

Module - I

1. Basic of Environmental Studies

- ↳ Environmental Studies
- ↳ Introduction Scope & importance of environment
- ↳ Impact concept of natural and artificial or man-made environment.

1.8. Structure and function of atmosphere, hydrosphere, lithosphere and Biosphere.

2. Ecology and Ecosystem - Definition, types, structure and function of ecosystem.

3. Natural Resources - Introduction, classification, conservation of natural resources.

a. Water resources

b. Forest "

c. Minerals "

The word environment means surroundings the sum of all external factor (biotic and abiotic).

⇒ Biotic factor: include all living factors or living beings.
eg. animals, humans and plant.

⇒ Abiotic factor: include all non-living factors.
eg. air, water, soil, minerals etc.

Natural Environment or Biophysical Environment

Biophysical or Natural environment contain three basic segments -

- ① Atmosphere ② Hydrosphere ③ Lithosphere ④ Biosphere
(major, minor, trace)

① Atmosphere: is a part of different gases, or mixture of different gases including water vapour.

Atmosphere contain five following layer -

- a) Troposphere b) Stratosphere c) Mesosphere d) Thermosphere
e) Ionosphere

Major function of Atmosphere -

- ① Atmosphere maintain earth temperature.
② Atmosphere control all climatic events or hydrological cycle.
③ It contain O_2 and CO_2 which are useful for living purpose (respiration).

Hydrosphere: The part of earth is covered with water is called hydrosphere.

70% of earth surface is covered with water is called hydrosphere. ~~2%~~ Out of total water resources 97% 2% found in salty ^{water} form (sea & oceans). only 1% found in fresh water form & rest water found in permafrost or glaciers.

Major function of hydrosphere: ① It provides circulation functions, eg hydrological cycle or cloud formation.

- ② It maintain earth temperature.
- ③ Basic fluid of plants and animals and humans.
- ④ It provides social and industrial use as coolant, solvent, cleaning agent etc.

Lithosphere: Solid part of earth surface is called lithosphere. Lithosphere include 3 basic layers - ① Crust ② Core ③ Mantle.

Earth crust and solid upper part of mantle. It is made up of three types of rock ① Metamorphic ② Igneous ③ Sedimentary.

Upper thick layer of lithosphere is called soil which is mixture of minerals and organic matter soil is generally fertile and help in plant growth.

Function:

- ① It provides solid surface.
- ② It provides soil for plant growth.
- ③ " " surface " decomposition process.

- ④ Lithosphere provide minerals for different purpose.
- ⑤ " " land for agriculture "
- ⑥ " " " " civilization, infrastructure.

Biosphere : The part of earth that sustain life is called biosphere. It includes all living or non-living factors. (air, water, soil). plant & animal

Biosphere found in atmosphere above 2 Km's 9 to 10 Km's found in hydrosphere only few meters found in lithosphere.

Functions : Presence of life, oxygen, water.

Ecology and Environment?

The subject environment and ecology contain two basic components - ① Ecology ② Environmental Science.

Environmental Science is the study of environment and includes biological factor or as well as man-made factors.

The serious major issues which are connected with environment all types of pollution over population, urbanization, acid rain, global warming, unequal distribution of rain etc.

Ecology's Relationship

Ecology is the study of living or environmental factor. OR
Study of living beings or environment. OR
Study of biotic or abiotic factor which are dependent or

connect with each other.

eg Food chain, Carbon cycle

Scope of Subject in Major Area :

- ① Natural Resources : Their conservation and management, environmental science is useful in the conservation & management of different types of natural resources, eg Forest, water, minerals, plant, energy etc.
- ② Pollution : Environmental science help in control different type of pollution (air, water, noise, land, thermal etc.).
- ③ Issue Related to environment and development : Environmental science help to find out solutions against complex issues of environment and development like unequal distribution of rain, change of climate, over population, global warming, urbanization and all type of pollution etc.
- ④ Job Opportunities :
 - ① Industries
 - ② Academics
 - ③ Government Sector
 - ④ Green media
 - ⑤ Green marketing
 - ⑥ Research & Develop.
 - ⑦ NGO (Non-governmental orga.)

Ecosystem :

Ecosystem can be define as structural or functional unit of biosphere. It include two basic components (biotic and abiotic) both are connected and exchanging energy (material) b/w them. The term of ecosystem is given by Sir Tansley in 1935. eg. Forest ecosystem, grassland, river, pond ecosystem.

Types of Ecosystem and Classification of Ecosystem -

Ecosystem divided in 3 basic categories -

- ① Terrestrial ② Aquatic ③ Man-made ecosystem

- ① Terrestrial ecosystem: The interaction b/w organism and environment on the earth is called terre. ecos. eg. Forest, grassland, ~~into~~ desert ecosystem. The %age of salt is less than 5. ~~conc~~

Marine Freshwater Ecosystem

Aquatic ecosystem: The salt concn' is 35%. They are divided in -

- ① Freshwater ecosystem
② Marine "
③ Brackish water "

- ① Freshwater ecosystem salt concentration is less than 5.

They are divided in

① Static water or still water or stagnant water -
eg - pond, lake.

② Running or lentic water : eg. River, Sea

③ Marine Salt concentr is 35%. eg. Sea or ocean.

④ Brackish : ^{water in} Salt concentr. b/w 5 to 35. Higher than 5 and less than 35%.

eg. Mangroves, Delta & estuary.

An estuary is a place where river or sea open in sea mouth is called estuary ecosystem.

Components of ecosystem - Two basic

① Biotic factor ② Abiotic factor

Biotic factor divided in three basic categories -

① Producer or Autotrophs ② Consumer or Heterotrophs ③ Decomposer.

<u>Consumer</u>	→	Herbivores	Primary	or Plant eater
	→	Carnivores	Secondary	or Animal eater
	→	Omnivores	Tertiary	or Plant & animal eater

Factors of Abiotic

- ① Physical ② Chemical ③ Adaptive factors
↓ ↓ ↓
aeration including all Physical & chemical properties of soil
soil chemicals and soil texture.

- ~~L~~ BOD (Biological Oxygen Demand)
- ~~L~~ COD (Chemical " " " ")
- ~~h~~ DO (Dissolve Oxygen)

Natural Resource :	Perpetual & Solar, Wind energy which are not affected by human activities)	Abstract. e.g. Sound.	Resources
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Forest Resources:

- ① Economical Importance ② Ecological Importance
③ Value for tribes ④ Cultural values

Deforestation : Cause & Effects.

- = 1. Function & Structure of Atmosphere
- = 2. Job opportunity.
- = 3. Awareness
- = 4. Ecosystem → Classification (Man made / Fresh water)
- = 5. Food chain
- = 6. Energy Pyramid
- = 7. Resources → Abstract and Perpetual with eg.
- = 8. Conservation of water & minerals with uses.
- = 9. Importance of forest.
- = 10. Cause & effect of deforestation.