
CBSE Class 6
NCERT Solutions- Notes and Exercise
Chapter 2. Diversity in the Living World

Introduction

Living organisms are found everywhere around us. They differ in size, shape, colour, food habits, movement, and habitat. This variety among living organisms is called **diversity**. To study them easily, we group organisms based on similarities and differences. This process is called **classification**.

2.1 Diversity in Plants and Animals Around Us

Different types of plants and animals live around us. Some are very small while others are huge. Some live on land, some in water, and some can live in both places.

Diversity in Plants

Plants differ in:

- Height
- Shape and size
- Type of stem
- Leaves and flowers
- Place where they grow

Types of Plants**Herbs**

- Small plants with soft, green, and tender stems.
- Usually live for a short period.
- Easy to bend.

Examples

Mint, Wheat, Coriander

Shrubs

- Medium-sized plants.
- Have hard and woody stems.
- Branches arise near the base.

Examples

Rose, Cotton, Hibiscus

Trees

- Tall and strong plants.
- Have a thick woody trunk.
- Branches arise high above the ground.
- Live for many years.

Examples

Mango, Neem, Banyan

Climbers

- Plants with weak stems.
- Cannot stand upright on their own.
- Need support to grow upward.

Examples

Pea plant, Grapevine, Money plant

Creepers

- Plants with very weak stems.
- Spread along the ground.

Examples

Pumpkin, Watermelon, Muskmelon

Diversity in Animals

Animals also show great diversity. They differ in:

- Body covering
- Shape and size
- Food habits
- Movement
- Habitat

Animals Based on Habitat**Terrestrial Animals**

- Animals that live on land.
- They have legs or limbs for movement.

Examples

Lion, Camel, Elephant

Aquatic Animals

- Animals that live in water.
- Many have fins or streamlined bodies for swimming.

Examples

Fish, Whale, Octopus

Amphibians

- Animals that can live both on land and in water.
- Usually lay eggs in water.

Examples

Frog, Toad

Aerial Animals

- Animals that spend most of their time flying in the air.

Examples

Eagle, Pigeon, Bat

2.2 How to Group Plants?

Plants can be grouped by carefully observing their features. Similar plants are placed in the same group.

Grouping Based on Stem**Soft Stem**

- Found in herbs.
- Green and flexible.

Woody Stem

- Hard and brown.
- Found in shrubs and trees.

Grouping Based on Roots

Roots help plants absorb water and minerals from the soil and hold the plant firmly in the ground.

Tap Root System

- One thick main root develops from the stem.
- Smaller roots arise from the main root.

Examples

Mustard, Gram, Bean

Fibrous Root System

- Many thin roots arise from the base of the stem.
- No single main root is present.

Examples

Wheat, Rice, Grass

Grouping Based on Leaf Venation

Venation is the arrangement of veins in a leaf.

Reticulate Venation

- Veins form a net-like pattern.
- Common in plants with tap roots.

Examples

Mango leaf, Hibiscus leaf

Parallel Venation

- Veins run parallel to one another.
- Common in plants with fibrous roots.

Examples

Banana leaf, Grass leaf

2.3 How to Group Animals?

Animals can be grouped according to:

- Habitat
- Food habits
- Body structure
- Movement

Grouping helps us study animals more easily.

Animals Based on Food Habits**Herbivores**

- Animals that eat only plants and plant products.
- Usually have strong teeth for chewing plants.

Examples

Cow, Deer, Goat

Carnivores

- Animals that eat the flesh of other animals.
- Have sharp teeth and claws.

Examples

Tiger, Lion, Wolf

Omnivores

- Animals that eat both plants and animals.

Examples

Bear, Crow, Human beings

Scavengers

- Animals that feed on dead animals.
- Help keep the environment clean.

Examples

Vulture, Hyena

Animals Based on Movement

Different animals move in different ways depending on their body structure.

Animals that Walk or Run**Examples**

Horse, Dog, Elephant

Animals that Fly**Examples**

Birds, Bats, Butterflies

Animals that Swim**Examples**

Fish, Dolphin, Whale

Animals that Crawl or Slither**Examples**

Snake, Earthworm, Snail

2.4 Importance of Classification

Classification means arranging organisms into groups based on similarities and differences.

Why is Classification Important?**Makes Study Easier**

- It is difficult to study each organism separately.
- Grouping helps us study many organisms together.

