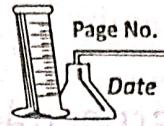


Environment



Page No.

Date

Introduction

- It refers to the complete range of physical and biological condition in which organism live and interact with biotic and abiotic factors.
- The biotic factors are living organism of our nature whereas the abiotic factors are the non-living things in our nature.

Habitat

The place where an organism live is called its habitat.

Ecosystem

All the interacting organisms in an area together with the non-living constituents of the environment forms an ecosystem.

It was coined by A.G. Tansley in 1935

Types of Ecosystem

There are 2 types of ecosystem - Natural ecosystem and artificial system.

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Homework No. 3

Natural ecosystem

The ecosystem which exists in the nature on its own.

E.g. forest, lake, ocean, etc. edit at 2023-01-11
but will make more details in following days

Artificial Ecosystem (Do bao bao khac nhau)

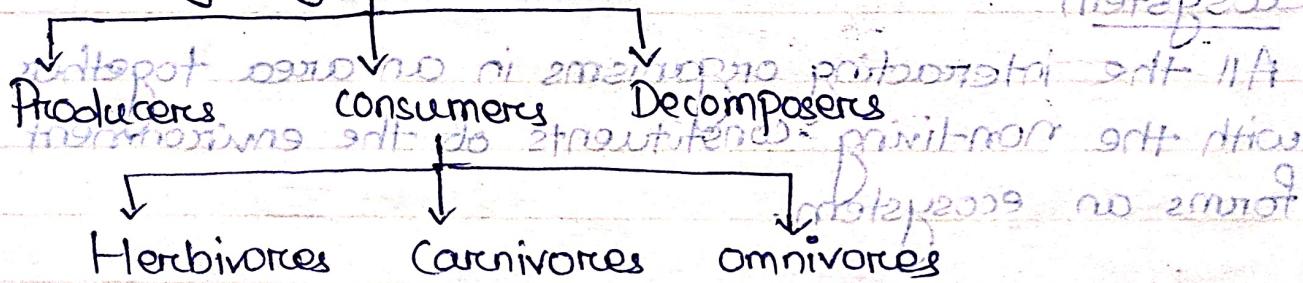
The ecosystem which is created and maintained by humans are called ^{artificial} ecosystem / Man-made ecosystem.

E.g. Aquarium, Garden, Zoo, pet shop, garden

Components of Ecosystem

Biotic components
(living organisms)

Abiotic components (non-living things)



Producers

The organisms which can prepare their own food from simple inorganic substances like CO_2 and water by using Sunlight ~~and~~ in the presence of chlorophyll are called producers.

