Plants and Animals in Different

1. Introduction to Habitats

All living organisms require food, shelter, oxygen, and water from their surroundings to survive.

A habitat is the natural environment where organisms live and thrive, providing essential resources.

Examples of habitats:

Oceans: Home to sea turtles.

Deserts: Camels are adapted to extreme conditions.

Mountains – Rhododendrons grow in cold regions.

Biodiversity is shaped by habitats, supporting a variety of species.

Conservation of habitats is essential for sustaining biodiversity.

2. Classification of Habitats

Terrestrial Habitats: Land-based environments (forests, grasslands, deserts, mountains).

Aquatic Habitats: Water-based environments (oceans, rivers, lakes, ponds).

Terrestrial Habitats

Organisms interact with land, air, and climate.

Adaptations help organisms cope with temperature fluctuations, water availability, and soil types.

Examples:

Grasslands: Lions and elephants have strong limbs and sharp senses.

Mountains: Pine trees and mountain goats survive in cold, high-altitude regions.

Deserts: Cactus stores water, camels have adaptations to survive heat.

Aquatic Habitats

Organisms have adaptations to live and move in water.

Aquatic habitats include both marine (oceans, seas) and freshwater (rivers, lakes, ponds) environments.

Examples:

Fish: Fins for swimming, gills for breathing underwater.

Sea turtles: Live in the ocean but lay eggs on land.

Algae & seaweeds: Provide food and oxygen for marine life.

Coral reefs: High biodiversity, often called the "rainforests of the sea".

3. Habitat and Biodiversity

Habitats provide food, shelter, and climate conditions for organisms.

Ecosystems are formed as species share habitats and depend on each other.

Examples:

Forests: Trees provide shelter for birds, insects pollinate plants.

Ponds: Fish feed on smaller organisms, water plants provide oxygen.

Threats to Habitats & Conservation

Major threats: Deforestation, pollution, urbanization.

Conservation strategies:

- Establishing wildlife reserves.
- Protecting coral reefs.
- Reducing pollution to maintain ecosystems.

4. Adaptations in Plants and Animals

Adaptation is the ability of organisms to adjust and survive in their habitat.

Adaptations can be physical, behavioral, or migratory.

Types of Adaptations

i. **Changes in Body:** Camels store fat in humps for energy.

ii. **Changes in Behavior:** Polar bears hibernate to conserve energy.

iii. **Changes in Location:** Birds migrate to warmer regions in winter.

5. Adaptations in Deserts

Cactus:

- Spines instead of leaves to minimize water loss.

- Green, spongy stems store water and perform photosynthesis.
- Long roots absorb water from deep underground.

Camel:

- Brown body for camouflage.
- Long eyelashes and closable nostrils protect from sandstorms.
- Hump stores fat for energy.
- Long legs keep body elevated above hot sand.
- Minimal sweating and water conservation.
- Thick lips for eating thorny plants.
- Wide padded feet for walking on soft sand.
- Cold-region camels (Ladakh) have shorter legs, two humps, and thick fur.

6. Adaptations in Mountains

Mountain Plants:

- Conical shape helps snow slide off easily.
- Thick bark provides insulation.
- Needle-shaped leaves with waxy coating reduce water loss.
- Cones instead of flowers protect seeds from freezing.
- Evergreen nature enables year-round photosynthesis.
- Rhododendrons adapt to different wind conditions (shorter in Nilgiri, taller in Sikkim).

Mountain Animals

Thick fur and fat layers: Yaks and snow leopards retain body heat.

Specialized feet and hooves: Mountain goats have rubbery hooves for grip.

Feeding adaptations: Yaks dig through snow for food.

Camouflage: Snow leopards blend into the snowy environment.

Mountain Goat: Strong hooves, thick fur, ability to leap long distances.

Yak: Dense fur, strong body, ability to dig through snow.

Snow Leopard: Thick patterned fur, long tail for balance.

7. Adaptations in Freshwater Habitats

Freshwater Plants:

Small roots: Minimal need for water absorption.

Long, hollow stems: Lightweight and flexible in water currents.

Leaf Adaptations

Submerged plants (Hydrilla) have ribbon-like leaves.

Floating plants (Water lily) have broad, wax-coated leaves.

Air spaces in stems – Help plants float.

Examples:

Hydrilla: Fully submerged, narrow leaves.

Water Lily: Floating, broad leaves.

Lotus: Waxy leaves and stems for floating.

Freshwater Animals

Fish: Streamlined body, fins, gills, protective scales.

Frogs: Webbed feet for swimming, lungs for breathing, sticky tongue for catching prey.

Insects: Water beetles and newts adapted for swimming.

8. Adaptations in Marine (Ocean & Sea) Habitats

Marine Plants

Phytoplankton: Float near surface, base of marine food chain.

Seaweeds: Perform photosynthesis in saline water.

Holdfasts: Anchor seaweeds to prevent them from being swept away.

Flexible fronds: Move with water currents.

Air sacs: Help plants float and reach sunlight.

Salt tolerance: Special mechanisms to excrete excess salt.

Marine Animals

Fish: Streamlined body, fins, gills.

Marine Mammals (Dolphins, Whales):

- Blowholes for breathing.
- Blubber for insulation.
- Streamlined body for swimming.

Mollusks: Protective shells.

Sea Anemones: Use tentacles to capture prey.

Deep-Sea Adaptations: Bioluminescence for communication and hunting.

Examples:

Dolphins & Whales: Use blowholes, echolocation for navigation.

Fish: Adapted with gills and fins.

Crabs & Starfish: Adapt to varying salinity and depth.