br>c. Rotational motion. Etc. |
| 6 | Motion (ii) | 1. Cause and effect of motion:<br>2. Types of force.<br>a. Contact force<br>b. Field Force |
| 7 | Friction and reducing friction. | 1. Definition<br>2. Types of friction:<br>a. Static friction<br>b. Dynamic friction. |

| | | |
|---|---|---|
| | | 3. Coefficient of limiting friction<br>4. Advantages and disadvantages of friction<br>5. Methods of reducing friction<br>6. Second C.A test. |
| 8 | Speed and velocity. | 1. Concept of speed and velocity<br>2. Uniform and non-uniform speed and velocity.<br>3. Distance and displacement time graph (slope). |
| 9 | Rectilinear acceleration. | 1. Concept of rectilinear acceleration<br>2. Uniform and non-uniform acceleration<br>3. Velocity time-graph<br>4. Analysis of rectilinear motion (Equation of motion)<br>5. Third C.A test |
| 10 | Scalars and vectors | 1. Concept of Scalars and vectors<br>2. Distinction between scalars and vectors<br>3. Vector representation.<br>4. Addition and resolution of vectors |
| 11-12 | Examination | Examination |
| 13 | Extra curricular activities | i. Compilation/issuance of result<br>ii. Debate, quiz, games etc<br>iii. Vacation |

**BAUCHI STATE MINISTRY OF EDUCATION,**
**QUALITY ASSURANCE DIRECTORATE,**
**REVISED HARMONIZED SCHEME OF WORK 2023.**

**SUBJECT:** Physics **CLASS:** SS 1 **TERM:** Second Term

| WEEKS | TOPIC | CONTENT |
|---|---|---|
| 1. | Work, energy and power (i) | 1. Concept of work energy and power.<br>2. Inter changeability of work and energy.<br>3. Determination of work, energy and power |
| 2. | Work, energy and power (ii) | 1. Types of energy (Mechanical).<br>2. Sources of energy<br>i. Renewable energy resources<br>ii. Nonrenewable energy resources<br>3. Conservation of energy. |
| 3. | Heat energy | 1. Concept of heat energy<br>2. Concept of temperature<br>3. Effects of heat.<br>i. Rise and fall in temperature<br>ii. Expansion and contraction<br>iii. Change of state/phase etc.<br>4. Expansion in solids and its consequences and application |
| 4. | Thermal expansivity | 1. linear expansivity<br>2. Area of expansivity<br>3. Volume or cubic expansivity<br>5. First C.A test. |
| 5. | Transfer of heat energy | 1. Conduction<br>2. Convection<br>3. Radiation |
| 6. | Electric charges | 1. Production of charges<br>2. Types of charges<br>3. Distribution of charges<br>4. Storage of charges<br>5. Application in lightening conductor |
| 7. | Description and properties of fields | 1. Concept of fields<br>2. Types of fields<br>3. Properties of fields<br>7. Second C.A test. |
| 8. | Gravitational field | 1. Concept of gravitational field<br>2. Acceleration due to gravity |

| | | |
|---|---|---|
| | | 3. Shape and dimension of the earth |
| 9. | Electric field | 1. Electric circuit<br>2. Electric conduction through materials<br>3. Ohm's law<br>4. Electrical work done in a given circuit<br>5. Third C.A test |
| 10. | Particulate nature of matter | 1. Structure of matter<br>i. Evidence of the particle nature of matter<br>ii. Simple atomic structure<br>2. Molecules.<br>i. Their nature<br>ii. Their size<br>3. Brownian motion<br>4. Diffusion<br>5. State of matter |
| 11-12 | Examination | Examination |
| 13 | Extra curricular activities | i. Compilation/issuance of result<br>ii. Debate, quiz, games etc<br>iii. Vacation |

**BAUCHI STATE MINISTRY OF EDUCATION,**
**QUALITY ASSURANCE DIRECTORATE,**
**REVISED HARMONIZED SCHEME OF WORK 2023.**

**SUBJECT:** Physics **CLASS:** SS 1 **TERM:** Third Term

| WEEKS | TOPIC | CONTENT |
|---|---|---|
| 1. | Crystal structure. | 1. Define crystal structure.<br>2. Arrangement of atoms in crystal structure<br>3. Distinction between crystalline and amorphous substances. |
| 2. | Elastic properties of solid | 1. Define Solid.<br>2. Hooke's law<br>3. Young modulus<br>4. Work done in springs and elastic string |
| 3. | Fluids at rest and in motion | 1. Surface tension<br>i. definition, effects and their applications<br>2. Capillarity.<br>i. Cohesion<br>ii. Adhesion<br>3. Viscosity<br>i. Definition<br>ii. Terminal viscosity<br>iii. Application of viscosity |
| 4. | Physics in technology | 1. Units in industry<br>2. Electrical continuity testing<br>3. Solar energy<br>4. Solar panels/collector for energy supply<br>6. First C.A test. |
| 5. | Equilibrium of forces | 1. Resultant and Equilibrant forces<br>2. Parallel forces<br>3. Moment of a force |
| 6. | Centre of gravity and stability | 1. Stability of objects<br>2. Stable<br>3. Unstable<br>4. Neutral |
| 7. | Equilibrium of bodies in fluids | 1. Archimedes' principle<br>2. Law of floatation<br>3. Density and relative density<br>4. Hydrometer |

| | | |
|---|---|---|
| | | 5. Second C.A test. |
| 8. | Projectiles | 1. Concept of projectiles<br>2. Ways of projecting an object<br>i. Vertical projection<br>ii. Horizontal projection<br>iii. Projecting at an angle to the horizontal<br>3. Simple problems involving range, height, time of flight etc. |
| 9. | Circular motion | 1. Define circular motion.<br>2. Uniform circular motion<br>3. Centripetal force<br>4. Centrifugal force<br>5. Angular speed and velocity<br>6. Example of circular motion<br>7. Third C.A test |
| 10. | Simple harmonic motion (i) | 1. Definition.<br>2. Displacement, velocity and acceleration of simple harmonic motion |
| 11. | Simple harmonic motion (ii) | 1. Energy of simple harmonic motion<br>2. Force vibration and resonance |
| 12-13 | Examination | Examination |
| 14 | Extra curricular activities. | i. Compilation/issuance of result<br>ii. Debate, quiz, games etc<br>iii. Vacation |

**BAUCHI STATE MINISTRY OF EDUCATION,**
**QUALITY ASSURANCE DIRECTORATE,**
**REVISED HARMONIZED SCHEME OF WORK 2023.**

**SUBJECT:** Physics **CLASS:** SS 2 **TERM:** First Term

| WEEKS | TOPIC | CONTENT |
|---|---|---|
| 1. | Linear momentum. | 1. Momentum and impulse<br>2. Newton's law of motion (1st, 2nd and 3rd)<br>3. Conservation of linear momentum<br>4. Application Newton's law of motion |
| 2. | Mechanical energy | 1. Application of mechanical energy<br>2. Machines.<br>i. Force ration<br>ii. Velocity ration<br>iii. Efficiency<br>3. Types of machines<br>i. Lever<br>ii. Pulleys<br>iii. Incline plane etc. |
| 3. | Heat energy | 1. Define Temperature<br>2. Temperature and its Measurement<br>3. Types of thermometer and their uses.<br>4. Absolute scale of temperature |
| 4. | Heat energy measurement (i) | 1. Concept of specific heat capacity<br>i. Its Measurement and significances<br>2. First C.A test. |
| 5. | Heat energy measurement (ii). | 1. Latent heat<br>2. Evaporation, boiling and sublimation<br>3. Relative humidity and due point |
| 6. | Gas law. | 1. Kinetic theory of gas<br>2. measurement of gas pressure<br>3. Barometers in practical use<br>4. Boy's law and its application<br>5. Charles law and its application<br>6. Pressure law<br>7. General gas law. |
| 7. | Production and propagation of waves (i) | 1. Definition of wave<br>2. Production of mechanical waves<br>3. Pulsating system.<br>i. Energy transmitted with definite |

