Chapter-2
Diversity in the Living World

Q.1 Write the summary of the chapter in the flow chart below, using the hints given below:

1. **Biodiversity:** The living world has a wide variety of plants, animals, and microorganisms that make Earth rich and vibrant.
2. **Classification:** Scientists group living organisms into categories based on similarities and differences in their characteristics so they can study them easily.
3. **Functions of Leaf, Stem and Root:** Leaves prepare food through photosynthesis, stems support and transport materials, and roots anchor the plant while absorbing water and minerals.
4. **Habitat:** Every organism lives in a specific environment such as forests, deserts, oceans, or freshwater that provides its basic needs.
5. **Adaptation:** Living beings develop special features like thick fur, webbed feet, or waxy leaves to survive in their habitats

Q2. Multiple Choice Questions

1. **Which of the following is an example of an aquatic habitat?**
   c) Ocean
2. **Plants that grow on land are called:**
   b) Terrestrial plants
3. **What is the term for the natural environment where an organism lives?**
   b) Habitat
4. **Which of the following is NOT a characteristic of a desert plant?**
   d) Broad, flat leaves
5. **The ability of an organism to adjust to its environment is called:**
   b) Adaptation

Q3. Fill in the Blanks

1. The place where living things stay is called their **habitat**.
2. Water homes like **ponds**, lakes, and oceans are called aquatic habitats.
3. The **plants and animals** in a habitat are the living parts.
4. The main parts of a plant are the **roots**, stem, **leaves**, flowers, and **fruits**.
5. Plants are of three types: **herbs**, **shrubs**, and **trees**.
6. Two kinds of roots are **tap** roots and **fibrous** roots.

Q4. True or False

1. True
2. True
3. True
4. False
5. True

Q5. Match the Column

Column A	Column B
Herbs	Soft green stems, short plants
Shrubs	Woody stems, branched near base
Trees	Strong trunk, tall with branches
Climbers	Weak stems needing support
Creepers	Spread along the ground

Column A	Column B
Tap root	One main root with small branches
Fibrous root	Many roots From one point
Radish	Tap root system
Wheat	Fibrous root system
Carrot	Tap root system

Column A	Column B
Floating plants	Broad waxy leaves, float on water
Submerged plants	Thin ribbon-like leaves, flexible stems
Gills	Help fish breathe underwater
Streamlined body	Helps fish glide easily through water
Fins & tails	Help with movement and balance

Q6. Assertion and Reason Questions

(A) Both the assertion and reason are true, and the reason is the correct explanation.
(B) Both the assertion and reason are true, but the reason is not the correct explanation.
(C) The assertion is true, but the reason is false.
(D) The assertion is false, but the reason is true.

Choose the correct options

1. **Assertion (A):** Fish can easily swim in water.

   Reason (R): Fish have streamlined bodies and fins that help them glide and stay balanced in water.

Answer (a) Both A and R are correct, and R explains A

Explanation: Fish have streamlined bodies to reduce water resistance and fins to help with movement and balance, allowing them to swim easily.

2. **Assertion (A):** Cactus performs photosynthesis through its stem.

   Reason (R): Cactus leaves are modified into spines to reduce water loss.

Answer: (a) Both A and R are correct, and R explains A

Explanation: Because cactus leaves are spines, the green stem carries out photosynthesis while also conserving water.

Q7. Very Short Answer Questions

1. **Name the scientist who developed the system of giving each living thing two names.**

   A scientist named Carolus Linnaeus came up with a way to give each living thing two names, like a first and last name, to keep things organized.

2. **What is a habitat?**

   A habitat is the natural environment or specific surroundings where an organism lives, providing all the necessary resources for its survival.

3. **Give an example of a desert animal and its one main feature.**

   A camel is an example of a desert animal.

4. **What are organisms living on land called?**

   Organisms living on land are called terrestrial organisms.

5. **Name the three parts of a seed**

   Plumule – future shoot,

   Radicle – future root,

   Cotyledon – store food.

