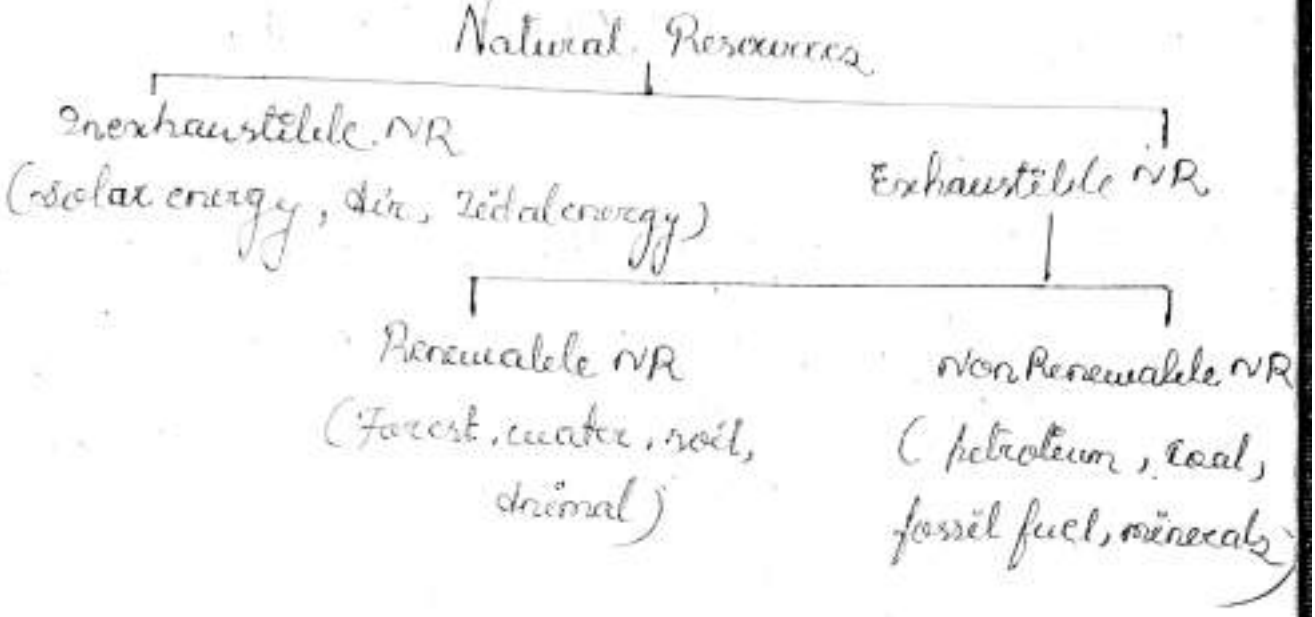
NATURAL RESOURCES

Materials of the nature that can be put to some use by human beings for their growth development, comfort and other necessities are called Natural Resources.



Forest Resources:-

Forest resources play an important role in the economy of any country. Forest covers 31% of total land area of the world. It is highly complex, changing environment made up of a living and non living things. Living things include trees, shrubs, wild-life etc. and non living include trees water, nutrients, rocks, sunlight and air.

Forest Resource means the various types of vegetation normally growing on Oregon's forestland, the associated harvested products and the associated

residue, including but not limited to bush bush, grass, logs, saplings, seedling, trees and slashing.

General Uses of Forest Resources:

1) Wood
2) Food
3) fuel wood
4) Raw material
5) Fodder.
6) Climate Control
7) Habitat for wild flora and fauna
8) Prevent soil erosion

Fuel Wood:-

For the rural population, wood is an important source of energy for cooking and heating. They prefe smaller stems as these are easier to collect and carry. The wood that they select should be easy to split and have low moisture content to dry faster. Some of the wood is converted to charcoal and used for cooking.

Fodder:-

Fodder from the forest forms an important sourc for cattle and other grazing animals in the hilly and the arid regions & during a drought.

Soil Erosion:-

Tree roots bind the soil and prevent erosion caused by wind or water, Leaf fall also provides a soil cover that further protects the soil.

