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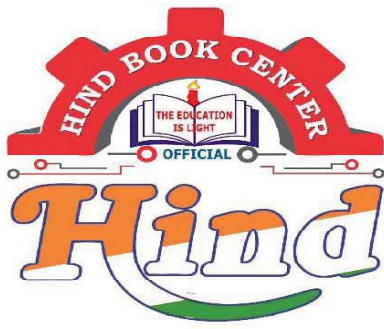
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**ESE- GS : Prelim Paper-1
Toppers Handwritten Notes
Energy and Environment
By-By-Dr.Sajiza Ali Sir**

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Basics of Energy & Environment.

4-6 Questions

- Dr. Sajid Ali

[9818868392]

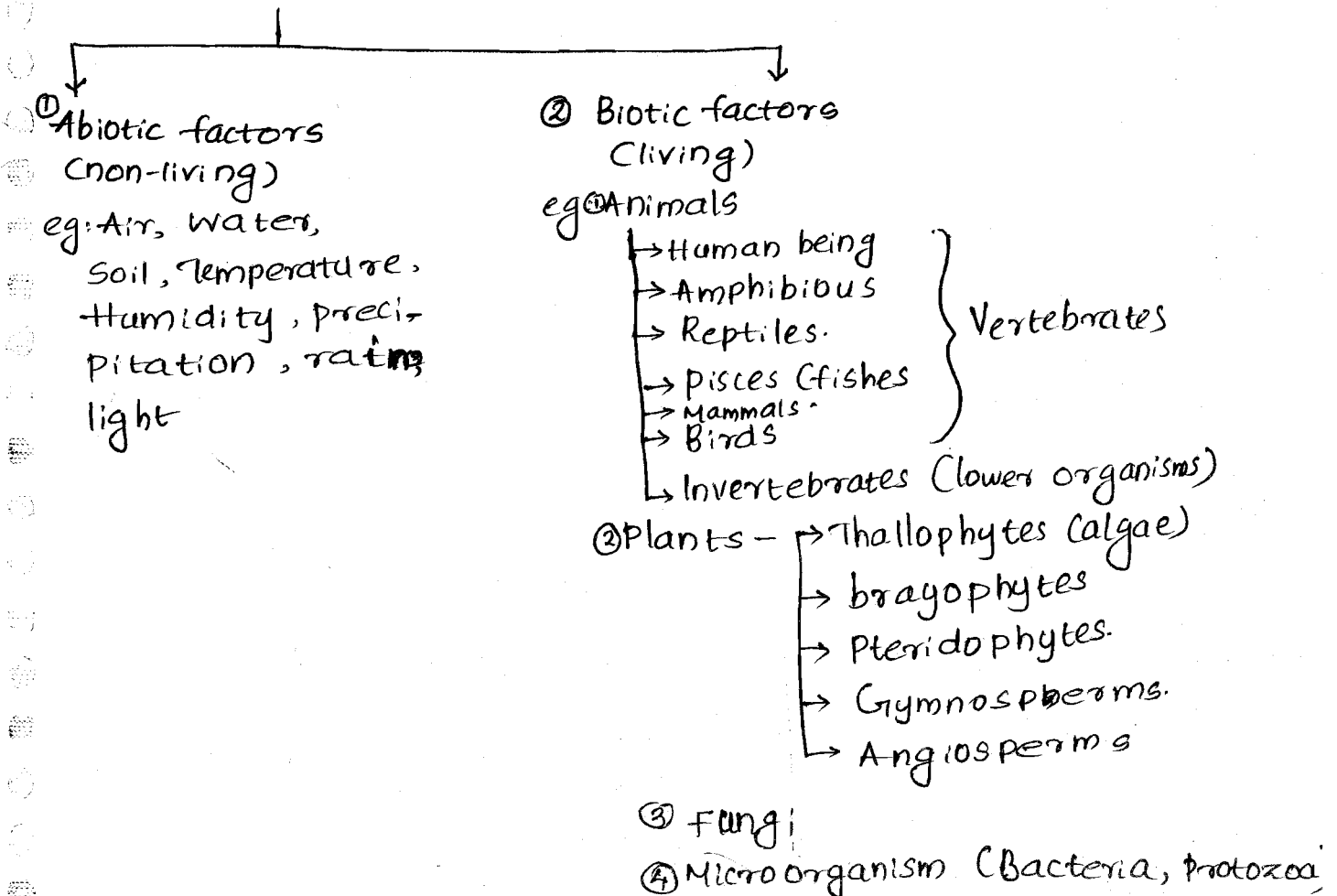
- ① Introduction
- ② Diversity & conservation
- ③ Environmental degradation & pollution
- ④ Global warming & climate.
- ⑤ Disaster & Disaster management
- ⑥ Environment Impact Assessment.

Introduction

Environment: Environment word derived from ~~fran~~ French word.

Environer/Environ which means surrounding or encircled

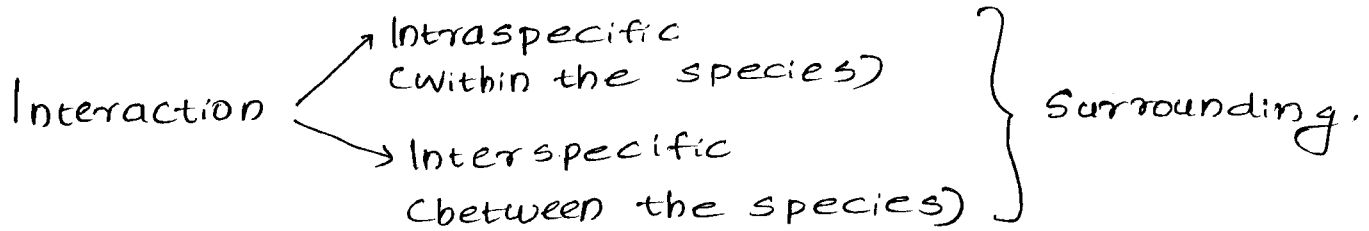
Environmental factors:



Interaction b/w Biotic & Abiotic is Ecosystem.

Ecosystem

Interaction of abiotic and biotic factors with their surrounding is called ecosystem.



Ecosystem term is given by A.G. Tansley

Nature derived from latin word

Type of ecosystem.

Natural ecosystem

ex: Ocean, sea, River, lake, Pond, wet land, soil esturries, falls, forest Grassland.... etc.

Artificial Ecosystem [Manmade]

ex: Crop field, Garden, zoo Botanical garden, Seed bank, Gene Bank, park, Aquarium.

Living → Organisms

- Hierarchy:
- ① Physical hierarchy
 - ② Biological hierarchy
 - ③ Ecological hierarchy
 - ④ Taxonomical hierarchy

