

THIRD TERM E-LEARNING NOTE

SUBJECT: PHYSICS

CLASS: SS 1

SCHEME OF WORK

WEEK	TOPIC
1	Electric Circuit (DC).
2	Resistors and Cells in Series and Parallel.
3	Electrical Energy and Power
4	Safety Device – Fuse
5	Atomic Structure, Diffusion and Osmosis
6	Crystal Structure of Matter – Amorphous and Crystalline Substances
7	Surface Tension
8	Capillarity
9	Elasticity
10	Energy Stored in an Elastic Material
11	Revision
12	Examination

REFERENCE BOOKS

- New School Physics By M.W Anyahkoha
- New System Physics By Dr. Charles Chow.

WEEK ONE

TOPIC: ELECTRIC CIRCUIT

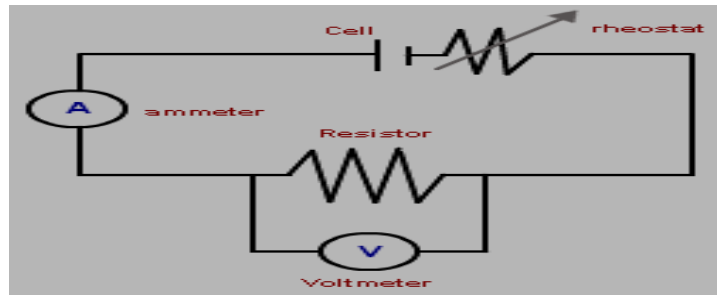
CONTENT

- Definition and functions of electric circuit and its components
- Definition of some physical quantities in dc circuit
- Verification of ohm's law

Before explaining electric circuit, let us define some terms

1. Conductors: They are materials which allow electrons to pass through them easily e.g. metal, graphite, acids, salt solution etc.
2. Semi conductors: They are materials whose resistivity is mid way between good conductors and insulators e.g. germanium, silicon etc
3. Insulators: They are materials which do not allow electrons to pass through them e.g. paper, plastic, glass, oil, cotton, dry hair, polythene etc

Electric Circuit: An electric circuit is a complete path provided for the flow of electric current. The circuit diagram below is a symbolic representation of such circuit.



Functions of dc circuit components

- Cells are chemical devices which produce electric force/pressure that pushes the current to flow.
- Switch / key is a device used to start or stop the current flow.
- Ammeter measures the electric current flowing in a circuit
- Voltmeter measures the potential difference across the terminal of a load
- Rheostat varies the flow of current
- Resistor is a component that limits or regulate the flow of electric current

EVALUATION

1. Define electric circuit
2. State the functions of the components that make up a circuit

DEFINITIONS OF SOME PHYSICAL QUANTITIES

Electric Current (I): it is the measure of the rate of movement (flow) of charged particles along an electrical conductor (a circuit). It is simple electric charge (Q) in motion which consists of moving electrons.

$$I = Q/t \text{ (1a) where } t - \text{time (s)}$$

$$Q = It \text{ (1b)}$$

Potential Difference (V): Potential difference between two points in a circuit is the work done (W) when one coulomb of charge moves from one point to another.

$$W = Q (V_B - V_A) = QV \text{ (2a)}$$

$$V = W/Q \text{(2b)}$$

Electromotive Force (E): e.m.f of a cell is the p.d between the terminals of the cell when it is not delivering any current to the circuit.

Internal Resistance (r): r of a cell is the resistance offered by the electrolyte to the motion of the current.

Resistance (R): R is the ratio of...