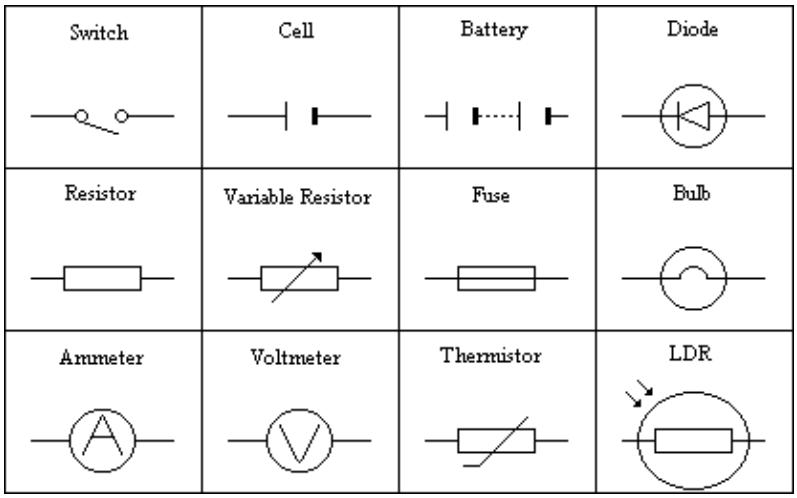
Physics Revision Notes – Electricity

1. An **atom** consists of **protons** (positive), **neutrons** (neutral), and **electrons** (negative).
2. Like charges repel, and unlike charges attract.
3. When you rub a **plastic** rod with a cloth, it becomes **negatively charged**. When you rub an **acetate** rod with a cloth, it becomes **positively charged**.
4. **Static charges** can be used:
   - To keep the air clean, using an **electrostatic precipitator**.
   - For **even painting**, whereby the metal object has a negative charge (due to electrons from the ground), and the paint is positively charged.
5. Static charges can be dangerous when **re-fuelling planes**, as the materials are good insulators, and a spark could be formed to ignite the fuel. Therefore, planes are **earthed** during re-fuelling.
6. Ionic substances in solution can conduct electricity through electrolysis.
7. The formula for **electric charge**:

$$\text{Charge (C)} = \text{Current (A)} \times \text{Time (s)} \quad - \quad Q = I \times t$$

8. **Electrical symbols**:



9. The **voltage** is the force (push) or potential difference that pushes electrons around the circuit. It is measured in **volts** (V).
10. The **current** is the flow of electrons through a wire. It is measured in **amps** (A).
11. The **resistance** is the slowing down of current. It is measured in **ohms** (Ω).
12. The formula for **resistance**:

$$\text{Voltage (V)} = \text{Current (A)} \times \text{Resistance } (\Omega) \quad - \quad V = I \times R$$

13. In a **series circuit**:
    - The resistances of each component add together to give the total resistance.
    - The current is the same for every component.
    - The total voltage is shared out between the components.
14. In a **parallel circuit**:
    - The greater the resistance of a component is, the smaller the current through it will be.
    - The currents in all the separate branches add together to give the total current.
    - The voltage is the same across every component.
15. Simple **voltage-current graphs**: