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Basic of Energy Environment

BY- DR.SAJID ALI

- Theory
- Explanation
- Derivation
- Example
- Shortcuts
- Previous Years Question With Solution

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# Basics of Energy & Environment.

4-5 Questions

- Dr. Sajid Ali

[9818868392]

① Introduction

② Diversity &amp; conservation

③ Environmental degradation &amp; pollution

④ Global warming &amp; climate.

⑤ Disaster &amp; Disaster management

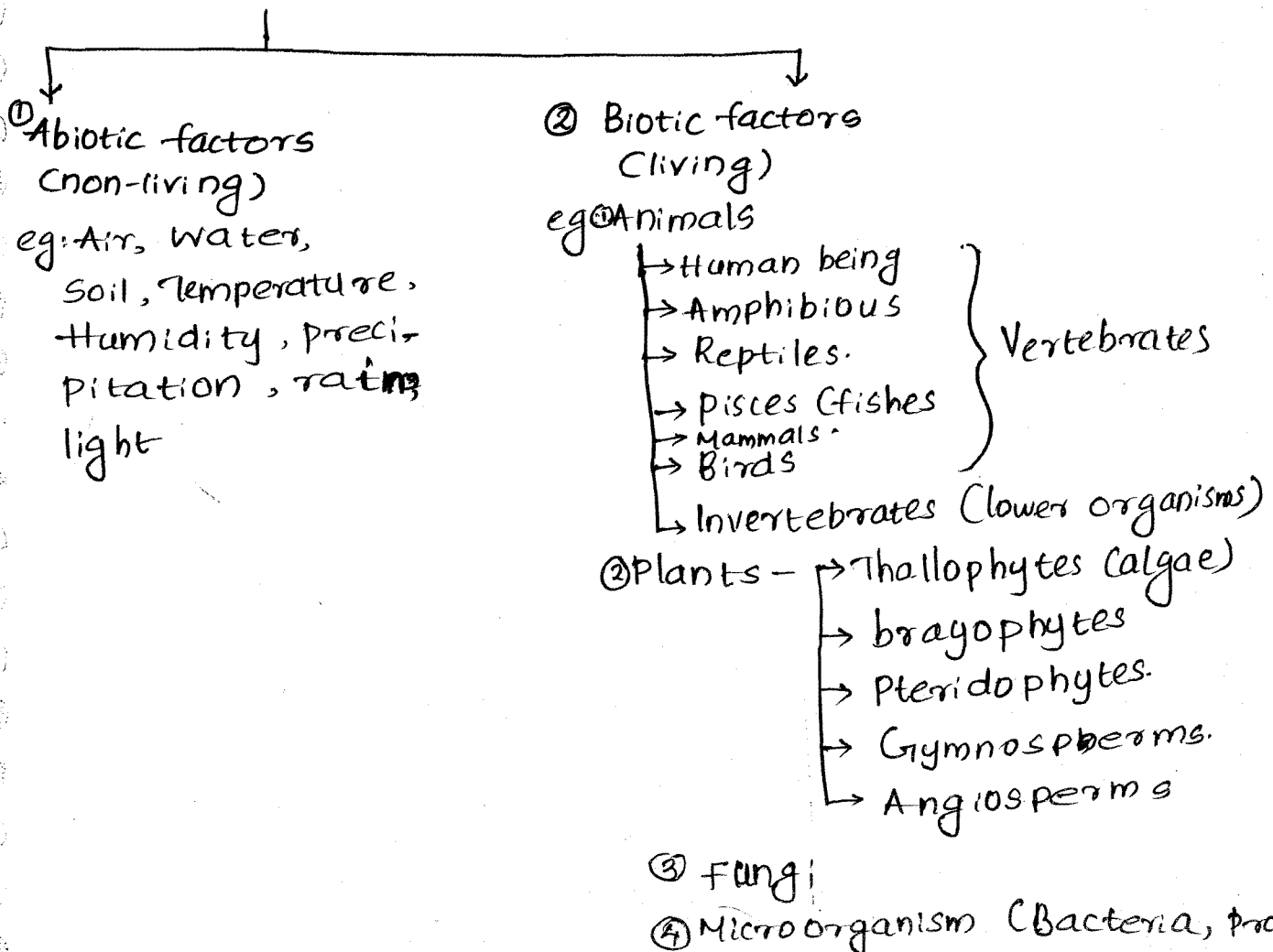
⑥ Environment Impact Assessment.

