Electricity and circuits

I Word focus
1. Electricity
2. Circuit
3. Conductor
4. Insulator
5. Battery
6. Switch
7. Current
8. Bulb
9. Cell
10. Resistance

II KWL

III Concept map
IV Q and A

1. Differentiate between a conductor and an insulator. *(5 Marks)*

Feature	Conductor	Insulator
Definition	A material that allows electric current to pass through it.	A material that does not allow electric current to pass through it.
Flow of Current	Electric current **flows easily**.	Electric current **does not flow**.
Examples	Copper, Aluminium, Iron	Plastic, Wood, Rubber
Use in Circuits	Used to **carry current** (e.g., wires).	Used to **prevent electric shocks** (e.g., wire coverings).

2. Why does a torch light up only when the switch is turned on? Explain using the concept of an electric circuit.

A torch lights up only when the **switch is turned on** because that action **completes the electric circuit**. When the circuit is complete:

- **Electric current flows** from the **dry cells** (batteries) through the wires.
- The **bulb receives current** and lights up.

- A **dry cell** contains chemicals like **zinc (Zn)** as the **negative terminal** and **carbon (C)** surrounded by **manganese dioxide (MnO_2)** as the **positive terminal**. A **paste of ammonium chloride (NH_4Cl)** or **zinc chloride ($ZnCl_2$)** is used as the **electrolyte**.

- These chemicals produce electricity through a **chemical reaction**.

- When the **switch is OFF**, the circuit is broken, **no current flows**, and the **bulb does not glow**.

This shows that for any electrical device to work, the **circuit must be complete**, and the **chemical energy in the dry cell is converted into electrical energy** to light the torch.

3. What is an electric circuit? Draw a basic electric circuit diagram and prepare a table showing standard symbols used in an electric circuit.

An **electric circuit** is a closed path through which **electric current** flows. It usually includes a **cell**, **wires**, **a switch**, and an **electrical component** like a **bulb**. When the circuit is **complete**, the current flows and the device works. If the circuit is **open**, the current does not flow.

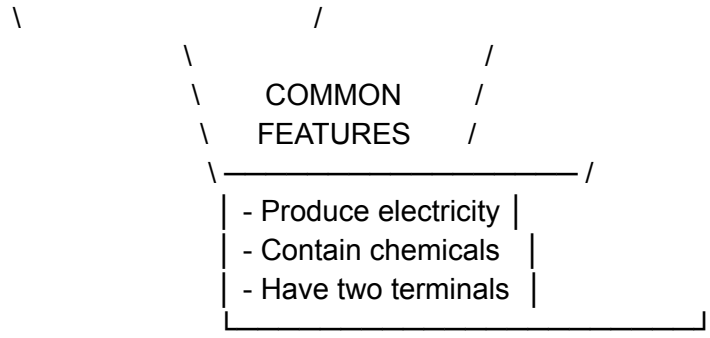
Diagram
Table

4. Compare dry cells and secondary cells using a Venn diagram. What are their similarities and differences?

Electric cells are devices that convert chemical energy into electrical energy. They are mainly of two types:

- **Primary Cells** (e.g., Dry Cell)
- **Secondary Cells** (e.g., Rechargeable Batteries like Lead-acid cell, Li-ion cell)

[DRY CELLS]	[SECONDARY CELLS]
- Used once only - Non-rechargeable - Common in torches, remotes	- Can be recharged - Reusable - Used in cars, mobiles laptops, etc.


COMMON
FEATURES
- Produce electricity
- Contain chemicals
- Have two terminals