Soil improvement :-

Some species of trees have the ability to return nitrogen to the soil through root decomposition or fallen leaves. Such trees are planted to increase the nitrogen content of the soil.

Forest Exploitation :

Forest have been exploited over the centuries as a source of wood and for obtaining land for agricultural use. The mismanagement of forest lands and forest resources has led to a situation where the forest is now in rapid retreat.

Ex :- land for living, agriculture, Dams, mining

Deforestation :

It is the removal of a forest from land which is then converted to a non-forest use. Deforestation can involve conversion of forest land to farms, ranches or urban use. The most concentrated deforestation occurs in tropical rainforests.

Causes :-

1) Population increase
2) Demand of forest products
3) Hydroelectric projects
4) Mining Operation
5) shifting cultivation
6) overgrazing (by cattles)
7) weather condition
8) Forest Fire
9) Pests

- Effects :-

i) Loss of Biodiversity
ii) Loss of cultural diversity
iii) Loss of carbon storage capacity
iv) Loss of Hydrological Balance
v) soil erosion (removal of top layer of soil)
vi) loss of aesthetic (pleasing to eyes) Beauty

Remedies :-

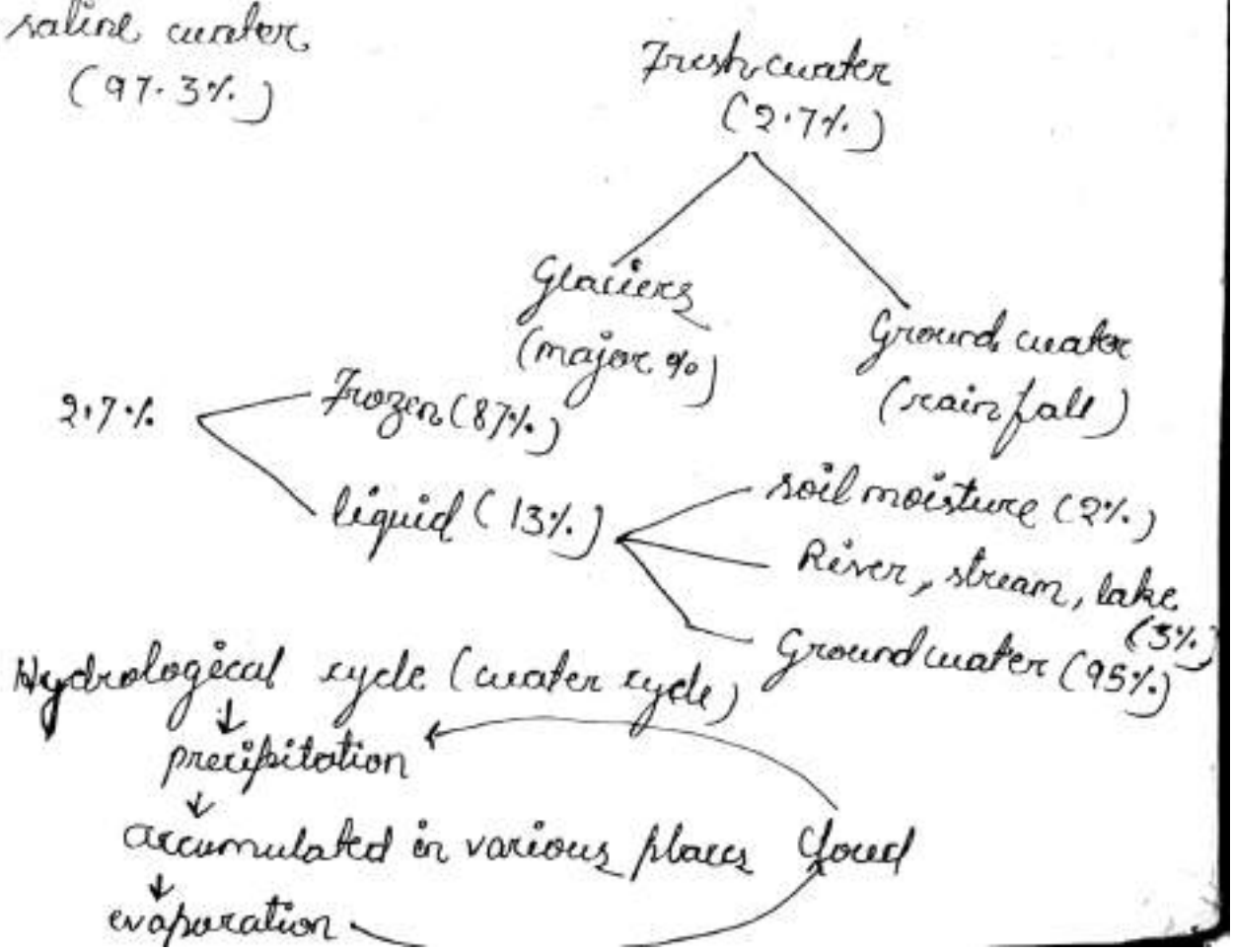
Forest Conservation :-

1) Afforestation (plantation) programme
2) Conservation forestry (people not allowed to cut tree)
3) Commercial Forestry
4) Social forestry
5) Agro forestry
6) Urban forestry

WATER RESOURCES:

Water Resources are natural resources of water that are potentially useful. Uses of water include agricultural, industrial, household, recreational and environmental activities. All living things require water to grow and reproduce

Water Resources are of 71% of total earth. From which 97.3% are saline water (salty) & 2.7% are fresh water, slightly over two thirds of fresh water is frozen in glaciers & polar ice caps. The remaining unfrozen fresh water is found mainly as ground water, with only a small fraction present above ground or in the air.



water resources fresh water used in 3 major area.

1) Irrigation
2) Domestic
3) Industries

Over exploitation of water:

The exploitation of ground water resources more than it's annual replenishment (opposite of exploitation) has caused the continuous declining of water levels, well yield, drying of shallow wells, deterioration of ground water quality and high cost of energy required to lift the water from great depths which becomes uneconomical for poor farmers to continue agriculture. The uneven distribution of water resources coupled with over utilization of ground water resources has resulted in imbalance between recharge and development. The annual replenishment of ground water resources is getting reduced due to reduction in natural recharge mechanism by human interaction. There exists a gap between available water resources and future need of water for the country. Excess heavy rainfall lead to flood and scarcity of water leads to drought

Conflicts over water : (difference in opinion)

1) Urban water demands are concentrated in space. Therefore pose serious problems at local levels.

2) Water demands in mega cities are growing much faster and are putting heavy strain on water resources. It is creating difficult problems for the surrounding rural areas leading to serious conflicts.

3) Since the urban water supply are made from surface flows there will be conflict with upstream users specially farmers while the downstream users will be affected by polluted waste water released by urban areas.

Dams :-

By constructing dams we face both benefits & problems.

Benefits :-

1) Generation of electricity
2) water availability without pollution
3) Increased food and crop output
4) Fresh water supply for domestic, industrial & other needs.
5) Generation of employement.
6) yearound water supply.
7) Tourism

Problems:-

1) Loss of fertile agricultural land.
2) Loss of native flora and fauna
3) Rehabilitation and resettlement of native people
4) Health problems due to release of metals.
5) silting and losses of storage capacity

Q- 31-7-19

FOOD RESOURCES:

→ Crops → meat
→ vegetables → Milk, dairy products
→ Fruits

World food Problems:

→ Overgrazing
→ Effects of modern agriculture
1) Damage to soil
2) Contamination of water (irrigation)
3) Fertilizers (phosphorus, nitrogen, potassium)
4) Pesticides (high chloride contain)
5) water logging (excessive irrigation)
6) salinity (salty)

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MINERAL RESOURCES:

It is non-renewable, natural resources. Minerals are the definite chemically bonded substances created through chemical processes between organic and inorganic matter present in the earth crust. They may be solid or liquid.

Ex - Iron, copper.

Mineral Resources

- Metallic — allow electric current
- Nonmetallic
- Mineral fuel

Metallic :-

Metallic mineral are generally found in combined state,

1) Iron :- steel manufacture, machines etc.