Q8. Short Answer Questions

1. **What are cotyledons?**

   Cotyledons are seed leaves which provide food to the embryo

2. **What are the functions of a plant's stem?**

   The stem of a plant primarily functions for support and transport. It holds the leaves, flowers, and fruits, and acts as a pathway for water and minerals to move from the roots to the leaves (via xylem), and for prepared food (sugar) to move from the leaves to other parts of the plant (via phloem).

3. **Explain the difference between herbs and shrubs.**

   (i) Herbs are plants with soft, green, and tender stems. They are typically short and may have few branches.

   (ii) Shrubs have hard, woody stems that are not very thick. Their branches grow near the base of the ground, and they are generally taller than herbs.

4. **Describe two adaptations of desert plants.**

Two adaptations of desert plants include:

i. Modified leaves: Their leaves are often small or reduced to spines to minimize water loss through transpiration in the dry environment.

ii. Fleshy stems: Many desert plants, like cacti, have thick, fleshy stems that are adapted to store water.

5. Discuss the two main types of root systems?

The two main types of root systems are:

i. Tap root system: This system has one main, thick root that grows deep into the soil, with smaller lateral roots branching off it. Examples include carrots and radishes.

ii. Fibrous root system: This system consists of many thin, branching roots of similar size that spread out close to the soil surface. Examples include grass and wheat.

Q9. Long Answer Questions

1. Describe the different types of forests and the adaptations of animals living in the forest habitat.

The provided document, "G-6 Diversity in Living World.pdf," mentions forests as a type of terrestrial habitat. However, it does not specifically describe different types of forests (such as tropical, temperate, or coniferous forests) or detail the specific adaptations of animals living in those varied forest habitats. It primarily focuses on general classifications and adaptations across different habitats.

2. Explain the concept of adaptation and give examples of how animals adapt to desert and aquatic habitats.

a. **Adaptation** is the ability of an organism to adjust to its environment. It involves developing specific features or behaviors that enable the organism to survive and thrive in its particular habitat.

b. Examples of animal adaptations:

i. Desert Habitat (e.g., Camel): Camels are well-adapted to the harsh desert environment. They have long legs to keep their bodies away from the hot sand, the ability to drink large amounts of water at once and store it, and thick fur to protect them from extreme temperatures. They also have broad, padded feet to walk on sand easily.

ii. Aquatic Habitat (e.g., Fish): Fish are adapted to life in water. They possess a stream-lined body shape that helps them glide effortlessly through water. They have gills for breathing, which allow them to absorb oxygen dissolved in water. Additionally, fins and tails help them with movement, balance, and changing direction while swimming.

Q10. Case Study Based Questions

A student observes two different plants in their backyard: a rose bush and a money plant.

1. Identify the category of each plant (herb, shrub, tree, climber, or creeper).

a. Rose bush: Shrub

b. Money plant: Climber

2. **Compare and contrast the characteristics of their stems.**

   a. **Rose Bush (Shrub):** The rose bush has a hard, woody stem that is not very thick. Its branches typically grow from near the base of the ground, and the plant is generally taller than herbs but shorter than trees.

   b. **Money Plant (Climber):** The money plant has a weak stem that cannot stand upright on its own. It requires support from other structures (like walls or other plants) to grow vertically. It uses specialized structures, such as aerial roots or tendrils, to cling to these supports.

Observe & Classify

Fill in the table below:

Organism	Group (Plant / Animal / Fungi / Microorganism)	Reason for Classification
Mushroom	Fungi	Does not have chlorophyll, reproduces by spores
Fern	Plant	Green, photosynthetic, reproduces by spores, has fronds
Butterfly	Animal	Multicellular, moves actively, feeds on nectar
Fish	Animal	Vertebrate, lives in water, breathes through gills
Bacteria	Microorganism	Microscopic, unicellular, can be harmful or useful
Cactus	Plant	Photosynthetic, has spines instead of leaves, adapted to desert

Match the Habitat

Organism	Habitat Diagram (example)	Habitat Type
Camel	Desert sand dunes	Desert
Fishes	Pond / Lake	Aquatic
Polar Bear	Snow/ice region	Polar
Frog	Pond/wetland	Freshwater