Physical hierarchy

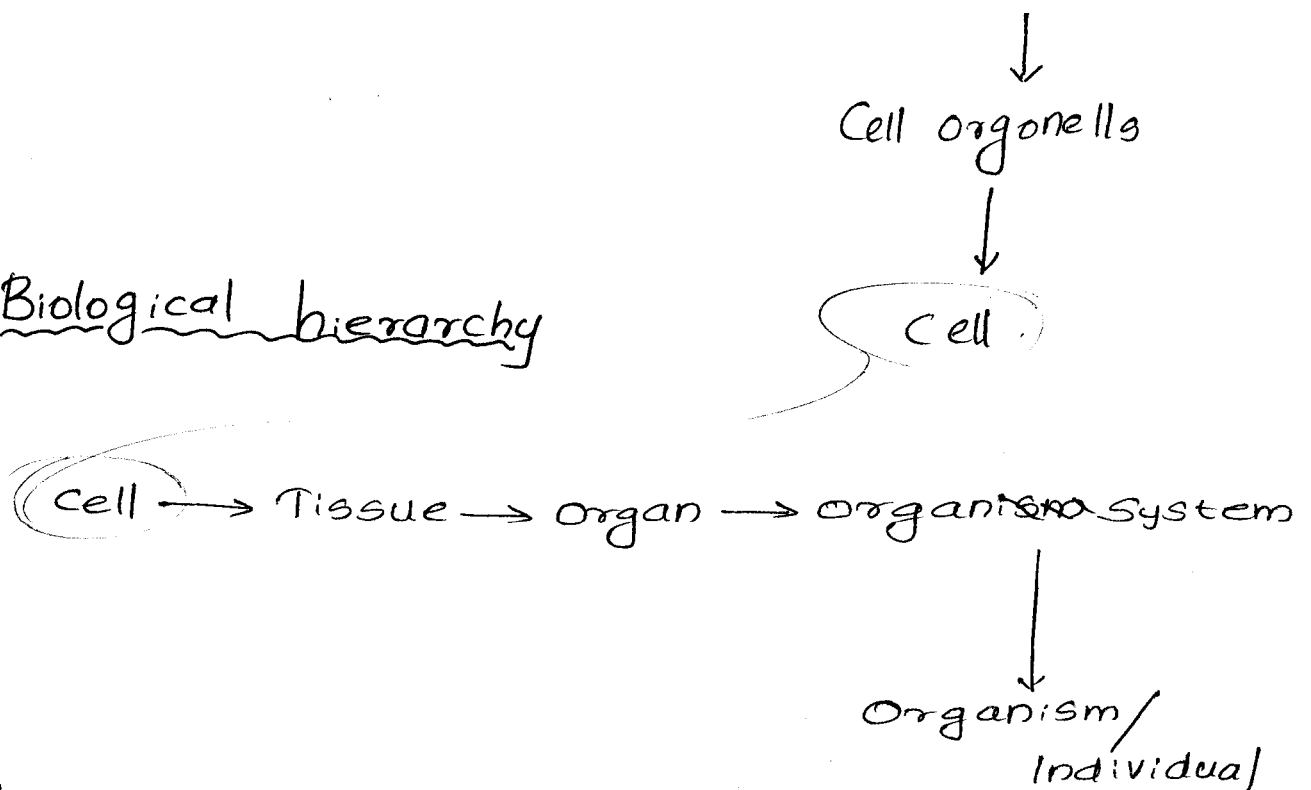
Subatomic particles

(electrons, protons, Neutrons)

→ Atom → Molecule → Complex molecules/ compounds.

↓

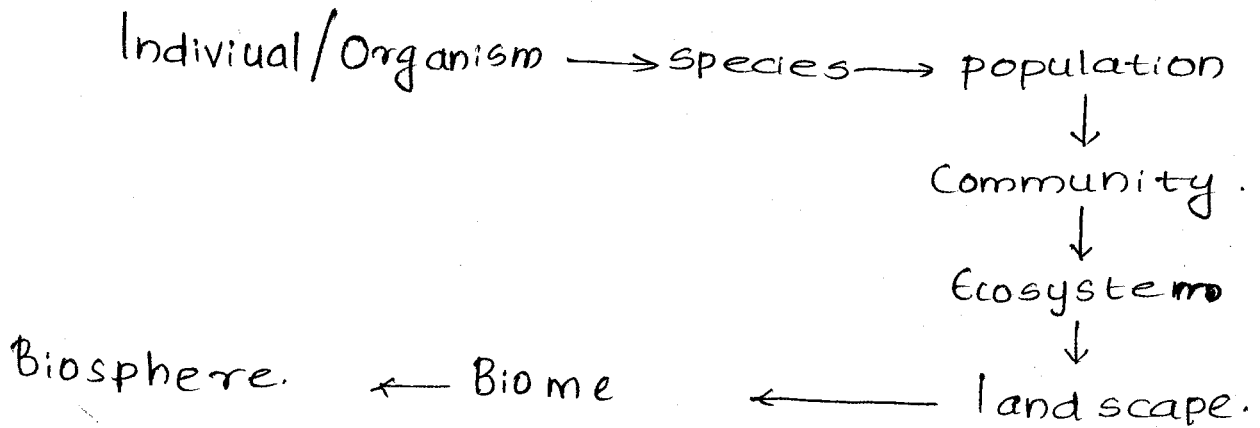
Biological hierarchy



Note

Cell is the fundamental unit of life
Cell is the structural & functional unit.
Cell is the unit of life process.

