SCIENCE

CHAPTER 9: LIVING ORGANISMS AND SURROUNDINGS

The Living Organisms and their Surroundings

Living and Non-living Things

- The study of living organisms is called **biology**.

Living things

Things which need food, air and water for their survival are called living things.

Examples: Plants, animals, human beings

Non-living things

Things which do not need food, air and water for their survival are called non-living things.

Examples: Table, chair, stone etc.

Habitat and Adaptation

Habitat

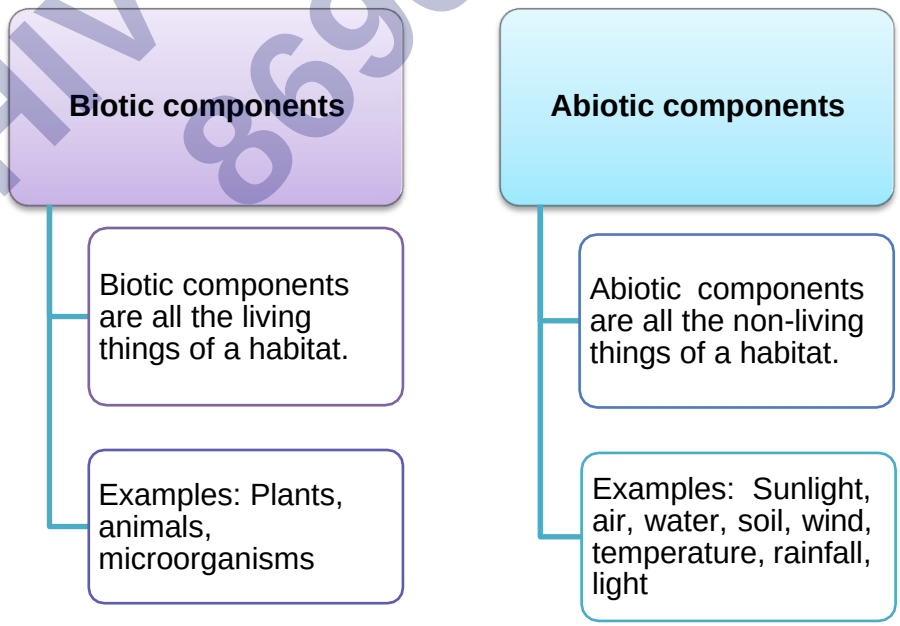
- The place where an organism lives is called its habitat.
- Deserts, mountains, forests, grasslands, soil, ponds, lakes and rivers are some examples of habitats.
- The habitat provides food, water, air, light, shelter and a place for breeding to plants and animals living in it.

Types of Habitat

Habitats of Some Common Plants and Animals

PLANTS	HABITAT	ANIMALS	HABITAT
Lotus	Pond	Fish	Pond
Cactus	Desert	Camel	Desert
Rose	Garden	Tiger	Forest
Oak tree	Mountain	Octopus	Sea
Coconut tree	Sea shore	Rat	Field
Hydrilla	Pond	Earthworm	Soil
Sunflower	Field	Squirrel	Tree
Sea weeds	Sea	Snake	Forest

Components of a Habitat



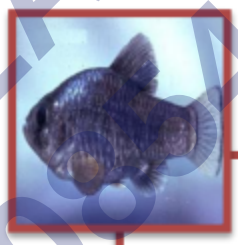
Adaptation

- The presence of specific body features which enable a plant or an animal to survive in a particular habitat is called **adaptation**.
- Adaptation is of two kinds - structural adaptation and behavioral adaptation.
- Structural adaptation refers to changes in the shape and size of the body of an animal. Examples: Ducks have webbed feet which enable them to wade through water easily.
- Behavioral adaptation refers to changes shown by an animal with respect to its behavior. Examples: Penguins move in large groups to protect themselves from redactors.

Adaptations in Animals

Adaptation in camel

- It lives in the hot desert where water is scarce.
- Long eyelashes, nostrils, ears covered with hair to prevent the sand from entering into their eyes, nose and ears.
- Large and flat feet which ensure that the camel can walk easily on the sand.
- Stores fats in its bulky and fatty hump and derives its nutrition using the reserve fat present in the hump.
- Excretes a small quantity of urine after a long period of time to conserve water.
- Drinks bulk of water and stores it in its stomach.



Adaptation in fish

- It lives in water.
- The head, trunk and tail merge to form a streamlined body.
- Gills which help to absorb oxygen dissolved in water for breathing.
- Slippery scales over its body protect the body from water.
- Strong tail for swimming.
- Flat fins to change direction and keep its body balanced in water.

Some Terrestrial Habitats

Deserts

- A waterless area of land covered with sand and with little or no vegetation is called a **desert**.
- It receives very low rainfall. The annual rainfall is less than 250 mm per year.

- The maximum temperature in deserts ranges between 43.5°C and 49°C. The minimum temperature ranges between 0°C and 3°C.

Adaptations of Organisms Living in Deserts

Adaptations in Desert Animals
• Most of the animals in the deserts remain inactive during the day and are called nocturnal. • They live in burrows to escape from intense heat. • Desert animals need to maintain an optimal body temperature. • So, animals such as jack rabbits have developed long ears which provide greater surface area to dissipate heat. • Desert animals such as desert rats and desert snakes pass out very small amounts of urine which helps them to conserve water in their body.
Adaptations in desert plants

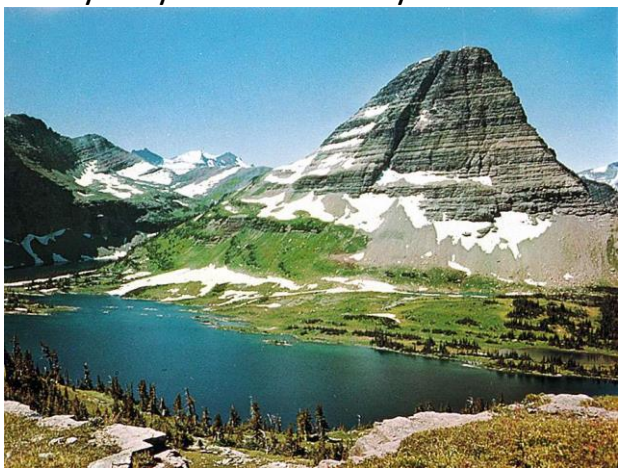
- lants growing in hot and dry regions such as deserts are called xerophytes or xerophytic plants.
- They have a well-developed root system which spreads deep into the soil. This helps them to absorb water from the deepest soil layers possible.
- In some plants, the surface area of the stem and leaves is reduced.
- Some plants shed their leaves under unfavorable conditions.
- The leaves are either absent, very small or present in the form of spines. This helps to reduce the loss of water through transpiration.
- Stem or leaves are covered with a thick waxy layer called cuticle which prevents the loss of water.
- The leaves of plants possess sunken stomata which are slightly deeper than the leaf surface.

Adaptations in Cactus

- The leaves are smaller and fewer in number.
- When water is scarce, the leaves get transformed into fine pointed spines.
- The stem is fleshy, thick and green so that it can store food and water.
- The stem is covered with a cuticle to prevent the loss of water through evaporation.
- It has long roots to absorb water from a larger area.

Mountain Regions

- A very high hill is called a mountain.
- Mountains can be covered with snow.
- Mountainous habitats are usually very cold and windy.



Adaptations of Organisms Living in Mountain Regions

Adaptations in mountainous plants
• Trees are usually cone-shaped with sloping branches • Leaves are small, needle-shaped to minimize the loss of water in windy conditions • Broad-leaved trees shed their leaves before the onset of winter to prevent the loss of water from their leaves
Adaptations in mountainous animals
• Thick skin of fur to protect them from the cold environment
Adaptations in Yak • Long hair on its body protects it from cold
Adaptations in Mountain goat • Long hair protects the goat from cold and keeps it warm • Strong hooves help in running up the rocky slopes of mountains for grazing
Adaptations in Snow leopard • Thick fur on its body protects it from cold and keeps it warm • Thick layer of fat beneath its skin provides insulation and protects it from cold • Rounded body and small ears to minimise the body surface area • Big feet to spread the weight on snow and to prevent it from sinking into soft snow

Forests

- A large area of land covered mainly with trees and plants is called a **forest**.