## Introduction

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

environer/ environ which means surrounding or encircled

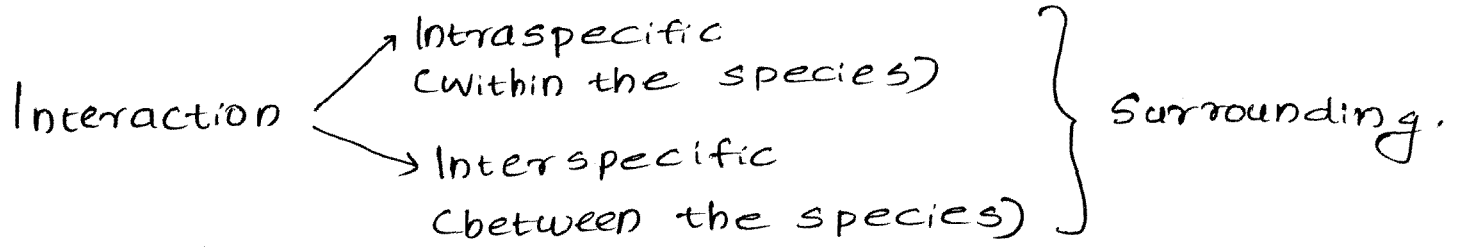
Environmental factors:



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

Type of ecosystem.

Nature derived from latin word

### Natural ecosystem

ex: Ocean, sea, River, lake, Pond, wetland, soil estuaries, 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

↓  
Cell organelles



Cell

Cell → Tissue → Organ → Organism → System

↓  
Organism/  
Individual

### Note

Cell is the fundamental unit of life

Cell is the structural & functional unit.

Cell is the unit of life process.

