PHY – ELECTRIC CHARGES

Electrostatics or static electricity is a type of electricity that does not move from one point to another in the substance in which it is produced. The study of electrostatics is the study of charges at rest.

Atomic Structure and Static Electricity

- Atomic theory assumes matter to be made of molecules and the molecules made up of atoms.
- The atom itself, is made up of a central part known as the nucleus, made up of protons and neutrons.
- The proton is a positively charged heavy particle and cannot be transferred easily.
- The neutron has no charge.
- The electron is a light particle carrying a negative charge.
- The total number of positive charges of the proton is equal to the total number of negative charges of the electrons. This makes the atom in its normal state to be electrically neutral.

When a neutral atom gains an electron, it becomes negatively charged, because more electrons (negative charges) than protons (positive charges). When a neutral atom loses an electron, it has a net positive charge. It is therefore positively charged.

Conductors and Insulators

In static electricity, substances are classified according to the degree of resistance they offer to the passage of electrons through them.

Materials that have low resistance to electron flow are called *conductors* while materials with high resistance to electron flow are called *insulators*.

Examples of conductors are almost all metals, damp air, graphite, acids, salt solutions, the earth and the human body.

Examples of insulators are plastic, polythene, Bakelite, ebonite, paper, dry hair silk, oils, glass, sulphur and wood.