| | | |
|---|---|---|
| | | speed, frequency and wavelength<br>4. 2nd C.A test. |
| 8. | Production and propagation of waves (ii). | 5. Wave form.<br>i. Description and graphical representation of wave.<br>6. Mathematical relationships among f, ϰ, T and V. |
| 9. | Types and properties of waves | 1. Longitudinal waves<br>2. Transverse waves<br>3. Wave equation (wt-2πx/ϰ)<br>4. Properties of waves<br>i. Reflection<br>ii. Refraction<br>iii. Diffraction<br>iv. Interference<br>v. polarization<br>5. 3rd C.A test |
| 10. | Light waves | 1. Sources of light<br>2. Light and matter<br>3. Transmission of light shadows<br>4. Eclipse, the pinhole camera |
| 11-12 | Examination | Examination |
| 13 | Extra curricular activities. | i. Compilation/issuance of result<br>ii. Debate, quiz, games etc<br>iii. Vacation |

**BAUCHI STATE MINISTRY OF EDUCATION,**
**QUALITY ASSURANCE DIRECTORATE,**
**REVISED HARMONIZED SCHEME OF WORK 2023.**

**SUBJECT:** Physics **CLASS:** SS 2 **TERM:** 2nd Term

| WEEK | TOPIC | CONTENT |
|---|---|---|
| 1. | Light waves (i) | 1. Reflection of light at plane and curved surfaces<br>2. Laws of reflection<br>3. Forms of images by plane and curved mirrors<br>4. Application of plane and curved mirrors |
| 2. | Light waves (ii). | 1. Refraction of light through rectangular glass block.<br>2. Laws of refraction<br>3. Real and apparent depth<br>4. Total internal reflection<br>5. Critical angle. |
| 3. | Light waves (iii). | 1. Refraction of light through triangular glass block.<br>2. Angle of minimum deviation<br>3. total reflecting prisms |
| 4. | Application of light waves | 1. Simple camera and firm projector<br>2. The human eye<br>3. The simple microscope and compound microscope.<br>4. Telescope<br>5. Prism binocular<br>6. First C.A test. |
| 5. | Sound waves (i) | 1. Definition<br>2. Sources of sound<br>3. Transmission of sound<br>4. Speed of sound in solid, liquid and gas.<br>5. Characteristics of sound |
| 6. | Sound waves (ii). | 1. Noise and music<br>2. Force vibration – resonance, harmonics and overtones.<br>3. Stationary waves |
| 7. | Application of sound waves | 1. Vibration in string and pipe<br>2. Wind instrument<br>3. String instrument<br>4. Percussion instrument |

| | | |
|---|---|---|
| | | 5. Echoes and their application<br>6. Hearing aids<br>7. Second C.A test. |
| 8. | Molecular theory of matter | 1. Pressure in fluid<br>i. Concept of pressure<br>ii. Atmospheric pressure<br>iii. Pressure in liquids<br>2. Application of atmospheric and gas pressure.<br>3. Pascal's principle |
| 9. | Electromagnetics waves. | 1. Electromagnetic spectrum<br>i. Difference between electromagnetic wave and mechanical waves<br>ii. Radiation in electromagnetic spectrum<br>iii. Uses of electromagnetic waves<br>iv. Application of formula ($V=f\lambda$) to solve simple waves<br>2. Third C.A Test. |
| 10. | Gravitational field (i). | 1. Gravitational force between two masses.<br>2. "G" as a universal constant.<br>3. Gravitational potentials<br>4. Escape velocity.<br>5. Solar system<br>6. Kepler's laws<br>7. Natural and artificial satellites |
| 11-12 | Examination | Examination |
| 13 | Extra curricular activities. | i. Compilation/issuance of result<br>ii. Debate, quiz, games etc<br>iii. Vacation |