Adaptations of animals living in forests

Adaptations in lion
• Strong, fast and agile animal which can hunt and kill its prey • Long, strong and sharp claws on its front legs so it can catch its prey • Eyes are in front of its head to have an exact idea of the location of its prey • Its light brown colour helps it to hide in dry grasslands when it hunts its prey
Adaptations in deer
• Eyes on the sides of its head enable vision in all directions at the same time • Big ears help the deer to hear the movements of predators very easily • High speed enables it to escape from its enemies • Brown colour helps it to camouflage itself in dry grasslands without being noticed by its predators • Strong teeth for chewing hard stems of forest plants

Some Aquatic Habitats

Oceans

- A very large area of sea is called an **ocean**.

Adaptations in animals living in oceans
• Streamlined bodies. • Gills for breathing. • Blowholes in case of Dolphins and whales for breathing.

Ponds, Lakes and Rivers

Pond

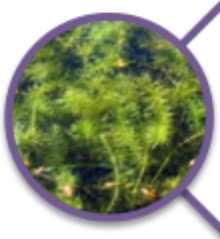
Lake

River

- Small water bodies are referred to as ponds, lakes and rivers.

Floating plants:
- Some aquatic plants float on the surface of water. They are called floating plants.
- Examples: Water lettuce, water hyacinth

Partly submerged plants:
- Some aquatic plants are partly submerged in water.
- The stems of such plants grows upto the surface of water while the leaves and flowers float on the water surface.
- Examples: Water lily, lotus