2) Aluminium :- Packing of food and transportation electronics

3) Manganese :- steel alloy, industrials used

4) Gold :- Jewellery, medical purposes, electronics

5) Silver :- Photography, Jewellery, electricity.

6) Lead :- Batteries, paints, Ammunations

2) Copper :- Electronics and buildings

6) Iron Chromium :- Used in making steel alloy, plating, Electronics.

2) Non metallic Mineral :-

Non metallic minerals are mining ores yield products are other than metals.

Ex:- Graphite, Gypsum, lime stone
(Cement, road work)
Silicates - manufacturing of glass
Sulpher - chemical industries
Gem stone - Jewellery, Ruby
diamond
Mica (Industrial use)
Asbestos, phosphos.

3) Mineral Fuel :-

Coal, natural gases, petrolium, fossil fuel
these are the sources of energy used for both domestic & industrial.

Extraction of Mineral :-

Environmental Effect of mining :-

1) Land degredation (destroy)
2) Deforestation
3) soil errorion
4) adverse effect on ground water table
5) Pollution of local water drainage system
6) Land slide
7) Loss of flora & fauna
8) Noise pollution
9) Air pollution
10) Causes lung & skin diseases

ENERGY RESOURCES:

Energy Resources

- Renewable / non-conventional (or exhaustible)
  e.g. - solar energy, wind energy, ocean energy, bio-gas, hydrogen
- Non renewable / Conventional (exhaustible)
  e.g. - fossil fuel, bio mass, atomic energy, hydro power.

NON CONVENTIONAL / RENEWABLE ENERGY:

Solar Energy:-

→ Solar energy is the most readily available & free source of energy.

→ It is not polluting in nature and helps in reducing Green House effect.

→ Solar energy can be utilized through two different routes. one as solar thermal route and another as solar electric route.

→ Solar thermal energy is used for cooking, heating, drying, distillation, electricity generation etc. For all of these solar energy is converted into thermal energy with the help of solar collectors & receivers known as solar thermal devices.

→ these devices are used in solar water heaters, air heaters, solar cookers and solar driers for domestic & industrial applications.

solar photo voltaic cells uses converts solar energy into DC electry-city through sylicon solar shells.

→ this electricity is used for lighting buildings, running motors, pumps, electrical appliances, lighting strips, village electrification etc.

Wind Energy:

wind energy is basically harvdressing (capture) of wind power to produce electricity. the K.E of the wind is converted into electrical energy with the help of wind mills and wind turbines.

→ this energy is used for grinding corn, pumping water, ~~sheding~~ sailing ships.

→ the average annual wind speed upatleast 15 km/h is required for wind energy system to be feasible

Hydro Energy:

Potential energy of falling water can be captured and converted to ~~power~~ electrical energy with the help of a turbine.

→ this requires setting up of dams.

Bio Energy:

Bio mass is a renewable energy resource derived from the waste of various human activities and natural activities including the bi-products from agricultural crops, wood industry, raw material from forest, household waste etc.

→ It can be used to generate electricity with the same equipment used for burning fossil fuels.

→ Biomass doesn't act CO_2 to the atmosphere when consumed as a fuel.

Tidal and Ocean Energy:-

LAND RESOURCES:

Land is a natural Resource.

Exploitation of land :- Land degradation

→ soil erosion

→ Lowering of watertable

→ Land slides

→ Desertification

Desertification:-

It is a process of conversion of irrigated rich land to desert.

It is characterised by loss of vegetation, depletion of ground water, salinization of soil and soil erosion.

Causes :-

1) Deforestation
2) Drought
3) Mining & Quarrying
4) Modern agriculture

EQUITABLE USE OF RESOURCES FOR SUSTAINABLE LIFESTYLE :

Sustainable - If it will fulfill present & future demand.

Equitable :- Equality, balance between need and consumption of natural Resources.