E.g. Green plants and certain B.G.A. are called

Consumers

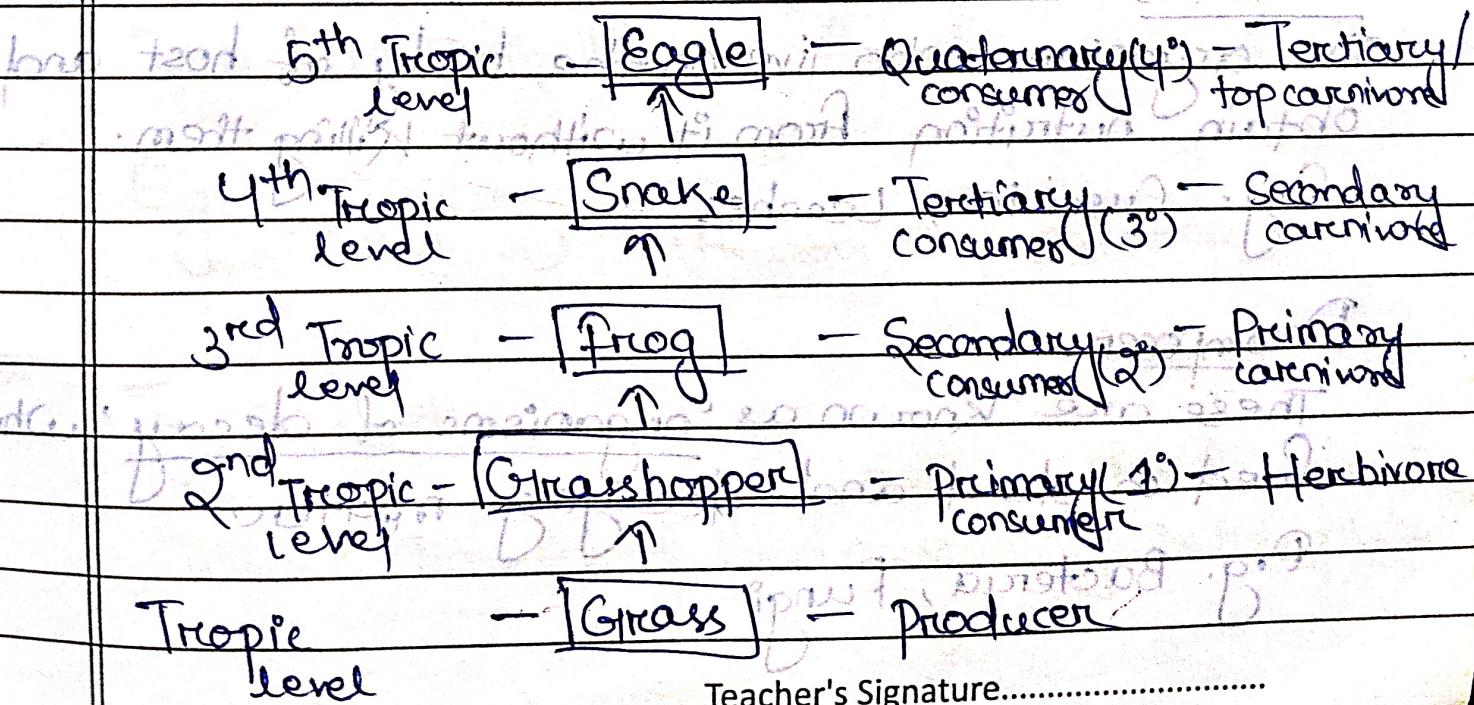
The organisms which consume food prepared by the producers are called consumers.

→ These are of 3 types - Herbivores, carnivores

and omnivores

Herbivores

These are the animals which directly depend on the plants for food. They are also called primary consumers. E.g. Deer, goat, etc.



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Carnivores

These are the animals which prey upon other animals and feed on their flesh. They are also called Secondary consumer.
Some carnivores may be killed by the predators.
These are called Tertiary consumer.

Some carnivores may be the predators which kill the other carnivores. These are called Tertiary consumer. E.g. - Lion, Tiger

Omnivores

These are the animals who feed upon both plants and animals. E.g. Human

Parasites

The organisms who live on the body of host and obtain nutrition from it without killing them.

E.g. Cuscuta, Leeches

Decomposers

These are known as organisms of decay which feed on dead and decaying matter.

E.g. Bacteria, Fungi

Role of decomposers in environment:

- (i) They help in recycling of material, replenishment of soil nutrients
- (ii) They also clean up our surroundings by decomposing waste materials. Hence, they are called as 'cleansing agent' of our environment.

Food chain

It is a sequence of organisms in which one animal eats another animal and being eaten by other animals which results in the energy transfer in the form of food.

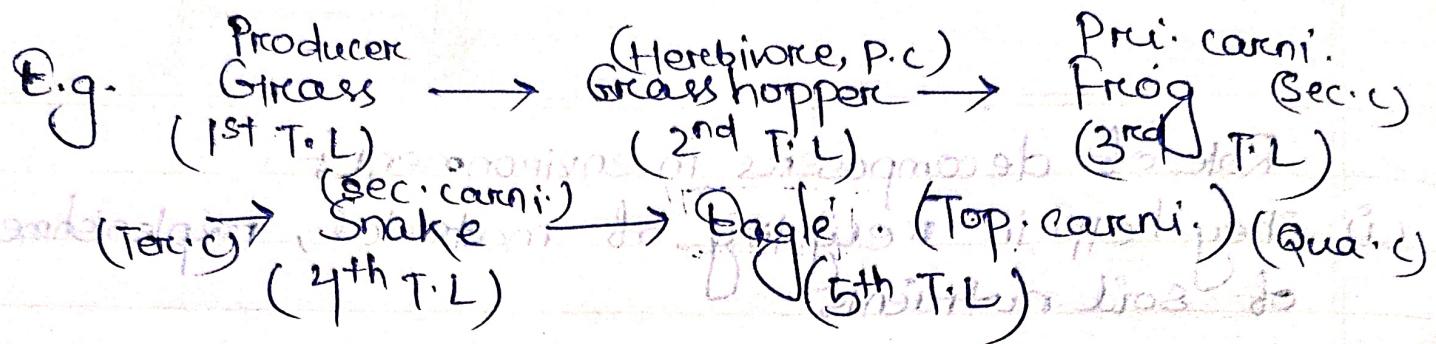
In a food chain, the transfer of energy is unidirectional.

E.g. - Grass → Deer → Lion
(Producer) (Herbivore) (Carnivore)

Trophic levels

These are the various levels in the food chain where transfer of food or energy takes place.

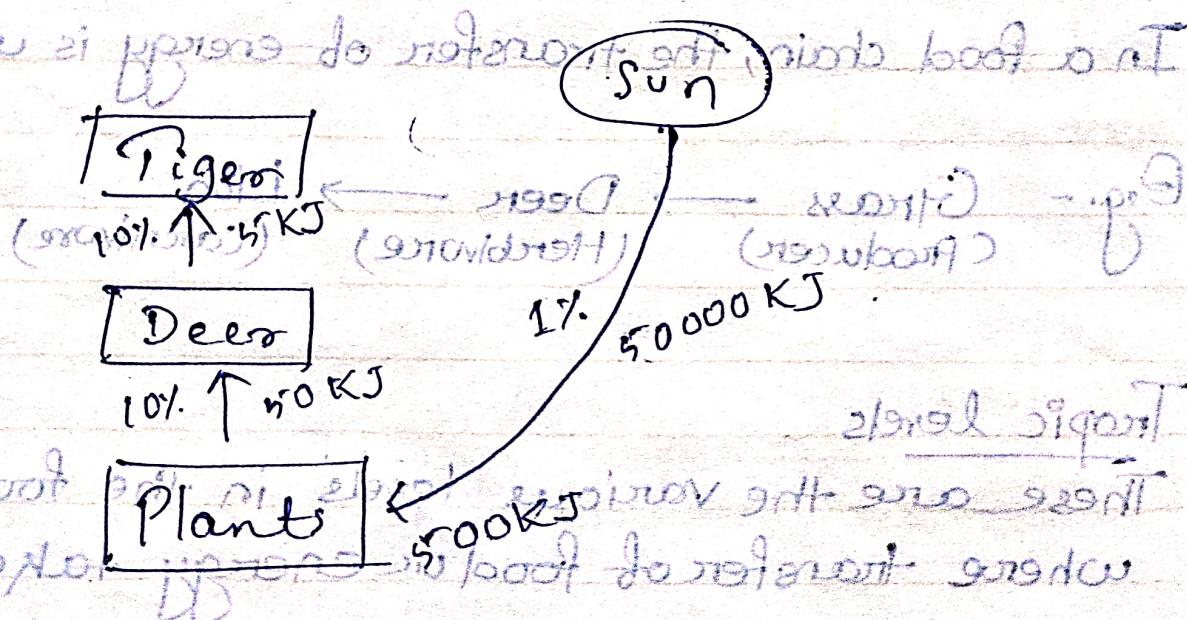
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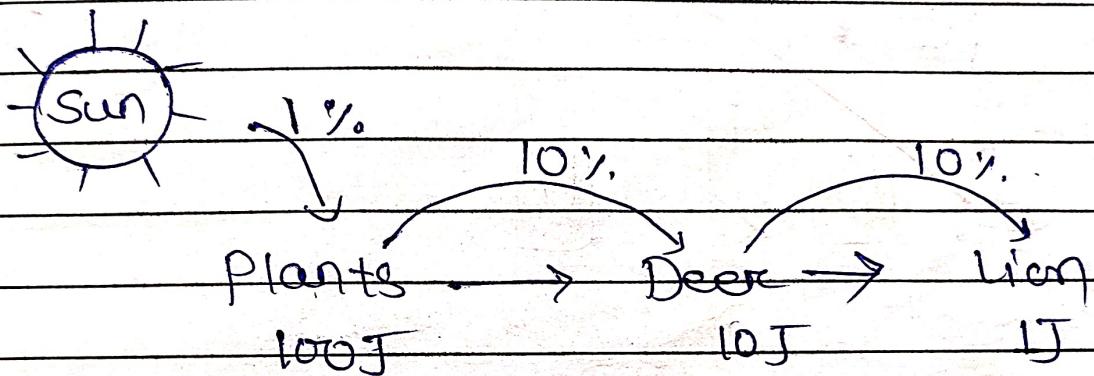
Explain The Quo

