

### Brain:

Human brain is contained in skull. It has three major parts.

- i) The Cereberum ot bigger brain
- ii) The Cerebellum or Smaller brain
- iii) Medulla Oblongata or hind brain

The cereberum constitutes the major volume of brain. It consists of two large masses of nervous material known as cerebral hemispheres. Human consciousness, thought, emotions, sight, will, hearing, sensation of pain, memory and speech are centere in the creberum. Some parts of it also control motor nerves, operating the arms and legs.

The cerebellum or the smaller brain is related with the coordination of action of nerves and muscles. In this way movements of body are manged. Medulla or hind brain contains the centres for reflex actions in addition to automatic movements such as breathing and walking.

### Reflex Action:

- Reflex actions are the responded to environmental changes both internal and external and are immediate or automatic and are without intervention of will.
- These reflexes amy be simple or conditioned e.g. watering of mouth on seeing or smelling of food.
- Simple reflexes are inborn, inherited or unlearnt responses to stimuli.
- The structural and functional basis of simple reflex is called reflex arc.
- Impulses are carried from receprtors to sensory neurons to CNS from where they are passed on via motor neurons to the effectors for necessary response.

### Thermoplastics:

Substances (esp. synthetic resins) that become plastic on heating and harden on cooling and are able to repeat these processes

### OR

A type of plastic that can be softened by heat, hardened by cooling, and then softened by heat over and over again.

### Properties of Thermoplastics:

Thermoplastics have wide ranging properties.

- They can be very much like rubber, or as strong as aluminium.
- are light in weight,
- Can withstand temperature extremes of up to 600 F, while others retain their properties at -100 F. Some
- Thermoplastic materials have no known solvents at room temperature.
- Most thermoplastic materials are excellent insulators, both electrical and thermal.
- Are recyclable materials that are used frequently today to create objects such as foam cups, polyethylene squeeze bottles, acrylic lenses and safety helmets.
- In general the combination of light weight, high strength, and low processing costs make thermoplastics well suited to many applications.

### Uses:

- They are useful for a variety of applications, including consumer goods, machine parts, medical equipment and packaging and storage materials.

### Examples:

- PVC/Vinyl

- Polystyrene
- Polyethylene
- Cellulose Acetate
- PTFE/Teflon
- Nylon/Polyamide
- Polyester

### **Synthetic Polymers:**

Polymers are composed of very large molecules (macromolecules) formed by linking together many smaller, more simple units called monomers. There can be as few as five or as many as several thousand monomers units in a polymer. There are a large number of synthetic polymers prepared and in use. Some of these are polyamides(nylon), polyethylene, propylene, polyvinylchloride, synthetic rubber, cellulose acetate, cellulose nitrate and silicones.

### **Blood:**

Blood is vital connective tissue (fluid) consisting of fluid portion i.e. plasma, in which are suspended the formed elements i.e. RBCs, WBCs, and the platelets, along with other particles. Blood is opaque, alkaline and appears scarlet red when taken from arteries and purplish from veins. The difference in colour is due to its oxygen content.

### **Composition Of Blood:**

The human blood is composed of:

#### **1) Formed Elements**

Formed elements of blood are:

- RBCs
- WBCs
- Platelets

#### **2) Plasma:**

The fluid portion of blood is known as the plasma. It is composed of:

- Water: 91 to 92%
- Solids: 8 to 9%

The solids are again classified as inorganic and organic:

Inorganic solids include:

- Sodium
- Magnesium
- Iron
- Potassium
- Phosphorous
- Copper

While organic substances are:

#### **i) Proteins:**

- Serum Albumin
- Serum Globulin
- Prothrombin
- Fibrinogen

**ii) Non-Protein Nitrogenous Substances:**

e.g. urea, uric acid, xanthine, creatinine, NH<sub>3</sub> and amino acids etc.

**iii) Fats:**

Like: Natural fats, phospholipids, cholesterol etc.

**iv) Carbohydrates**

Like: Glucose

**v) Other Substances:**

These include internal secretions, antibodies, enzymes i.e. amylase, protease and lipase etc.

**Functions Of Blood:**

- To transport oxygen and nutrients from the lungs and intestines respectively to all cells in your body.
- To fight pathogens and kill bacteria and other microbes.
- To keep our core body temperature stable.
- To help heal and clot wounds.