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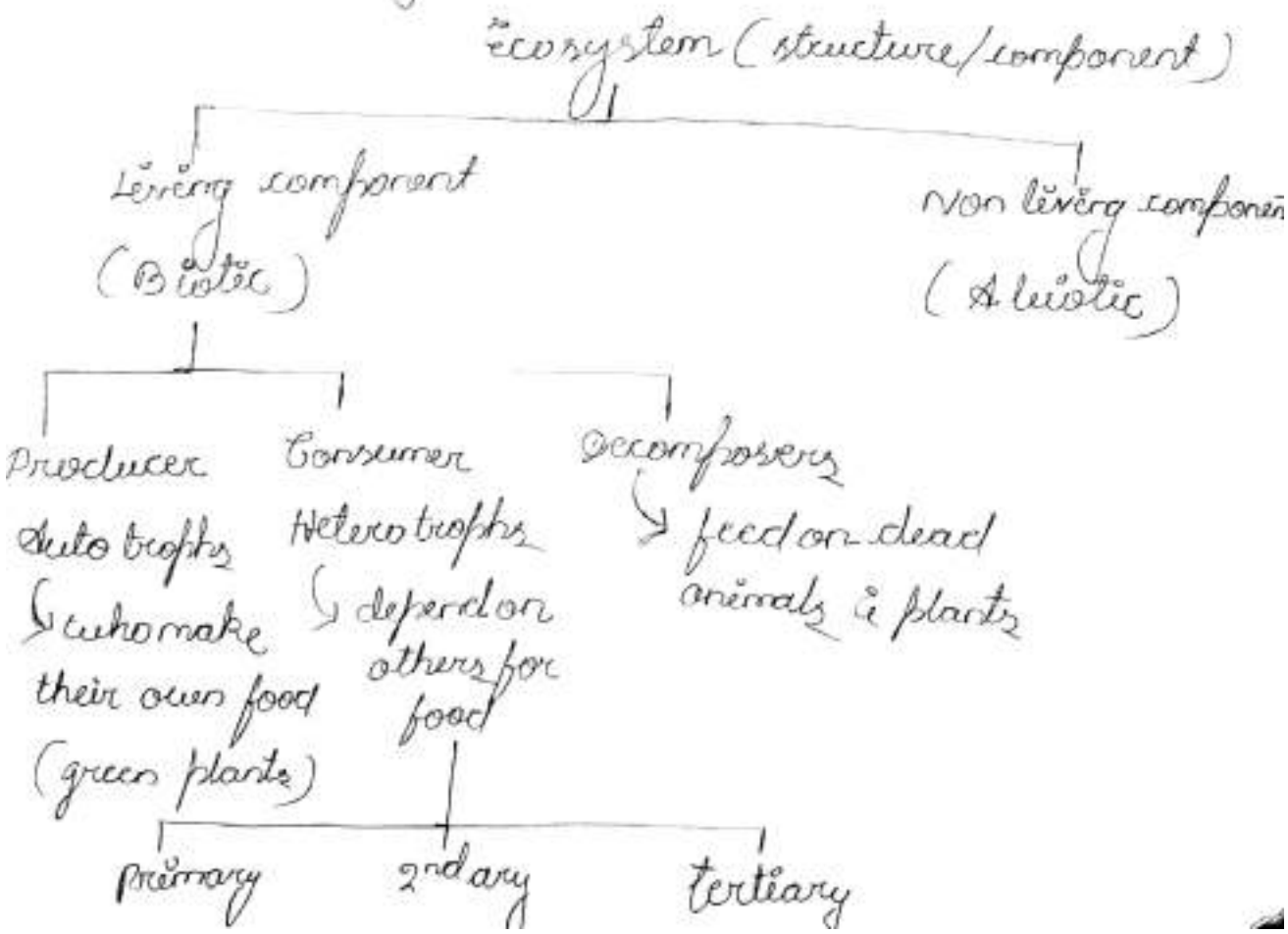
ECO SYSTEM

Ecosystem is defined as a community of organisms interacting with one another and the environment in which they live.