## Ecological hierarchy

Individual/Organism → Species → Population



Community



Ecosystem



← Landscape

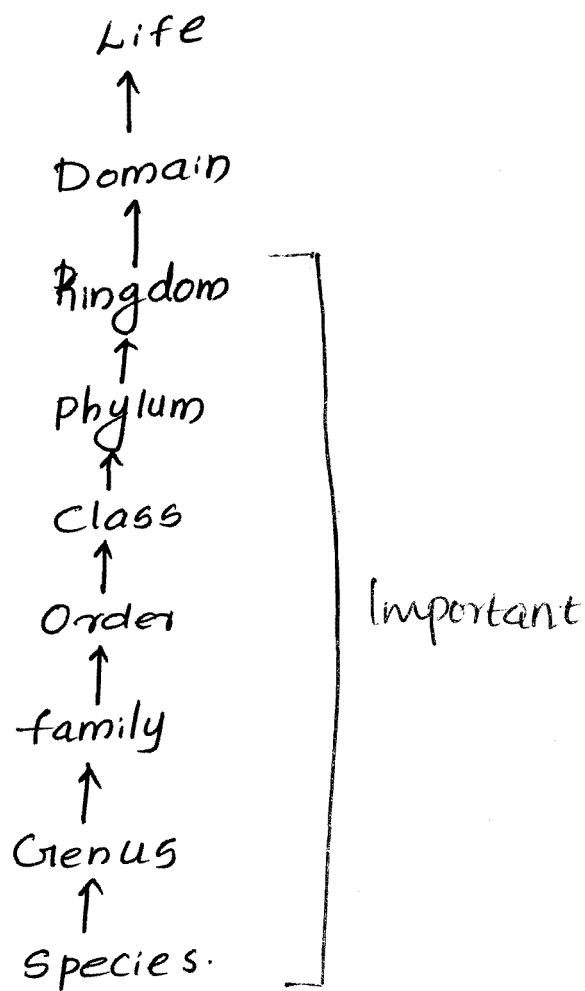
Biosphere ← Biome

## 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: *Pantera 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

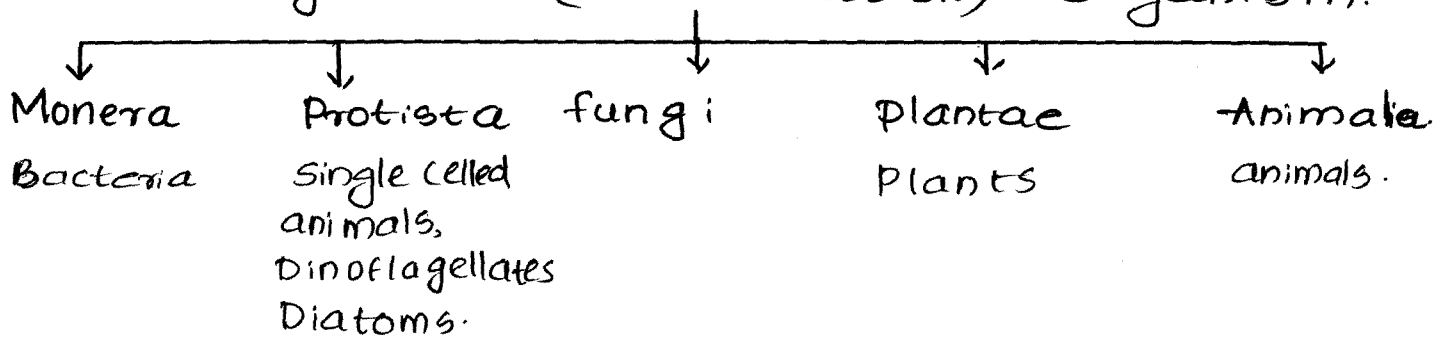
③ species → Genus → family → order → class → phylum → kingdom.

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

Largest ecosystem → Earth.

Smallest ecosystem → single drop of water

→ Five kingdom of (classification) Organism.



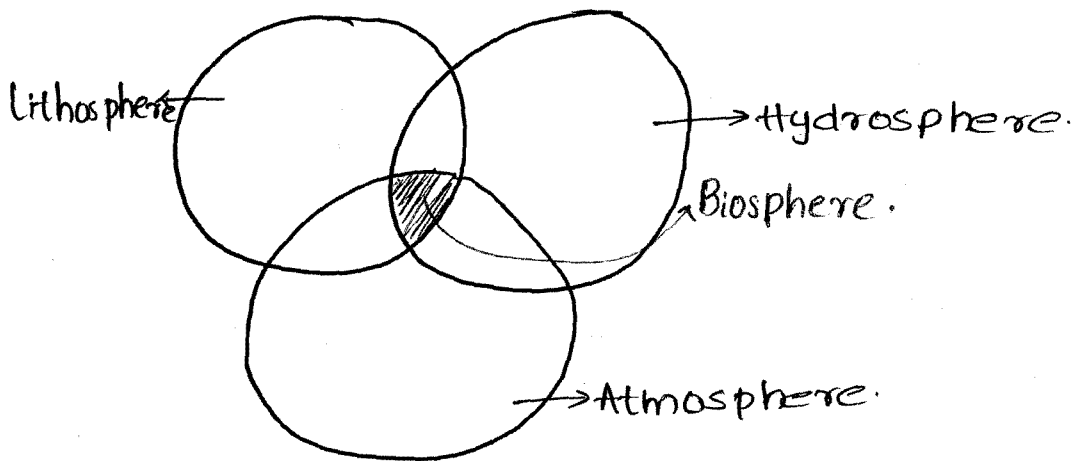
• Given by R.H. Whittaker

Existence of Life

Water → Hydrosphere.