Ecological hierarchy

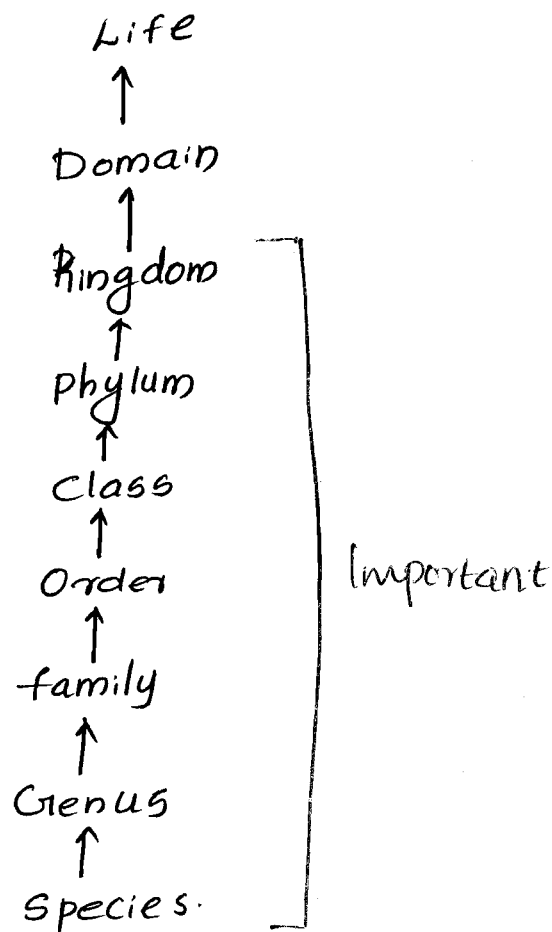


Taxonomical hierarchy

Species is the smallest unit [of classification] in taxonomical hierarchy.

Genus + Species → Scientific name of Organism.

Human: Homo Sapiens
 Genus Species



⇒ Kingdom is the largest classification.

Frog: *Rana tigrina*

Tiger: *Panthera tigris*.

Question: which of the following is the correct taxonomical hierarchy.

① Genus → class → species → kingdom → phylum → family → order.

② class → species → Genus → phylum → kingdom → order → genus

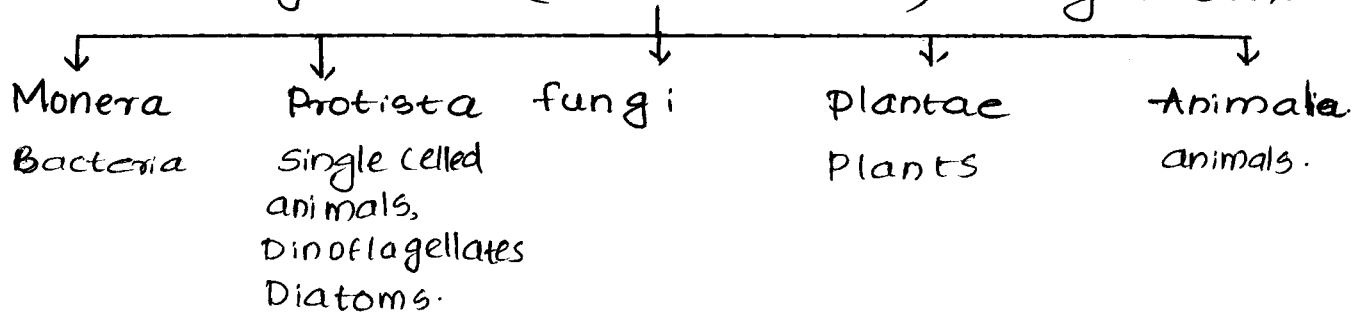
③ species → Genus → family → order → class → phylum → kingdom.

④ Genus → kingdom → species → order → class → family → phylum

Largest ecosystem → Earth.

Smallest ecosystem → single drop of water

→ Five kingdom of (classification) Organism.



