



Diversity in Living Organisms

All living organisms are surrounded by various factors that affect their life. These factors constitute the environment for that organism.

Our environment is made up of two components

- (i) **Abiotic or non-living**, e.g. Air, water, soil, etc.
- (ii) **Biotic or living**, e.g. Plants and animals.

Abiotic Environment

Various non-living things such as rocks, soil, air and water, etc. make the abiotic components of the environment. *Some abiotic components and their characteristics are given below*

Abiotic component	Characteristics
Air	<ul style="list-style-type: none">■ Mixture of gases■ Contains 78%, nitrogen, 21% oxygen and small percentage of other gases.■ Movement of air brings us rain, temperature and wheather change.
Water	<ul style="list-style-type: none">■ All living cells are composed of water.■ Found in atmosphere as vapours, snow and water.■ 97% water on earth is found in oceans and only 3% is freshwater.
Soil	<ul style="list-style-type: none">■ Formed by breaking up of rocks.■ Contains minerals such as iron, zinc, nitrogen, etc.■ Holds water and makes it available to plants.■ Different soils are used to grow crops.
Light	<ul style="list-style-type: none">■ Sun is the ultimate source of energy on earth.■ It helps the plants to grow, animals to regulate their day-to-day activities etc.

Wheather vs Climate

- Wheather is a short term property of the atmosphere. It changes from place to place.
- Climate is a long term property of atmosphere. It is the same over a larger area.
- Various processes that degrade the quality of our environment are tabulated below

Phenomenon	Characteristic/Effects
Soil erosion	<ul style="list-style-type: none">■ Top fertile layer of soil gets removed■ Leads to deforestation, arid areas, etc.
Greenhouse effect	<ul style="list-style-type: none">■ Rays from sun are trapped by gases like CO₂, methane, chlorofluorocarbons (CFC), etc.■ Causes increased temperature of earth.
Water pollution	<ul style="list-style-type: none">■ It is caused due to addition of unwanted materials in water bodies.■ It makes water unfit for use and cause many diseases like diarrhoea.
Acid rain	<ul style="list-style-type: none">■ It is caused due the addition of harmful gases in the air [mainly sulphur dioxide (SO₂)].■ It causes the destruction of buildings, skin diseases, etc.

Biotic Environment

There are the living components of our environment including plants and animals.

Plants

- In terms of temperature variation, earth can be divided into four zones.
- The vegetation (type of plants) in these zones is summarised below

Zone	Temperature	Type of Plants
Tropical	Above 24°C	Large trees (ever green)
Subtropical	17° – 24°C	Shed their leaves during dry season (Savannah)
Temperate	7° – 17°C	Grasslands
Arctic and Antarctic	Below 7°C	Deserts

- All plants possess roots which help them to take water from soil.
- Various characteristics of roots are listed below

Characteristics of Roots	Example
■ Eatable roots	■ Raddish, carrot, beatroot
■ Roots that hang from the branches of the tree.	■ Banyan tree
■ Big, strong and deep roots.	■ Neem tree
■ Roots that can cause cracks and break the wall.	■ Peepal tree

Animals

Broadly, animals can be divided into various groups. There groups are as follows

Animal Group	Example
Pisces	Fishes (live in water)
Amphibian	Frog (live in both water and Land)
Reptiles	Snakes, lizard
Aves	Birds
Mammals	Whales, dolphins, humans

Different animal groups possess different structures that suits their living habits.

For example;

1. Teeth in different animals

Animal	Characteristics of Teeth
Cows	■ Short front teeth. ■ Side teeth are large and flat for chewing grass.
Cats	■ Sharp teeth for cutting and tearing meat.
Snakes	■ Sharp curved teeth [but they do not chew their prey].
Squirrel	■ Teeth grow throughout life.

2. Different type of bird beaks It depends on the type of food they eat.

Beakshape with Function	Examples
Hooked beak to tear and eat meat	Vulture, kite, owls
Straight long beak to make holes in wood and tree trunks	Woodpecker
Slightly curved beak to suck nectar from flowers	Humming bird, sunbird
Long pointed beak to find insects and worms from mud and shallow water	Egret, kingfisher
Strong, slightly curved beak to break and crush seeds	Serinus, chestnut seed eater
Pointed, sharpened strong beak to cut and eat many kinds of food	Parrot, house sparrow

3. Different type of bird feets They help in different type of locomotion.

Shape of bird's feet related to its Function	Example
Webbed feet to help to swim in water	Duck, swan
Strong clawed feet to hold tree branches	Sparrow, parrot
Clawed feet with pointed nails to catch the prey	Eagle, culture
Tilted clawed feet with pointed nails to climb the trees	Woodpecker, maina
Long feet with small claws to walk on the land	Swan, kites



Practice Exercise

1. Composition of N_2 in air is
(a) 21% (b) 18%
(c) 98% (d) 78%
2. Movement of brings us rain and wheather change.
(a) air (b) water
(c) soil (d) animals
3. 97% water on earth is found in
(a) glaciers (b) oceans
(c) rivers (d) ponds
4. Amount of O_2 in atmosphere is A and that of freshwater is B.

	A	B
(a)	3%	88%
(b)	72%	28%
(c)	21%	3%
(d)	56%	33%
5. Physical components of environment do not include
(a) soil (b) air (c) water (d) fishes
6. is the exclusive source of energy on earth.
(a) Electricity (b) Water
(c) Sun (d) Wind power
7. The property of soil that helps it to hold water is
(a) mineral composition
(b) soil profile
(c) porosity
(d) soil horizons
8. Short-term property of atmosphere is called
(a) precipitation (b) wheather
(c) climate (d) evaporation
9. The type of plant and animals of an area are affected by the of that area.
(a) wheather
(b) soil type
(c) climate
(d) Both (b) and (c)
10. Which of the following gas is not a greenhouse gas?
(a) CO_2 (b) CFCs
(c) CH_4 (d) O_2
11. Acid rain is mainly caused by
(a) CO (b) O_3
(c) SO_2 (d) HCO_3^-
12. Water-borne disease is
(a) cancer (b) diarrhoea
(c) heart attack (d) arthritis
13. What temperature range is found in the subtropical zone of earth?
(a) $30 - 40^\circ C$
(b) Below $5^\circ C$
(c) $10 - 12^\circ C$
(d) $18 - 23^\circ C$
14. Evergreen forests are seen in the zone.
(a) tropical (b) arctic
(c) temperate (d) antarctic
15. Type of vegetation in subtropical zone is
(a) deserts (b) grasslands
(c) savannah (d) evergreen
16. Plants of zone continuously shed their leaves.
(a) tropical (b) subtropical
(c) temperate (d) antarctic
17. Animals of group can live both in water and land.
(a) amphibia (b) reptile
(c) ave (d) mammal
18. Name a mammal that is found in water.
(a) Starfish (b) Crocodile
(c) Dolphin (d) Frog
19. Lizards belong to group.
(a) mammal (b) aves
(c) pisces (d) reptiles
20. Pisces group contains
(a) humans (b) fishes
(c) birds (d) snakes

- 35.** The claws of preying birds are

Answers

[illegible]