Terrestrial → Lithosphere.

Air → Atmosphere.



Ecology

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

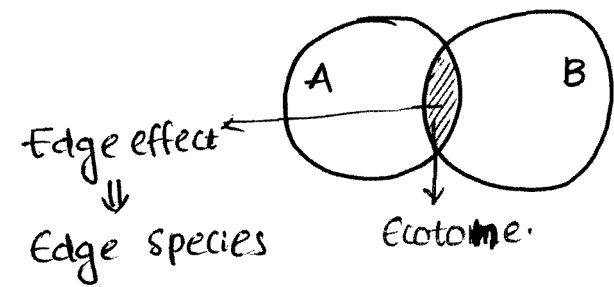
logy → logos  
↓  
Study of

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 an 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 present currently.

- India has 4 biodiversity hotspots.

(1) Eastern Himalayas / Himalaya

(2) Western Ghats

(3) Indo-Burma region

(4) Sunda-land

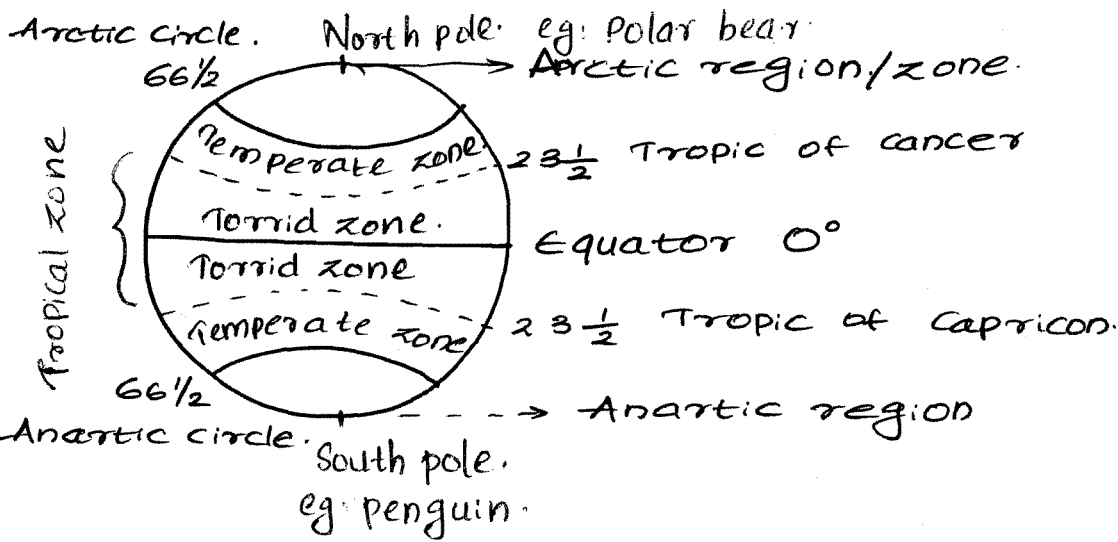


## Hotspots

- It is a kind of Conservation of diversity ~~for~~ <sup>in</sup> sea
- There are 76 hot-spot in the world.
- India
  - Lakshadweep
  - Andaman-Nicobar Island

## Mega diversity Country

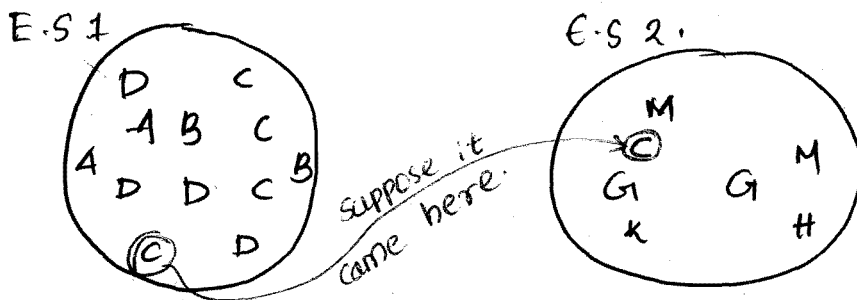
- Those countries which have a larger number of organisms.
- There are 17 mega diversity countries.
- India is also a country which belongs to this.