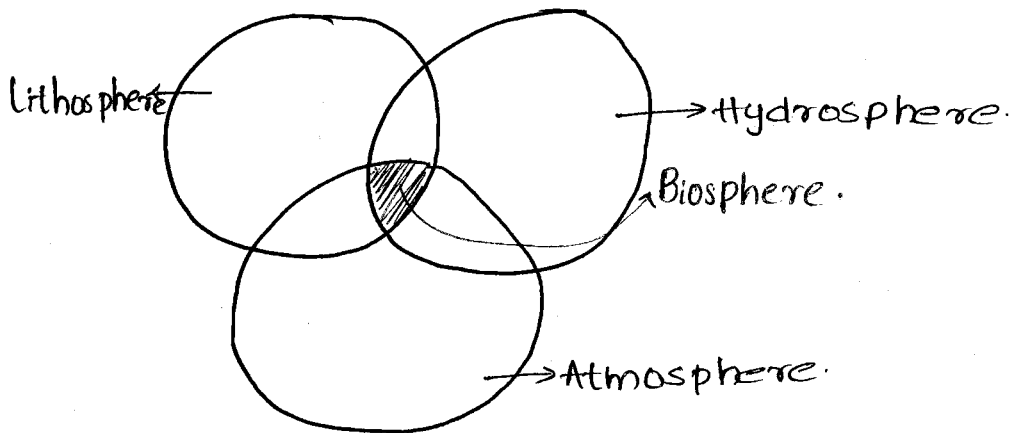
• Given by R.H. Whittaker

Existence of Life

Water → Hydrosphere.

Terrestrial → Lithosphere.

Air → Atmosphere.



Ecology

Eco → Oikos [Greek Word]
↓
Habitual (or) Home.

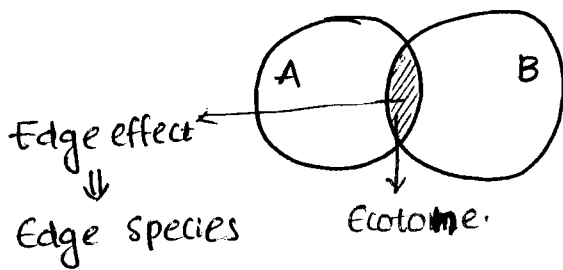
logy → logos
↓
Study of

Ecology term is given by Ernst Haeckel

- Father of ecology: Alexander Van Humboldt
- Father of Modern ecology: E. P. Odum
- Father of ecology in India: Prof. Ramdev Mishra.

Ecotome:

- It is the transitional zone between two ecosystems.



- In ecotone area, there will be more diversity of organisms as compared to both the ecosystems that is called edge effect.

Hotspots

- Those areas where the diversity of native species is high.

- Basic needs: true stem, leaf, root (water conduct)

① 0.5% Vascular plants should be there of the total vascular plants of the world.

Note: World has \approx 3 lakh vascular plants.

② 10% species of that area destroyed or damaged only. 30% remains.

- There are 36 biodiversity hotspots are present currently.

- India has 4 biodiversity hotspots.

(1) Eastern Himalayas / Himalaya

(2) Western Ghats

(3) Indo-Burma region

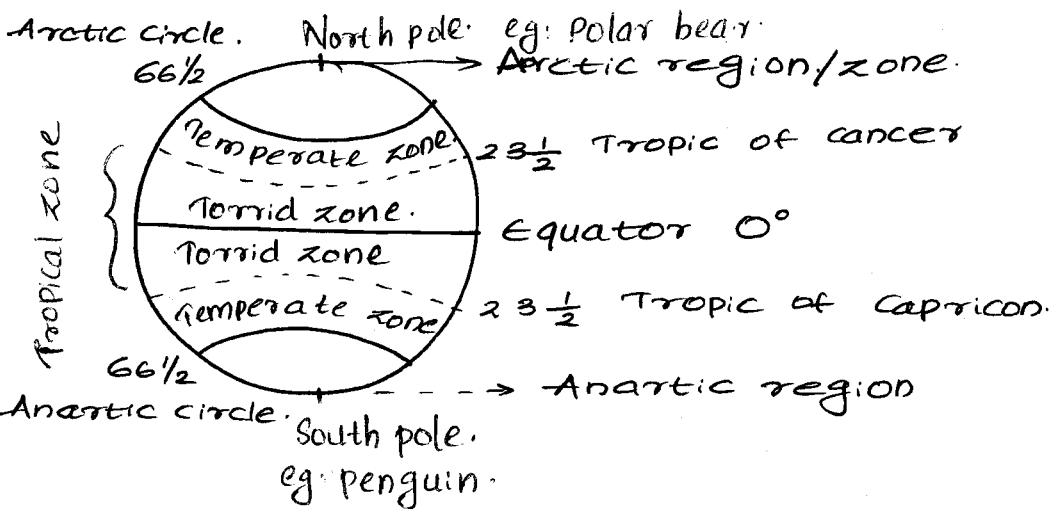
(4) Sunda-land

Hope spots

- It is a kind of Conservation of diversity ~~for~~ ⁱⁿ sea
- There are 76 hop-spot in the world.
- India
 - Lakshadweep
 - Andman-Nicobar Island