Helps in Identification

- Organisms can be recognised easily.

Helps Understand Relationships

- Similar organisms may share similar features and habits.

Organises Information

- Scientific study becomes systematic and clear.
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Key Terms

Term	Meaning
Diversity	Variety among living organisms
Classification	Grouping organisms based on similarities
Habitat	Natural home of an organism
Herb	Small plant with soft stem
Shrub	Medium-sized woody plant
Tree	Tall plant with thick trunk
Tap Root	Root with one main branch
Fibrous Root	Cluster of thin roots
Venation	Arrangement of veins in leaves
Herbivore	Plant-eating animal
Carnivore	Flesh-eating animal
Omnivore	Animal eating both plants and animals
Amphibian	Animal living on land and water

Important Points to Remember

- Living organisms show great diversity.
 - Plants are grouped based on stems, roots, and leaves.
 - Animals are grouped based on habitat, food habits, and movement.
 - Tap roots are usually linked with reticulate venation.
 - Fibrous roots are usually linked with parallel venation.
 - Classification helps scientists study organisms easily and systematically.
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Quick Revision
Types of Plants

- Herbs → soft stems
 - Shrubs → woody stems
 - Trees → thick trunks
 - Climbers → need support
 - Creepers → spread on ground
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Types of Animal Food Habits

- Herbivores → eat plants
 - Carnivores → eat flesh
 - Omnivores → eat both
 - Scavengers → feed on dead animals
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Root and Venation Relation

- Tap root → reticulate venation
 - Fibrous root → parallel venation
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Summary from NCERT

- We are surrounded by a large variety of plants and animals. Such variety of plants and animals is a part of biodiversity.
- Plants and animals can be grouped on the basis of similarities and differences among them.
- Plants have similarities and differences based on features associated with roots, stems, leaves, flowers, and so on.
- The method of arranging things into groups based on their common features is called grouping.
- Plants can be grouped into herbs, shrubs, and trees based on their heights, types of stem, and branching patterns.
- Plants can also be grouped as dicotyledons (dicots) and monocotyledons (monocots) based on the number of cotyledons in their seeds.
- Monocots generally exhibit parallel venation in their leaves and possess fibrous roots while dicots typically exhibit reticulate venation in their leaves and possess taproots.
- Animals have different types of movement that can be a basis for their grouping.
- Biodiversity of different regions varies because of distinct environmental conditions.
- The special features that enable plants and animals to survive in a particular region are called adaptations.
- The place where plants and animals live is their habitat. Based on their habitats, animals and plants can be grouped as terrestrial and aquatic.
- Due to damage of their habitats, plants and animals lose their homes, food and other resources resulting in the loss of biodiversity.
- We must protect biodiversity to ensure that our planet is full of life, helping plants and animals to survive and thrive.

Exercise

Question 1. Here are two types of seeds. What differences do you find among the roots and leaf venation of their plants?

Answer:

Plant	Root Type	Leaf Venation
Wheat	Fibrous roots	Parallel venation
Kidney bean	Taproot	Reticulate venation

Question 2. Names of some animals are given below. Group them based on their habitats.

Horse, Dolphin, Frog, Sheep, Crocodile, Squirrel, Whale, Earthworm, Pigeon, Tortoise

Answer:

Aquatic animals (A)

Dolphin, Whale

Terrestrial animals (B)

Horse, Sheep, Squirrel, Earthworm, Pigeon

Animals living in both habitats (C)

Frog, Crocodile, Tortoise

Question 3. Manu's mother was digging out radish from the soil. She told Manu that radish is a kind of root. Examine a radish and write what type of root it is. What type of venation would you observe in the leaves of radish plant?

Answer:

- Radish is a **taproot**.
- Its leaves show **reticulate venation**.

Question 4. Look at the image of a mountain goat and a goat found in plains. Point out similarities and differences between them. What are the reasons for these differences?

Answer:

Similarities:

- Both are goats.
- Both have four legs, horns, hair, and hooves.

Differences:

Mountain Goat	Plains Goat
Thick fur	Thin fur
Strong legs and hard hooves	Normal legs and hooves
Adapted to cold mountains	Adapted to warm plains

Reason:

These differences are due to **adaptation to different habitats**.