- Food Web: A Several interconnected and intermingled food chains forms a food web.

Single food chain doesn't exist naturally in an ecosystem. Lomino volta os lomino
 10% law



According to 10% law, Only 10% of the energy entering a particular trophic level of organism is available for transfer to the next trophic level. The remaining 90% of energy is used in the life processes by present trophic level.



This 10% law was given by Lindeman in 1949. The flow of energy in a food chain is unidirectional. Green plants capture 1% of the sunlight and convert it into food energy. Due to this gradual decrease in energy, food chain contains only 3-5 trophic levels.

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Bio Magnification / Biological magnification:-

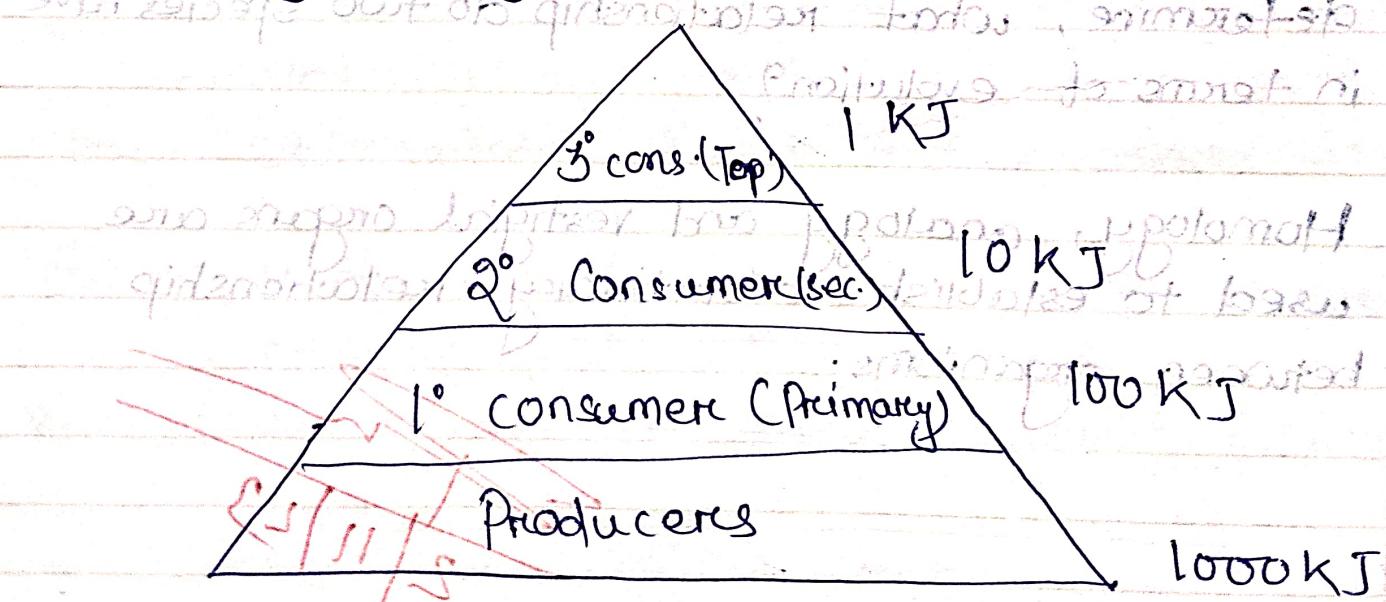
It refers to the increase in the concentration of harmful, toxic chemical substances in the body of living organisms at each trophic level of a food chain.