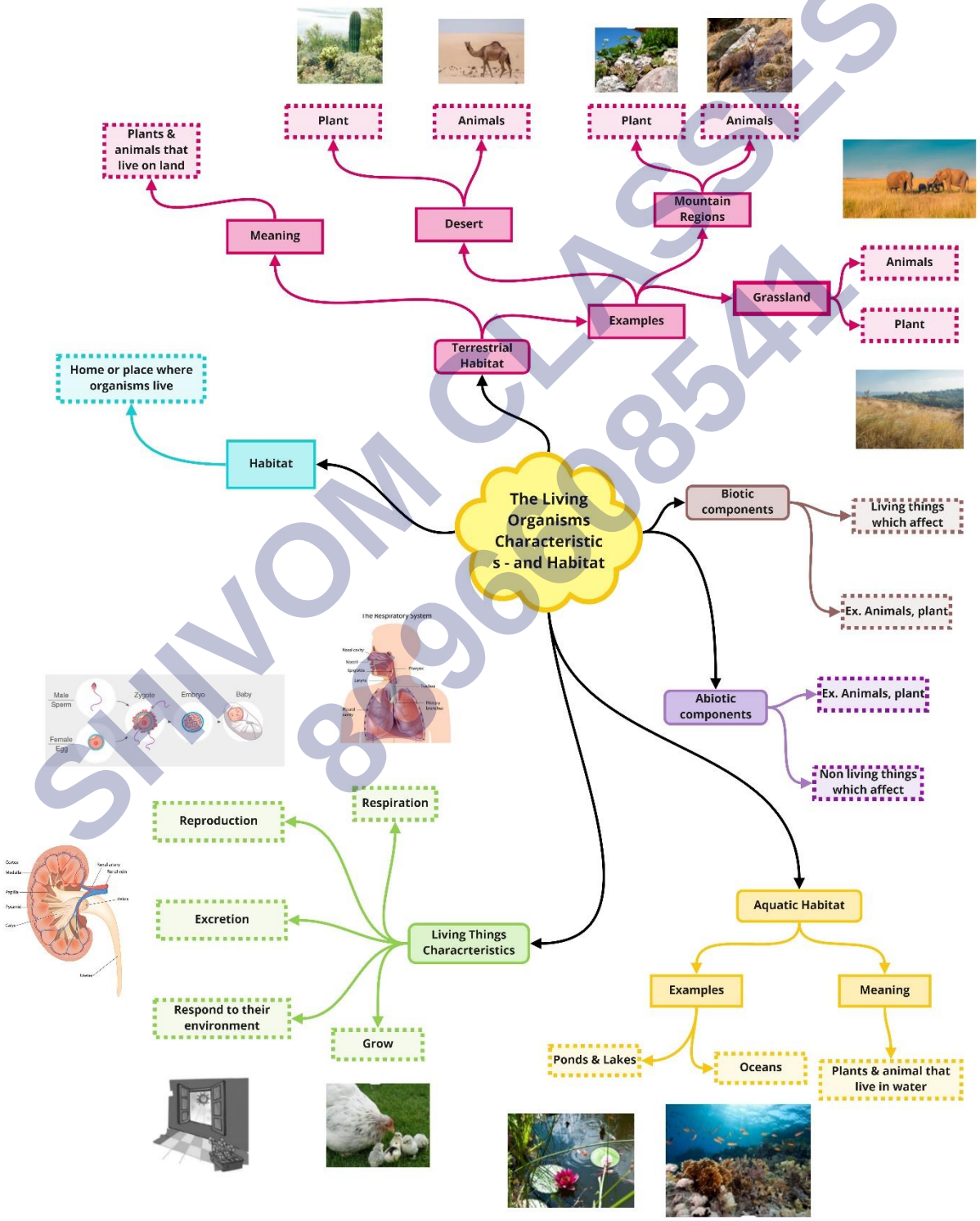


Completely submerged plants:
- Some aquatic plants are completely submerged in water.
- All plant parts such as stem, branches and leaves grow under water.
- Examples: *Hydrilla*, *Vallisneria*

Adaptations in aquatic plants
• They have very short and small roots. • They have soft, hollow and light stems with large spaces filled with air. This helps them to stay afloat in water. • The submerged aquatic plants have narrow and thin ribbon-like leaves which can bend in the flowing water of rivers and streams and hence, do not obstruct the flow of water. • The thin leaves also allow minerals to pass through the plants easily. • The leaves are broad but flexible.
Adaptations in animals to live in water and on land
• Frogs have webbed feet which help them to swim and survive in water. • They have strong hind legs for hopping and catching their prey. This helps them to survive on land.

- The process of being accustomed to a different environment over short periods of time is called acclimatization.

Class : 6th Science
Chapter- 9: The Living Organisms Characteristics - and Habitat



Important Questions

Multiple Choice Questions:

Question 1. Which one of the following statements is correct?

(a) Several kinds of plants and animals may share the same habitat.

(b) All the animals and plants in a habitat are adopted to it.

(c) Both the statements are correct.

(d) None of these is correct.

Question 2. Animals and plants have certain features which make them to survive in a particular habitat. This is called

(a) adaptation

(b) speciation

(c) specialization

(d) evolution

Question 3. Which is a biotic component of environment?

(a) Plants

(b) Animals

(c) Microorganisms

(d) All of these

Question 4. Which is not an abiotic component of environment?

(a) Soil

(b) Bacteria

(c) Water

(d) Air

Question 5. Which is an example of an animal found in mountain region?

(a) Leopard

(b) Yak

(c) Mountain goat

(d) All of these

Question 6. What are the characteristics of a desert plant?

(a) No leaves or very small leaves

(b) Spines

(c) Deep roots

(d) All of these

Question 7. Respiration in aquatic animals occurs by

(a) lungs

(b) gills

(c) nostrils

(d) legs

Question 8. Which is an aquatic adaptation?

(a) Streamlined body

(b) Light and hollow bones

(c) Hair on body

(d) Gills

Question 9. Bending of a stem towards sunlight is called

(a) geotropism

(b) phototropism

(c) hydrotropism

(d) nasticism

Question 10. Sunken stomata are present in

(a) hydrophytes

(b) epiphytes

(c) xerophytes

(d) mesophytes

Very Short Question:

1. Name some plants found on mountains.
2. What is habitat?
3. Name a few habitats.
4. Name two organisms that live in deserts.
5. Name a few plants that live in ponds.
6. Name the habitat where various types of fish live.
7. Name a common thing in all fishes.
8. What is the function of gill?

9. Name the animal which is called the ship of desert.

10. Name various types of habitat.

Short Questions:

1.What are the differences in the desert and sea regions?

2. What do you mean by term adaptation?

3. Explain the features offish which help it to adapt to live in water.

4. How are camels adapted to live in desert?

5. What do you mean by acclimatisation?

6. Why do we need abiotic factors?

7. How are some animals adapted to live in desert?

8. Write the features of desert plants.

Long Questions:

1.Explain the characteristics of living organisms.