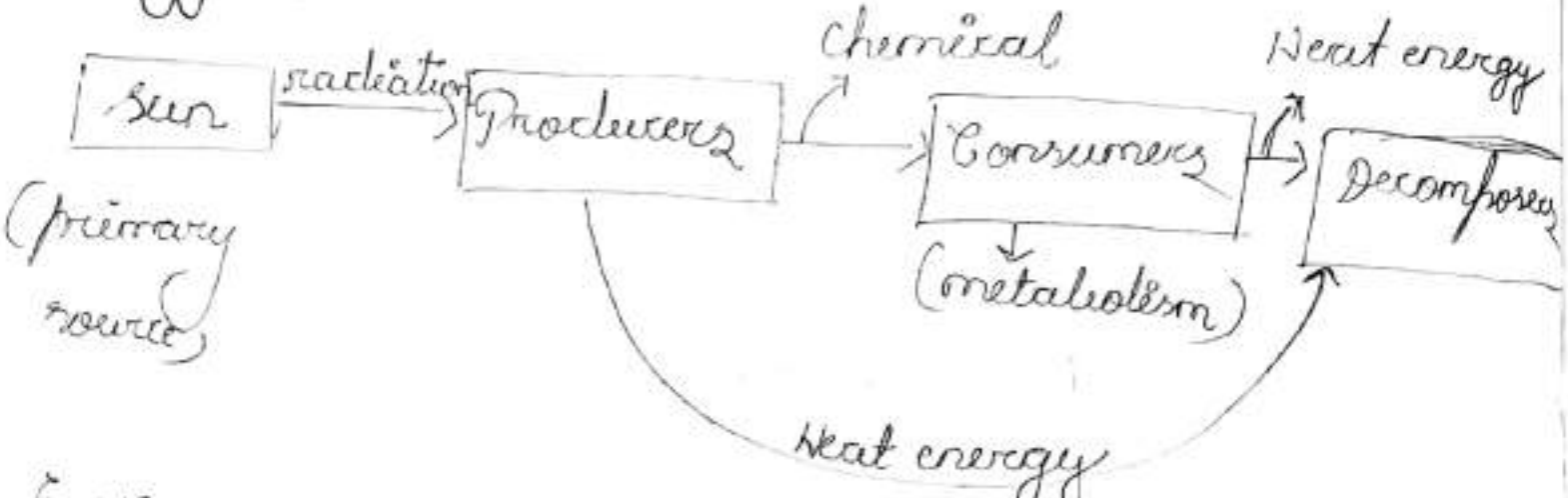


Abiotic

Physical factor (energy)
heat, light, rainfall

chemical factors (Materials)
minerals, inorganic salt, decaying product

Energy flow :-



Energy can only flow in one direction.

Ecosystem follows the two laws of thermodynamics,

2nd law :- When energy is transferred only 10% is transferred and rest 90% is lost.

1st law :- Energy can neither be created nor destroyed. It can change one form to another.

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ECOLOGICAL SUCCESSION:

The Ecological succession is a process of change in the species structure of an ecological community and the environment in due course of time.

There are 2 types of ecological succession.

1) Primary 2) Secondary

Primary Succession:

It is the process of species colonization and replacement in which the environment is initially free of life.

Secondary Succession:

It refers to community development on location previously occupied by well developed communities which has been disrupted.

Depending on moisture content ecological succession are of 3 types.

1) Hydrosere
2) Mesosere
3) ~~Xerosere~~ Xerosere

sere → Complete succession

Hydroxere:

The succession which starts in aquatic environment.

Mesoxere:- The succession which starts in areas with adequate moisture. (land)

Xeroxere:- The succession which starts in dry habitats having min^m amount of moisture (rocky area, deserts)

Stages of Succession:

1) Nudation (formation of bare)
2) Invasion
3) Competition → (arrival of various organisms)
→ (Competition betn diff^n species in the environment)
4) Reaction
5) Climax or stabilization → (formation of community, mature stage)