**BAUCHI STATE MINISTRY OF EDUCATION,**
**QUALITY ASSURANCE DIRECTORATE,**
**REVISED HARMONIZED SCHEME OF WORK 2023.**

**SUBJECT:** Physics **CLASS:** SS 2 **TERM:** 3rd Term

| WEEK | TOPIC | CONTENT |
|---|---|---|
| 1. | Electric fields (i) | 1. Production of continuous charges:<br>i. Primary cells<br>ii. Secondary cells<br>2. Electric circuit:<br>i. Series arrangement of cells<br>ii. Parallel arrangement of cells and<br>iii. Resistors |
| 2. | Electric fields (ii). | 1. E.m.f of a cell<br>2. Internal resistance of a cell<br>3. Standard resistance and rheostats<br>4. Resistivity and conductivity |
| 3. | Electric fields (iii). | 1. Shunts and multipliers(Galvanometer conversions)<br>2. Principle of the potentiometer<br>3. Wheatstone bridge<br>4. Meter bridge |
| 4. | Electric fields (iv). | 1. Electric conduction through liquid (Electrolysis)<br>i. Electrolytes and non-electrolytes<br>ii. Dynamic of charged particles (ion) in electrolytes<br>iii. Voltammeter<br>iv. Example of electrolysis<br>2. Faraday's law of electrolysis<br>3. Applications of electrolysis<br>4. First C.A test. |
| 5. | Electric fields (v). | 1. Conduction of electricity through gasses<br>2. Hot cathode, thermionic emission<br>3. The cathode valve<br>4. Application of hot cathode (thermionic emission)<br>i. Cathode-ray oscilloscope |
| 6. | Electric field (vi). | 1. Electric force between point charges (coulomb's law) |

| | | |
|---|---|---|
| | | 2. Concept of electric field.<br>i. Electric field intensity<br>ii. Electric potential |
| 7. | Electric field (vii). | 1. Capacitors and capacitances<br>i. Definition<br>ii. Arrangement of capacitors<br>2. Energy stored in a capacitor<br>3. Application of capacitors<br>4. Second C.A test. |
| 8. | Magnetic field (i). | 1. Concept of magnetic field<br>i. Properties of magnet<br>ii. Magnetic flux and flux density<br>2. Magnetic around:<br>i. A bar magnet<br>ii. A straight conductor carrying current<br>iii. A solenoid<br>3. Methods of making magnet<br>4. Methods of demagnetization. |
| 9. | . Magnetic field (ii). | 1. Magnetic properties of ion and steel<br>2. Magnetic screening or shielding<br>3. Electromagnets and its application<br>4. Temporary magnet<br>i. The electric bell<br>iii. Telephone earpiece etc.<br>3. Third C.A Test. |
| 10. | Magnetic field (iii). | 1. The earth's magnetic field<br>a. Magnetic elements of a place<br>i. Angle of declination<br>ii. Angle of dip<br>iii. Horizontal component of the earth's magnetic field<br>2. Bar magnet I earth's field: neutral point<br>3. Mariner's compass |
| 11. | Electromagnetic field. | 1. Concept of electromagnetic field<br>2. Magnetic force on a charge moving in a magnetic field.<br>3. The transformer<br>4. Power transmission<br>5. The induction coil<br>1. Revision of 2nd term work. |

| | | |
|---|---|---|
| 12-13 | Examination | Examination |
| 14 | Extra curricular activities. | i. Compilation/issuance of result<br>ii. Debate, quiz, games etc<br>iii. Vacation |