Mega diversity Country

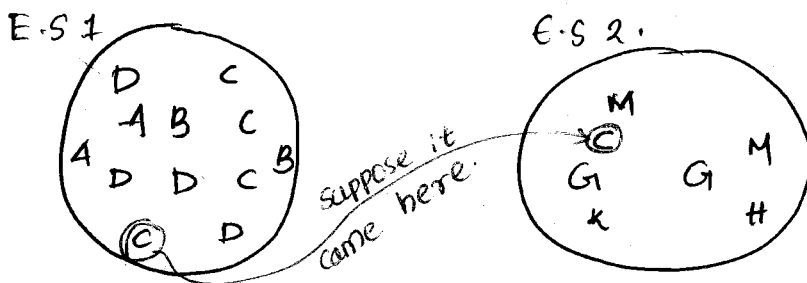
- Those countries which have a larger number of organisms.
- There are 17 mega diversity countries.
- India is also a country which belongs to this.



- Diversity ↓s from equator to the poles.

Eco\$ype

- change in the species in the different ecosystem.



- Change in the species occurs due to the following factors

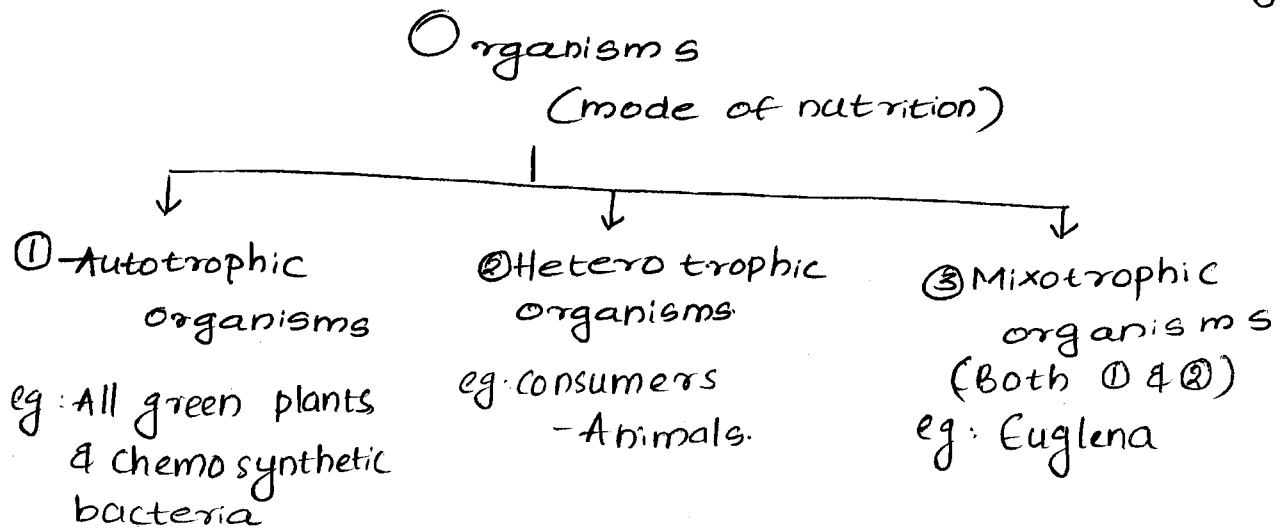
① Environmental factors ③ chemicals

② Mutation (sudden change in DNA)

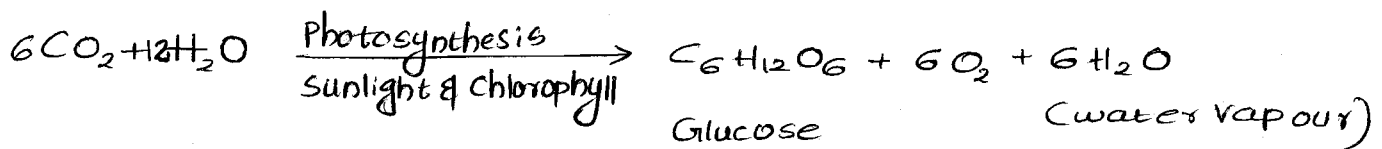
Food chain:

◦ It is the feeding relationship between the organisms in an ecosystem.