Draw & Discover

Group	Draw the Organism (student activity)	Unique Feature
Plant	Mango tree	Produces fruits with seed
Animal	Elephant	Trunk used for feeding and drinking
Fungi	Mushroom	Spore bearing fruiting body
Microorganism	Amoeba	Moves using pseudopodia

Nature Hunt

Organism Seen	Classification	Interesting Fact
Rose plant	Plant	Has thorns for protection
Crow	Animal	Highly intelligent bird, can recognize faces
Ant	Animal	Lives in colonies with division of labour

Plants Around Us

S. No.	Plant Name	Stem Type (Soft/Hard)	Leaf Shape & Venation	Flower Color	Type of Root	Plant Group
1	Hibiscus	Hard	Simple, reticulate	Red/ Pink	Top root	Shrub
2	Grass	Soft	Narrow, parallel	Small, whitish	Fibrous root	Herb
3	Neem	Hard	Compound,reticulate	White	Top root	Tree
4	Tulsi	Soft	Simple, reticulate	Purple/ white	Top root	Herb

Animal Diversity – Movement and Habitat

Animal Name	Movement Type	Body Parts Used	Habitat	Special Features
Ant	Crawling	Legs	Land	Lives in colonies, strong teamwork
Fish	Swimming	Fins, tail	Water	Breathes through gills
Pigeon	Flying	Wings	Land/Air	Homing ability, good vision
Goat	Walking/Running	Legs	Land	Provides milk, adapted to hilly terrain
Frog	Jumping/Swimming	Legs, webbed feet	Both	Amphibian, moist skin for respiration

Adaptations and Habitats

Region	Plant Example	Adaptation Feature	Animal Example	Adaptation Feature
Desert	Cactus	Spines reduce water loss, thick stem stores water	Camel	Stores fat in hump, long eyelashes, padded feet
Mountains	Pine	Needle like leaves reduce snow damage	Mountain Goat	Strong hooves for climbing steep slopes
Ocean	Seaweed	Flexible body to withstand waves	Whale	Streamlined body, blubber for warmth

Plant classification in Flow chart

Plant Name	Seed Type	Root Type	Leaf Venation	Group (A/B)
Wheat	Monocot	Fibrous	Parallel	A
Chickpea	Dicot	Tap root	Reticulate	B
Maize	Monocot	Fibrous	Parallel	A
Kidney Bean	Dicot	Tap root	Reticulate	B

Terms Explained

No.	Term	Meaning
1	Biodiversity	The variety of living organisms on Earth, from tiny microbes to large animals and plants.
2	Classification	Organizing organisms into groups based on similarities and differences for easy study.
3	Habitat	The natural home or environment where an organism lives and grows.
4	Adaptation	Special features or changes that help organisms survive in their environment.
5	Ecosystem	A community of living organisms interacting with each other and with their physical surroundings.

Portfolio of Favourite Organism

Organism: Tortoise

Habitat: Land and freshwater regions (ponds, riversides, deserts depending on species)

Special Features:

- Hard protective shell for safety
- Slow movement but long lifespan
- Can survive with little food and water for long periods
- Symbol of patience and endurance

Camel's Adaptations & Need

Camel's Adaptations	Need for Adaptations
Long legs keep body away from hot sand	Prevent overheating
Hump stores fat for energy	Survive food scarcity
Can drink large amounts of water at once	Survive long dry periods
Thick eyelashes and closing nostrils	Protect from sandstorms
Broad padded feet	Walk easily on sand

Present vs Imagined Situation

Present Situation	Imagined Situation
Organisms are interdependent: herbivores eat plants, carnivores eat herbivores, decomposers recycle nutrients	If all were autotrophs, food chains would not exist
Balance of nature maintained through predator–prey relationships	No dependence, but ecosystems would lose diversity and interactions
Energy flows through different trophic levels	Life would be uniform, less dynamic

Importance of Conservation

- **Biodiversity:** Protecting biodiversity ensures survival of species and maintains ecological balance.
- **Conservation:** Conservation prevents resource depletion and safeguards nature for future generations.