

# Science

## Chapter No. 1

### Cellular Organization of Plants and Animals

**Q1: Write a note on the Nucleus of a Cell.**

**Ans:** The most important part of a cell is its nucleus. It controls all the activities of the cell. Therefore, a nucleus is the control center of the cell. A thin membrane, called nuclear membrane, surrounds the nucleus. Many thread like structures called chromosomes are present in the nucleus.

**Q2: Write about shoot system of a plant.**

**Ans: Shoot System:** The part of the plant outside the ground forms **shoot system**. It consists of main stem, leaves, branches and flowers. Shoot system performs many functions such as movement of water, food making and producing seeds etc.

**Q3: Define a cell, a tissue, an organ, an organ system and an organism.**

**Ans: Major Organ Systems in Plants:**

**Cell:** A cell is the basic unit of structure and function of all living organisms, plants and animals are made of trillions of cells.

**Tissue:** A group of cells performing same function is called a tissue.

**Organ:** An organ is made of different tissues which work together.

**Organ System:** An organ system is a group of organs which work together.

**Organism:** An organism is a combination of different organ systems which work together.

## Chapter No. 2

### Sense Organs

**Q1: Describe the structure of human eye.**

**Ans:** We see with our eyes. The eye is an organ of sight.

The human eye consists of an eyeball. The eye is covered with eyelids. Main parts of our eye are cornea, iris, pupil, lens, retina and optic nerve.

**Cornea:** In the front of eye, the transparent part is called cornea.

**Iris:** Beneath the cornea the coloured portion of the eye is called iris.

**Lens:** Behind the pupil, a flexible lens is present. The lens helps the eye to focus light.

**Retina:** The light sensitive portion of the eyeball is called retina.

**Optic Nerve:** When light hits the retina, its cells make nerve signals. These signals pass along the optic nerve to the brain.

**Q2: Describe the structure and function of inner ear?**

**Ans: Inner Ear:**

The last part of the ear is the inner ear. The inner ear is filled with a liquid.



This part of ear has a coiled structure called cochlea. The cochlea is the actual hearing organ. The cochlea sends signals to the brain through a special nerve called **auditory nerve**.

Sound waves → Pinna → Eardrum → three bones → cochlea → brain

**Q3: Write a note on the sense of smell.**

**Ans:** Our nose is a hollow air passage. It has two openings called nostrils. The roof of the nose has lining of nerve cells to sense smell. Nerve cells pass the message to the brain through the olfactory nerve. Our brain tells whether the odour is pleasant or unpleasant.

## Chapter No. 3

### Photosynthesis and Respiration in Plants

**Q1: Describe the internal structure of leaf.**

**Ans: Internal Structure of a Leaf:**

Leaves are very important structures. They absorb sunlight energy to make food. There are three main parts of a leaf, i.e. epidermis, mesophyll and vascular bundle.

#### **Epidermis:**

The upper layer of a leaf is called the **upper epidermis**. The lower layer of the leaf is called the lower epidermis. Lower epidermis has many stomata. Stoma has an opening. Exchange of oxygen, carbon dioxide and water vapours between the leaf cells and the air takes place through stomata.

#### **Mesophyll:**

Between the upper and lower epidermis is the mesophyll. Chlorophyll traps light energy which is used in food making process. The mesophyll is the region where food making process called photosynthesis takes place.

#### **Vascular Bundle:**

Two types of tissues called xylem and phloem are present in vascular bundle. Xylem carries water from roots to the leaves. Phloem carries prepared food to other parts of a plant.

**Q2: Which factors are necessary for photosynthesis?**

**Ans:** Light, temperature, carbon dioxide, water and chlorophyll are necessary factors for photosynthesis.

**Light:** Plants trap sunlight to make food by photosynthesis. Photosynthesis increases as the light intensity increases.

**Carbon Dioxide:** The rate of photosynthesis increases with increasing carbon dioxide level. The level of carbon dioxide in the air is about 0.03 to 0.04 percent.

**Temperature:** The higher the temperature, the faster the process of photosynthesis. Normally plants grow well at 25–35°C. Temperatures below



0°C and above 40°C are not suitable for plant growth.

**Water:** Water is also one of the raw materials for photosynthesis and it is required in limited amounts.

**Chlorophyll:** Chlorophyll is the green material in plants that traps sunlight for photosynthesis. Without chlorophyll the photosynthesis is impossible.

**Q3: Prove that the structure of a leaf facilitates the process of photosynthesis.**

**Ans: Structure of Leaf is Well Suited to Photosynthesis:**

Photosynthesis occurs in green leaves:

(i) Most leaves have a flat surface to absorb maximum light.

(ii) Leaves are thin, so carbon dioxide and light can reach to inner cells easily.

(iii) Leaves have large number of stomata in the lower epidermis. Carbon dioxide can enter and oxygen and water vapours leave through these stomata.

(iv) Thick layer of mesophyll cells makes enough food for the plant.

(v) Vascular bundle in the leaf spreads its veins in a network to carry water to photosynthesizing cells and glucose away from them.

All these characteristics prove that the structure of a leaf is fit for the process of photosynthesis.

## Chapter No. 4

### Environment and interactions

**Q2: Explain the abiotic factors of the environment.**

**Ans: Abiotic Environment:**

Abiotic components mean non-living components. Light, temperature, soil, air and water are abiotic components in an environment.

**Light:** Light is a very important abiotic factor of the environment. The ultimate source of light energy is the Sun. Plants need sunlight for photosynthesis. All animals use the food prepared by plants.

**Temperature:** The heat of the Sun greatly influences the temperature of a place. Some places on the Earth like deserts are too hot and others like glaciers are too cold for animals and plants to survive. Temperature affects the activities of plants and animals.

**Air:** Air is an important abiotic factor. Air is a mixture of gases. Air contains gases which are very important for the lives of animals and plants. Animals and plants respire in the oxygen of air.

**Soil:** Soil is very important for plant growth. Plants get water and necessary minerals from soil. Bacteria present in soil provide important compounds to the plants. Man provides fertilizers to crops through soil.

**Water:** Water is essential for life. It is present in the environment of every plant and animal. A large number of plants and animal is found in tropical



rainforests because of heavy rainfall. Very few plants and animals are found in deserts because of less rainfall. Many plants, such as water lily and hydrilla are found in water.

**Q3: Explain the following with examples.**

**Ans: (a) Parasitism:**

Parasitism is a relationship between two living organisms in which one is harmed and other helped. A parasite is a living organism that feeds on another living organism. The living organism on which the parasite needs is called the **host**.

Many plants and animals are parasites. A mosquito is a parasite. The mosquito uses our blood of another animal for food. We are the host and mosquito is a parasite.

**(b) Mutualism:**

Mutualism is a relationship in which two living organisms live together and depend on each other. It is a friendly relationship. Mutualism occurs among some plants and animals.

Algae and Fungi form lichen. The lichen shows mutualism between the two, Green alga makes food for itself and for the fungus. Fungus protects the alga from drying up. The fungus also gives carbon dioxide to alga to make food.

**(c) Types of Consumers:**

All the organisms which do not make their own food and feed on plants directly or indirectly are called consumers. There are different types of consumers. Animals that eat only plants are called **herbivores**. Horses, goats, squirrels and butterflies.

Animals that eat flesh of the herbivores are called carnivores. For example, lions, cats, dogs, frogs and snakes.

Some animals eat both plants and animals. They are called omnivores. For example Chickens, crows, bears and humans are omnivores.

**Note:** Science work given above will be done on Science school copy.  
(learn also)

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