① Grass → Grasshopper → Frog → Snake → Hawk/Eagle.



Green plants → Photosynthesis.

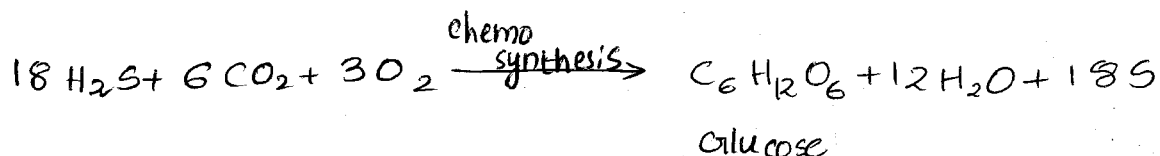


◦ Green colour of leaves is due to the presence of chlorophyll pigment. [Magnesium ion Mg^{2+}]

Chemosynthesis

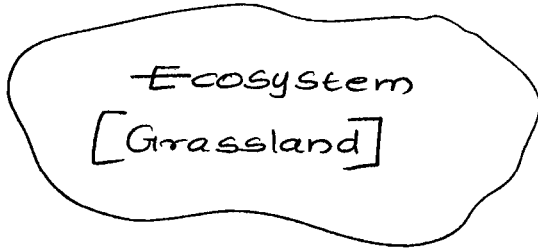
◦ It is performed by chemosynthetic bacteria.

ex: Sulphide bacteria



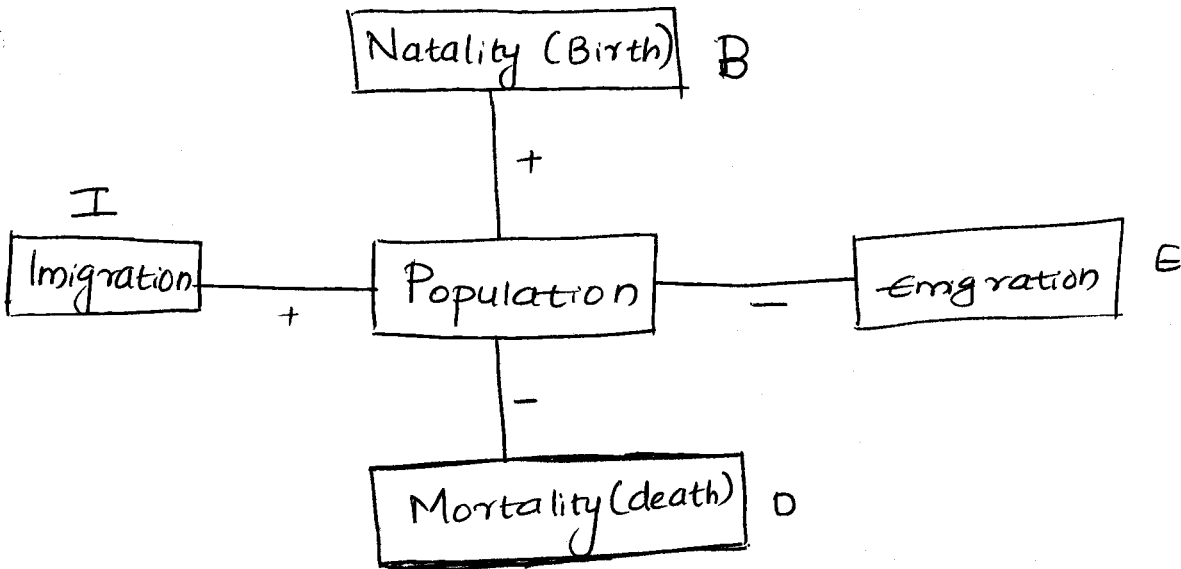
Note: Euglena is called connecting link between animals and plants.

Virus are the connecting link between living & non living things.