**BAUCHI STATE MINISTRY OF EDUCATION,**
**QUALITY ASSURANCE DIRECTORATE,**
**REVISED HARMONIZED SCHEME OF WORK 2023.**

**SUBJECT:** Physics **CLASS:** SS 3 **TERM:** 1st Term

| WEEK | TOPIC | CONTENT |
|---|---|---|
| 1. | Simple a.c circuits (i). | 1. Alternative current circuit:<br>i. Nomenclature in A.C circuits<br>ii. Peak and r.m.s values<br>iii. Series circuits containing resistance, inductance and capacitance. |
| 2. | Simple a.c circuits (ii). | 1. Reactance and impedance<br>2. Vector diagrams<br>3. Resonance in a.c. circuits<br>4. Power in an a.c circuit |
| 3. | Structure of the atom | 1. Models of the atom<br>2. The various models of the atom<br>i. Thomson<br>ii. Rutherford<br>iii. Neil Bohr's<br>iv. Electron cloud models<br>3. Limitations of physical models |
| 4. | Nucleus (i) | 1. Radioactivity (Natural and Artificial):<br>i. Isotope<br>ii. Radioactive element<br>iii. Radioactive emission<br>iv. Half-life and decay constant<br>v. 1st C.A test |
| 5. | Nucleus (ii). | 1. Transformation of elements<br>2. Nuclear reaction<br>i. Fission<br>ii. Fussion<br>iii. Nuclear energy<br>3. Application of radioactivity<br>4. Nigeria nuclear energy programme. |
| 6. | Energy quantization (i) | 1. Energy level in atoms<br>i. Ground state<br>ii. Excited state |

| | | |
|---|---|---|
| | | iii. Emission of light energy on return to ground state |
| 7. | Energy quantization (ii). | 2. Photo-electric effect<br>3. Einstein photo- electric equation<br>4. X-ray<br>i. Production<br>ii. Characteristics and its properties<br>iii. Uses of X-ray<br>5. Second C.A test. |
| 8. | Quantity of matter. | 1. Wave nature of matter<br>i. Electron diffraction<br>2. Particle nature of matter<br>i. Photoelectric effect<br>ii. Compton effect<br>3. The uncertainty principle |
| 9. | Physics in technology | 1. Concept of battery<br>2. Types of battery<br>3. Construction of battery<br>4. Electroplate a suitable electrode<br>4. Third C.A Test. |
| 10. | Physics in real world. | 1. Application of electromagnetic field<br>i. Construction of a galvanometer, electric motor and generators |
| 11-12 | Examination | Examination |
| 13 | Extra curricular activities. | i. Compilation/issuance of result<br>ii. Debate, quiz, games etc<br>iii. Vacation |

**BAUCHI STATE MINISTRY OF EDUCATION,**
**QUALITY ASSURANCE DIRECTORATE,**
**REVISED HARMONIZED SCHEME OF WORK 2023.**

**SUBJECT:** Physics **CLASS:** SS 3 **TERM:** 2nd Term

| WEEK | TOPIC | CONTENT |
|---|---|---|
| 1. | Physics in technology (i) | 1. Needs for use of machines in doing work<br>a. Easier<br>b. Quicker<br>c. More conveniently.<br>2. Instances for the use of machines<br>a. At home<br>b. In offices<br>c. In industries<br>d. In agriculture<br>e. In transportations etc. |
| 2. | Physics in technology (ii) | 3. Repair and maintenance of machines<br>a. Need for repairs of machines.<br>b. Need for regular maintenance of machines.<br>Maintenance schedule of machines. |
| 3. | Energy and society | 1. Dams and energy production<br>a. Location of dams for producing electricity in Nigeria.<br>b. Principle of production of electricity from dams. |
| 4. | Rockets and satellites (i) | 1. Definition<br>2. Components parts of rockets and satellite<br>3. 1st C.A test |
| 5. | Rockets and satellites (ii) | 4. Function of rockets and satellites.<br>5. Uses of rockets and satellites. |
| 6. | Nigerian satellites (i) | 1. Nigerian satellites.<br>2. Futures of Niger satellites.<br>3. Uses of Niger satellites.<br>4. 2st C.A test |
| 7. | Nigerian satellites (ii) | 5. Operation of Niger satellites.<br>6. Nicom Sat I<br>a. Features of NIcom- Sat.<br>b. Operation and uses of Nicom- Sat.<br>c. 2nd C.A test |

| | | |
|---|---|---|
| 8. | General revision | General Revision / Mock & SSCE |