2. Write the difference between living and non-living things.

Answer Key-

Multiple Choice Answers:

1. (c) Both the statements are correct.
2. (a) adaptation
3. (d) All of these
4. (b) Bacteria
5. (d) All of these
6. (d) All of these
7. (b) gills
8. (a) Streamlined body
9. (b) phototropism
10. (c) xerophytes

Very Short Answers:

1. Answer: Oaks, Pinus and Deodars.
2. Answer: The place where organisms live and which provide food and safety for them is called habitat.

3. Answer: Forests, grassland, mountains, ponds and oceans etc.
4. Answer: Cactus, camel, desert rat.
5. Answer: Hydrilla, lotus, hyacinth etc.
6. Answer: Pond, river, sea.
7. Answer: Gills, streamlined body, fins, tail.
8. Answer: Gills help the fish to absorb oxygen dissolved in water.
9. Answer: Camel
10. Answer:

    (i) Terrestrial Habitats

    (ii) Aquatic Habitats

    (iii) Aerial Habitat

Short Answer:

1. Answer: In the sea, plants and animals are surrounded by salty water. Most of them use the air dissolved in water for breathing. In desert, a very little amount of water is available. It is very hot in the day time and very cold at night. The organisms breathe air from the surroundings.
2. Answer: The presence of specific features or certain habits which enable a plant or an animal to live in its surroundings is called adaptation.
3. Answer:

    (i) The shape of the fish is streamlined which help in the movement.

    (ii) The slippery scales/skin on their bodies to protect them.

    (iii) They have flat fins and tails which help them to swim, change direction and to keep the body balanced.

    (iv) They have gills which help in breathing in water.

4. Answer:

    (i) The feet of the camels have thick, flat large soles which help them in the movement on sand.

    (ii) They can live without water for a long time. When water is available, it drinks large amount of water at a time.

    (iii) They release very little urine to prevent loss of water.

    (iv) Their dung is also dry which also helps to prevent loss of water.

    (v) The long legs of camel helps to keep the body away from the heat of the sand.

5. Answer: The small changes which take place in the body of a single organism over short periods to overcome small problems due to changes in the surroundings are called acclimatization.
6. Answer: The abiotic factors like air, water, light and heat are very important for the growth of plants. These abiotic factors are also very important for the growth and the development of animals.
7. Answer: Some animals like rats and snakes do not have the long legs like camels to stay away from the effect of heat during the day. They stay in burrows deep in the sand. They come out only during the night.
8. Answer:

   (i) The leaves in desert plants are either absent or very small.

   (ii) Leaves are converted into spines which help to reduce loss of water.

   (iii) The stems become thick, flat and green which help in photosynthesis.

   (iv) The stem is covered with waxy layer which helps to retain water. In some plants stem is spongy and stores water.

   (v) The roots go very deep in the soil to absorb water.

Long Answer:

1. Answer: There are following characteristics of living organisms

   (i) All living organisms require food. The food gives energy for growth and to maintain other life processes.

   (ii) All living organisms show growth. Young ones of animals grow into adults. Plants also grow.

   (iii) All living organisms respire. In respiration oxygen is used for the oxidation of food and carbon dioxide is produced.

   (iv) All living organisms respond to stimuli. All plants and animal respond to light, heat and the changes around them.

   (v) All living organisms show excretion. The process of getting rid of waste product by the living organisms is called excretion. Plants also remove their wastes.

   (vi) All living organisms reproduce. The process by which plants and animals produce their own kind is called reproduction.

2. Answer:

Living Things	Non-Living Things
They possess life.	They do not possess life.

Living things are capable of giving birth to their young one.	Non-living things do not reproduce.
For survival, living things depend on water, air and food.	Non-living things have no such requirements
Living things are sensitive and responsive to stimuli.	Non-living things are not sensitive and do not respond to stimuli.
Metabolic reactions constantly occur in all living things.	There are no metabolic reactions in Non-living things.
Living organisms undergo growth and development.	Non-living things do not grow or develop.
They have a lifespan and are not immortal.	They have no lifespan and are immortal.
Living things move from one place to another.	Non-living things cannot move by themselves.
They respire and exchange of gases takes place in their cells.	Non-living things do not respire.
Example: Humans, animals, plants, insects.	Example: Rock, pen, buildings, gadgets.