Organism at the higher trophic levels have higher concentration of toxic chemicals.

Pesticides → Soil → plants → Herbivores
→ Man

In the above case man will have the highest amount of pesticides in them.

Ecological Pyramids



This may be defined as the graphical representation of an ecological parameters at different trophic levels in a food chain in an ecosystem.

This idea was developed by Charles Elton in 1927. Thus these are often called as Eltonian pyramids.

On the basis of ecological parameters these are of two types -

(a) Pyramid of numbers - It is a graphical representation depicting the arrangement of numbers of individuals of different trophic levels in a food chain in an ecosystem.

The shape of pyramid of number may be upright (pond and grassland ecosystem) or inverted (Parasitic food chain) depending upon whether the producer individuals are greater in number or lesser in number respectively.

(b) Pyramid of the Biomass:

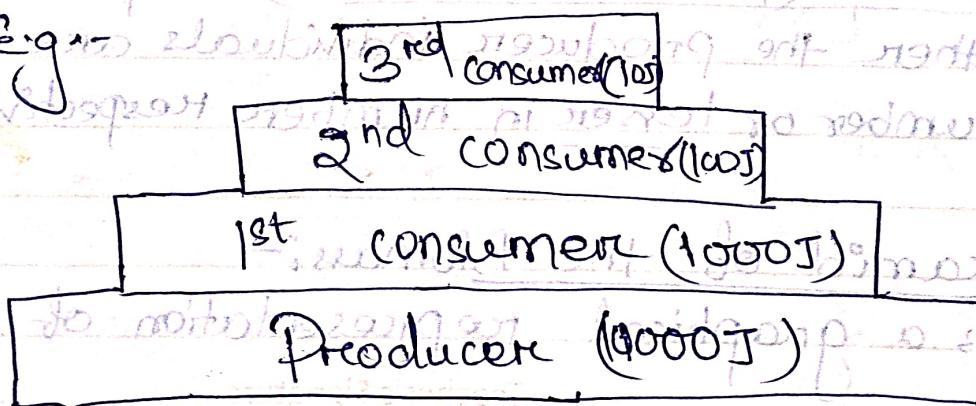
It's a graphical representation of bio mass

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(Organic matter) per unit area in different trophic levels. Pyramids of biomass may be upright (grassland ecosystem) or inverted (pond ecosystem) depending upon whether the biomass of organism gradually decrease or increase at successive trophic levels from producers to consumers.

(c) Pyramid of Energy:-

- A pyramid of energy is a graphical representation of amount of energy per unit area at different trophic levels of a food chain in an ecosystem.
- The available energy is highest at the producer level. There is a gradual decrease in available energy at successive trophic levels. Hence, the pyramid of energy is always upright.



How do our activities affect the environment?

- Humans are an integral part of the environment but we try to change the environment to fulfill our needs.
- changes in the environment affect us and activities change the environment around us leading to the environmental problems like depletion of the ozone layer and waste disposal.