- Diversity ↓'s from equator to the poles.

## Eco type

- change in the species in the different ecosystem.



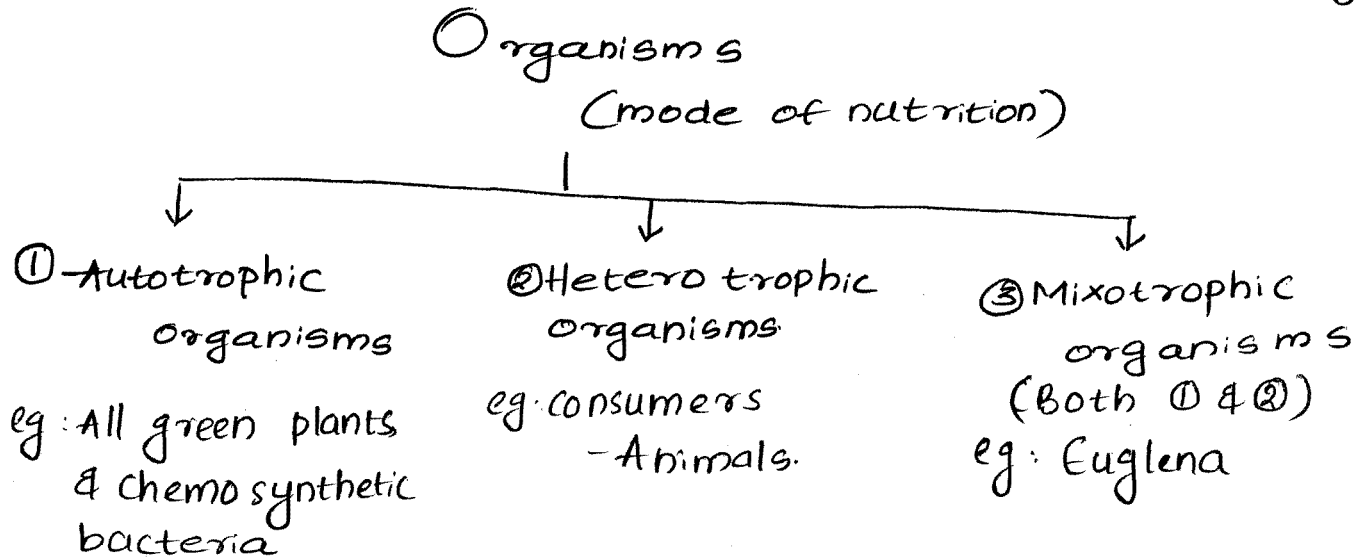
- Change in the species occurs due to the following factors

- ① Environmental factors
- ② Chemicals
- ③ Mutation ( sudden change in DNA)

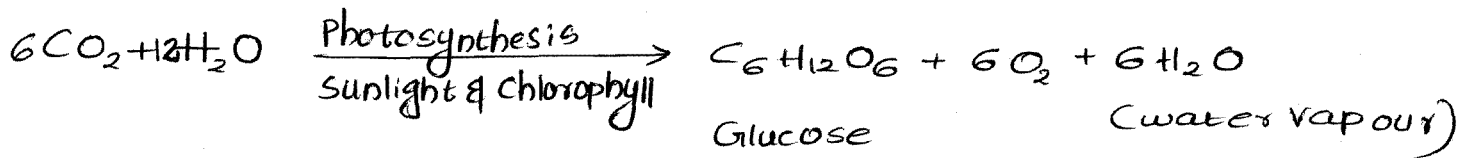
## Food chain:

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  $\text{Mg}^{2+}$ ]

## Chemosynthesis

It is performed by chemosynthetic bacteria.

ex: Sulphide bacteria