Consuming habbit of an ecosystem:-

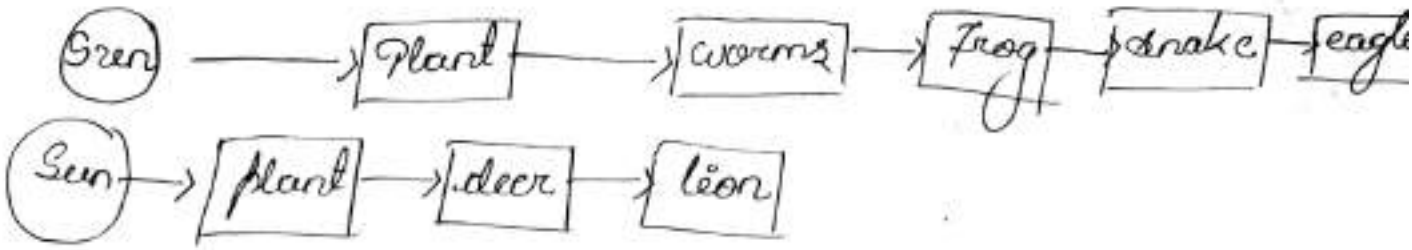
→ Food Chain

→ Food Wave

Food Chain:

It is the sequence of eating and being eaten with the resultant transfer of energy betn organisms of an ecosystem is called a Food Chain.

Ex:-



In nature we see two different types of food chains.

1) Grazing FC

2) Detritus FC

Grazing Food Chain:

This type of FC starts from green plants and ends at carnivours by passing through Herbivours

Autotrophs ⟶ Herbivors ⟶ Carnivors .....
(green plant) (1° consumer) (2° consumer)

Detritus (organic waste & dead matter) Food Chain:-

The food chain which starts from organic wastes and dead matter is called as Detritus FC.

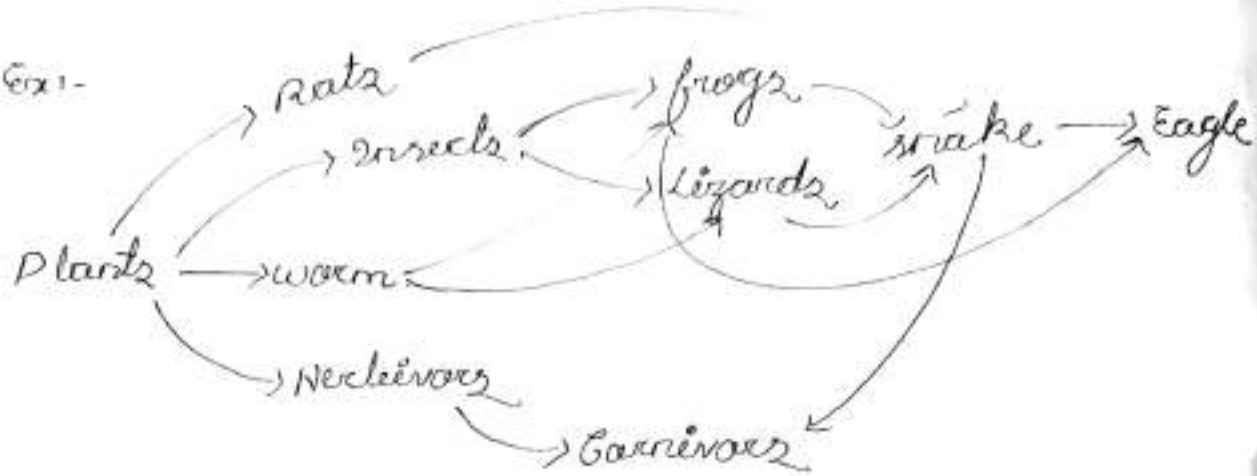
Ex-

Detritus ⟶ Detritivors ⟶ Detritivor consumer ⟶
small carnivors ⟶ large Carnivors

Food Wave:

It is a network of food chain where different types of organisms are connected at different trophic levels (food)

Ex:-



Ecological pyramid:-

Ecological pyramid is a graphical representation of different organisms in an ecosystem.

