

# Class-7

## Living beings and Their structure

### 1. Characteristics of Living Beings

Definition: Living beings (organisms) show life processes like growth, reproduction, respiration, movement, excretion, and response to stimuli.

Key Features:

Growth: Increase in size and number of cells (e.g., plants grow taller).

Reproduction: Producing offspring (sexual or asexual).

Respiration: Taking in oxygen and releasing carbon dioxide for energy.

Movement: Animals move; plants show slow movements (e.g., sunflowers tracking the sun).

Excretion: Removing waste (e.g., urine in animals, gases in plants).

Response to Stimuli: Reacting to environment (e.g., closing leaves in touch-me-not plant).

Non-living vs. Living: Non-living things lack these processes (e.g., rocks don't grow or reproduce).

### 2. Classification of Living Beings

Basis: Based on body structure, mode of nutrition, and habitat.

Main Groups:

Plants: Autotrophs (make own food via photosynthesis). Divided into herbs, shrubs, trees, climbers, creepers.

Animals: Heterotrophs (eat other organisms). Divided into vertebrates (with backbone: fish, amphibians, reptiles, birds, mammals) and invertebrates (without: insects, worms, mollusks).

Microorganisms: Tiny organisms like bacteria, fungi, protozoa, algae. Some are useful (e.g., yeast in baking), others harmful (e.g., bacteria causing diseases).

Levels of Organization: Cell → Tissue → Organ → Organ System → Organism.

### 3. Plant Structure

Parts and Functions:

Root: Anchors plant, absorbs water/minerals. Types: Taproot (e.g., carrot), fibrous (e.g., grass).

Stem: Supports plant, transports water/nutrients. Types: Herbaceous (soft, e.g., tomato), woody (hard, e.g., tree).

Leaf: Site of photosynthesis (makes food using chlorophyll, sunlight, CO<sub>2</sub>, water). Structure: Blade, petiole, veins.

Flower: Reproductive part. Parts: Sepals, petals, stamens (male), pistil (female). Fruits/seeds form after pollination/fertilization.

Tissues in Plants: Meristematic (growth), permanent (support, e.g., xylem for water transport, phloem for food).

#### 4. Animal Structure

Basic Body Parts: Vary by type, but include cells, tissues, organs (e.g., heart, lungs).

Examples:

Unicellular Animals: Single-celled (e.g., Amoeba: moves by pseudopodia, ingests food).

Insects: Exoskeleton, three body parts (head, thorax, abdomen), wings for flight.

Mammals: Warm-blooded, hair/fur, mammary glands for milk.

Tissues in Animals: Epithelial (covering), muscular (movement), connective (support), nervous (response).

#### 5. Cells and Tissues

Cell: Basic unit of life. Plant cells have cell wall, chloroplast; animal cells lack these but have centrioles.

Tissues: Group of similar cells performing a function (e.g., muscle tissue for contraction).

Importance: Cells combine to form tissues, organs, and systems for survival.

Key Diagrams to Remember

Plant parts (root, stem, leaf, flower).

Animal cell vs. plant cell.

Levels of organization.

Important Questions for Exam Preparation

Multiple-Choice Questions (MCQs)

Which of these is NOT a characteristic of living beings?

- a) Growth
- b) Reproduction
- c) Melting
- d) Respiration

(Answer: c)

Plants are classified as:

- a) Heterotrophs
- b) Autotrophs
- c) Parasites
- d) Saprophytes

(Answer: b)

The part of a plant that absorbs water is:

- a) Leaf
- b) Stem
- c) Root
- d) Flower

(Answer: c)

Which tissue in plants transports water?

- a) Phloem

- b) Xylem
  - c) Meristem
  - d) Epidermis
- (Answer: b)

Amoeba is an example of:

- a) Multicellular organism
  - b) Unicellular organism
  - c) Plant
  - d) Microorganism
- (Answer: b)

#### Short Answer Questions

List four characteristics of living beings and give one example for each.

Differentiate between taproot and fibrous root with examples.

Explain the function of leaves in plants.

What are the main parts of a flower? Describe their roles.

How do plant cells differ from animal cells?

#### Long Answer Questions

Describe the levels of organization in living beings, from cell to organism, with examples.

Explain how plants and animals are classified, giving examples of each group.

Discuss the structure and functions of the main parts of a plant (root, stem, leaf, flower).

Tips for Preparation: Revise diagrams, memorize key terms, and practice questions. Focus on real-life examples for better understanding. Good luck!