Population

of an ecosystem depend on 4 factors



Population for a particular time (t)
(N)

$$N_{t+1} = N_t + (B+I) - (D+E)$$

Days to Remember

① World Environment Day → 5 June

UNGA [United Nations General Assembly]

↳ on human environment 5 June 1972

@ Stockholm (Sweden)

After 2 years of this conference, 1st world Environmental Day (WED) celebrated in USA [5 June 1974]

Theme: "Only one earth"

• India hosted WED in 2018:

Theme: Beat plastic pollution.

China hosted WED in 2019

Theme: Air pollution.

Columbia hosted WED in 2020

Theme: Time for Nature

Pakistan hosted WED in 2021

Theme: Ecosystem Restoration.

Sweden hosted WED in 2022 [After 50 years]

Theme: Only One earth.

② World Water Day → 21 March

③ World Earth Day → 21 April

④ World Biodiversity Day.
→ 22 April

⑤ World Ozone Day → 16 September.

⑥ World Wildlife Day → 3 March

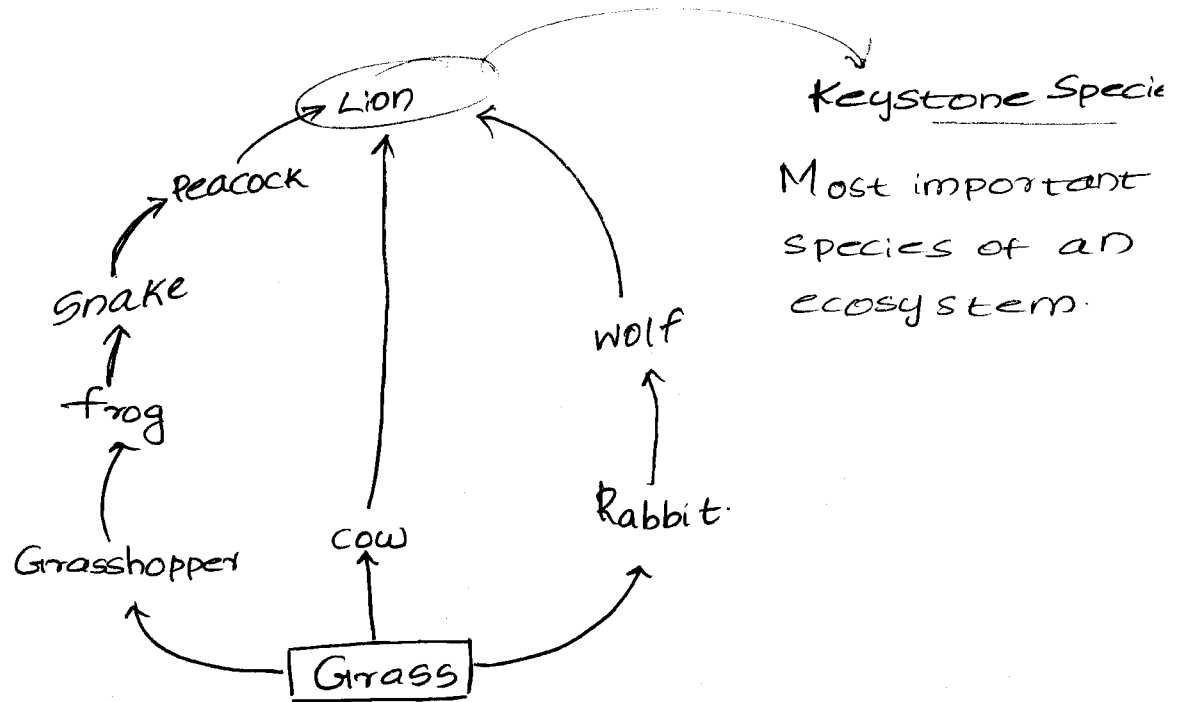
⑦ World Population Day → 11 July.

⑧ World Wetland Day → 2 Feb.

Ecological Pyrami!

Food Web

Interlinking of different food chain is called food web.



* Energy flow \propto $\frac{1}{\text{food chain}}$

• long the food chain, less energy flow.

lec 2.

Food chain

- Grazing food chain: It starts with plants
- Detritous food chain starts with dead & decaying materials.
Specially performed by micro-organisms.

Saprophytes: depend on dead & decaying materials.