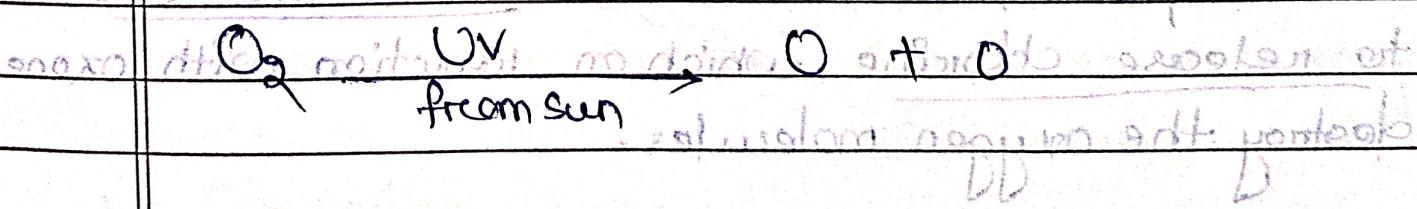
Ozone (Present in stratosphere)

Ozone (O_3) is a molecule formed by 3 atoms of oxygen.

It is deadly poisonous.

formation of ozone in atmosphere

The high energy UV radiation coming from the sun splits oxygen into two free oxygen atoms.



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The free oxygen atoms produced is very reactive.
These oxygen atoms react with oxygen molecule present in the atmosphere to form ozone molecule.



Function of the ozone layer:
It absorbs most of the harmful radiations (UV) coming from the sun which can cause skin cancer, cataract, skin infections, global warming, etc.

Depletion of the ozone layer:
It is mainly depleted due to synthetic chemicals called chloro-fluoro-carbons (CFCs) used in the refrigerators and air conditioners.

As CFCs are very stable, they don't degrade easily and rise up in the atmosphere.
In atmosphere, UV radiations break the CFCs to release chlorine which on reaction with ozone destroy the oxygen molecules.

Harmful effects of ozone - up air & auto. auto. FA

- i- It causes eye irritation.
- ii- It also harms plant by destroying photosynthetic cells.

iii- 3 gases that replaced CFCs - Perfluoro carbon (PFC)

Hydro fluoro carbon (HFC)

Hydro chloro fluoro carbon (HCFC)

Garbage

The household waste is called garbage.

→ The disposal of wastes generated by us in such a manner that it doesn't affect our environment.

Adversely it is called Garbage Management.

Methods of Garbage disposal

i) Recycling

It is a process in which the waste materials are converted into new products.

Materials like tin (Sn), cans, etc. are recyclable.

ii) Composting

Biodegradable domestic wastes like leftovers

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~~peels~~
food, parts of fruits and vegetables are buried in a pit dug in the ground. They are converted into compost and used as manure.

iii) Landfills

Solid wastes are dumped into a low lying area far from the cities and towns and covered with soil to avoid smells.

iv) Sewage Treatment

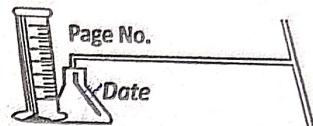
Sewage is carried to sewage treatment plants for purifying it.

v) Montreal Protocol

In 1987, the United Nations Environment Programme (UNEP) forged an agreement between nations to limit CFCs production of half the level of 1986.

It was also decided that all the signing nation would take necessary steps to decrease the use of all ozone depleting substances (ODS), particularly CFCs.

This agreement was signed on Sept. 16. Hence, this day is celebrated by International Community as "International Day for the Preservation of Ozone Layer".



vi

Helsinki ~~agreement~~ ^{on environment} ~~pledged~~ ^{pledged}

In 1989, majority of the nations pledged to phase out CFCs by the year 2000.

Production of CFCs have been stopped since then and CFCs have been replaced with Hydro-fluoro-carbons, Hydro chloro fluoro carbon and Per fluro carbon.