There are 3 types of pyramids-

1) Pyramid of numbers
2) Pyramid of biomass
3) Pyramid of energy

Pyramid of Numbers:-

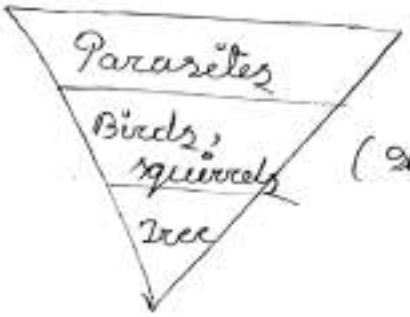
This pyramid deals with the numbers of relationship between the no. of producers, consumers and decomposers at each trophic level.

Ex:- Grassland ecosystem

Producer → Herbivors → Carnivors → 3° consumer
or 1° consumer or 2° consumer

(Upright pyramid or erect)

Ex- Fo Tree of a Forest

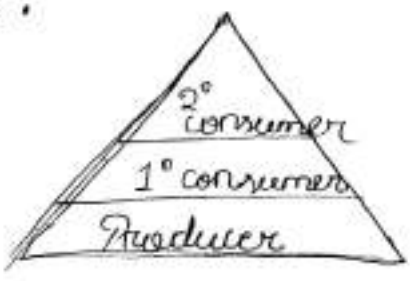


(Inverted pyramid)

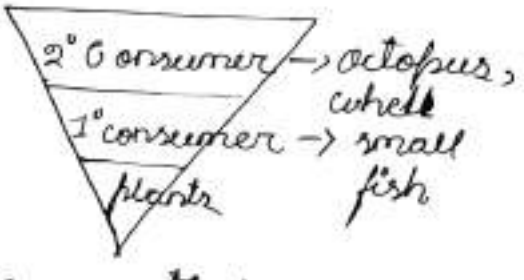
Pyramid of Biomass :-

→ wt. of organic matter

Pyramid of biomass shows a quantitative relationship among the organisms of an ecosystem where instead of geometric factor the total wt. of organisms in a given area is taken into account.



(Forest)



(aquatic)

3) Pyramid of energy :-

Pyramid of energy represents the total quantity of energy utilized by different trophic level organisms of an ecosystem per unit area over a given period of time.

Most accurate ecological pyramid. In this case Pyramid is always upright. Because ~~pyram~~ energy content is more in producers.

- Forest
- Pond
- Lake
- Ocean
- Stream
- Estuaries
- Rivers

→ Ecosystem → structure & function

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BIO DIVERSITY
↳ (variety)

It means the variability and variety of living organisms and their ecosystems.

→ Ecosystem Diversity
→ species Diversity
→ Genetics Diversity

Bio geographical classification of India:

Biogeographical Regions of India-

1) Himalayas (Norther India)
2) Desert (Thar desert)
3) Decard Paransola (3 side surrounded with water)
4) Malleo Malabar Coast (souther India)
5) Islands (Andaman & Nicobar, Lakshyadeep)
6) Gangatic Plane (having fertile soil)
7) Asam & Westbengal (western ghats)

Values of biodiversity:

1) Consumptive use/values
2) Productive value
3) social value
4) Esthetic value
↳ (scenic beauty)
5) option value

* option value is the indirect value of a species to provide an economic benefit to human society at some point in near future. *

Threads to Biodiversity :-

1) loss of habitat (man made activity, natural calamity)

(Pollution of natural Resources)

2) Hunting and poaching

3) Man wild life conflict

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ENVIRONMENTAL POLLUTION

Pollutants ——→ Pollution

→ Causes
→ Effects
→ Control Measures

1) Air
2) water
3) soil
4) Marine
5) Noise
6) Thermal
7) Nuclear
8) Solid waste Management

Air Pollution:

Air pollution is defined as presence of contaminants (impure substances) in the outdoor atmosphere in such quantities and of such duration which may be injurious to human plant or animal life or property or comfortable enjoyment of life.

Air pollution may be classified as primary & secondary according to their origin.

Primary Pollutants:

Those pollutants which are directly emitted in the atmosphere and found as such.

Secondary Pollutants:

These pollutants are derived from the primary pollutants due to chemical or photo chemical reactions in the atmosphere.

Ex:- Ozone, Photo chemical smog, peroxy-acyl-nitrate (PAN)

Air pollutants can be classified as gaseous or particulate based on its state.