Question 5. Group the following animals into two groups based on any feature other than those discussed in the chapter:

Cow, cockroach, pigeon, bat, tortoise, whale, fish, grasshopper, lizard

Answer:**Animals with backbone:**

Cow, Pigeon, Bat, Tortoise, Whale, Fish, Lizard

Animals without backbone:

Cockroach, Grasshopper

Question 6. As population grows and people want more comfortable lives, forests are being cut down. How can this affect our surroundings? How can we address this challenge?

Answer:**Effects of cutting forests:**

- Loss of wildlife habitat
- Soil erosion
- Less rainfall
- Increase in pollution
- Global warming

Ways to solve this problem:

- Plant more trees
- Reduce paper wastage
- Protect forests
- Spread awareness
- Use resources carefully

Question 7. Analyse the flowchart. What can be examples of 'A' and 'B'?

Answer:**A (Plants with reticulate venation/taproots)**

- Gram
- Bean
- Mango
- Tomato

B (Plants with parallel venation/fibrous roots)

- Wheat
- Rice
- Maize
- Onion

Question 8. Raj says that "Gudhal (Hibiscus) plant is a shrub." What questions can Sanjay ask for clarification?

Answer:

Sanjay can ask:

- Does it have a hard woody stem?
- Does it branch near the base?
- Is it smaller than a tree?
- Does it live for many years?

These features help identify a shrub.

Question 9. Based on the information in the table, find examples of plants for each group.

Answer:

Group Examples

Herbs Mint, wheat

Shrubs Rose, hibiscus

Trees Mango, neem

Climbers Money plant, grapevine

Creepers Pumpkin, watermelon

Question 10. Observe the labelled part of a duck in the picture. What differences do you observe in the feet of the duck compared to other birds? Which activity can the duck perform using this part?

Answer:

- Duck feet are **webbed** (skin joins the toes).
- Other birds usually have separate toes.

Function:

Webbed feet help ducks:

- Swim easily in water
- Paddle through water efficiently

These are adaptations for aquatic life.

Extra Practice Questions

MCQs (Multiple Choice Questions)

Q1. Which plant has fibrous roots?

- A. Mango
- B. Mustard
- C. Wheat
- D. Pea

Answer: C. Wheat

Q2. Which animal can live both on land and in water?

- A. Camel
- B. Frog
- C. Lion
- D. Pigeon

Answer: B. Frog

Q3. Leaves with parallel venation are mostly found in:

- A. Mango plants
 - B. Grass plants
 - C. Rose plants
 - D. Hibiscus plants
- Answer:** B. Grass plants
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Q4. Which of the following is a shrub?

- A. Neem
- B. Pumpkin
- C. Rose
- D. Wheat

Answer: C. Rose

Q5. Webbed feet help ducks in:

- A. Flying
- B. Climbing
- C. Running
- D. Swimming

Answer: D. Swimming

Fill in the Blanks

Q1. Plants with fibrous roots usually have _____ venation.

Answer: parallel

Q2. A frog is an animal that lives both on _____ and in water.

Answer: land

Q3. Rose plant is an example of a _____.

Answer: shrub

Q4. The thick fur of mountain goats helps them survive in _____ regions.

Answer: cold

Q5. Pumpkin is a _____ plant.

Answer: creeper

True or False

Q1. Fish are terrestrial animals.

Answer: False

Q2. Trees usually have a thick woody stem.

Answer: True

Q3. Duck feet are adapted for swimming.

Answer: True

Q4. Plants with reticulate venation always have fibrous roots.

Answer: False

Q5. Cutting forests can disturb the balance of nature.

Answer: True

4. Match the Following

Column A	Column B
1. Wheat	a. Webbed feet
2. Duck	b. Taproot
3. Mango	c. Fibrous root
4. Frog	d. Amphibian
5. Rose	e. Shrub

Answers:

- 1 → c
 2 → a
 3 → b
 4 → d
 5 → e
-

5. Short Answer Questions

Q1. What is habitat?

Answer:

The natural place where an organism lives is called its habitat.

Q2. What are taproots?

Answer:

Taproots are roots with one main thick root and smaller side roots.

Q3. Why do ducks have webbed feet?

Answer:

Ducks have webbed feet to help them swim easily in water.

Q4. What is adaptation?

Answer:

Special features that help living organisms survive in their surroundings are called adaptations.

Q5. Name any two aquatic animals.

Answer:

Whale, Dolphin
