Unit-I

Environment, Ecosystem and Biodiversity

Introduction:

"The earth provides enough to satisfy every person's need but not every person's greed

Mahatma Gandhi

Environment is derived from the French word Environ → Surroundings.

Each & everything around us is called as environment

Example:

Cow —eats→ plant —soil→ Nourishment —provided by→ Nitrogenous matter —excreted→ Animal or by the dead bodies of other plant and animals.

The degradation of the environment has became a serious problem. The pollution of soil, water and air leads to loss of valuable natural resources

Definitions:

Environment:

The sum of total of all the living and non-living things around us influencing one another

Environmental Science

Study of the environment, its biotic (biological) and abiotic (non biological) Components and their interrelationship.

Environmental Engineering

The application of engineering principles to th

protection and enhancement of the quality of the environment and to the enhancement and protection of public health and welfare

Environmental Studies (or) Environmental Education

The process of educating the people for preserving quality environment

Types of environment

* Natural Environment
* Man-made Environment

Natural Environment:

It is characterized by natural Components All biotic (living) & abiotic components (non-living) are created through a natural process.

Creation of these biotic & abiotic Compone do not require any human support.

ex:

Soil, water, air etc.

Man-made Environment:

Man made environment is created by ma

He modifies the environment using moder technologies, according to his needs to a great extent

ex:

House, road, Schools etc

Components of the environment

- ✓ Abiotic (or) Non-living Components
- ✓ Biotic (or) Living Components
- ✓ Energy Components

Abiotic (or) Non-living (or) physical Components

Abiotic (Non-living components of the environ
components

ex: Air, water, soil & minerals

These abiotic components enter the body
of living organisms directly (or) indirectly, take
part in metabolic activities and then return to
environment.

Types of abiotic components

* Atmosphere
* Lithosphere
* Hydrosphere

Atmosphere:

The cover of air, that envelopes the earth
is known as the atmosphere.

Atmosphere extends upto 500kms from the
earth surface.

78% of Nitrogen
21% of Oxygen
1% of other gases

Structure of atmosphere

- ✓ Five concentric layers
  * Troposphere (0-18kms)
  * Stratosphere (18-50kms)
  * Mesosphere (50-85kms)
  * Thermosphere (or) Ionosphere (85-5
  * Exosphere (upto 1600km)

Troposphere: * Lower portion of the atmosphere

* 75% of atmospheric air

* O_2, CO_2, N_2 & water (clouds)

Stratosphere:

- Above the troposphere
- Ozone

Mesosphere:

- Above the Stratosphere
- N_2, O_2, O_2^+ & NO^+

Thermosphere (or) Ionosphere:

- Above the mesosphere
- O_2^+, O^+, NO^+

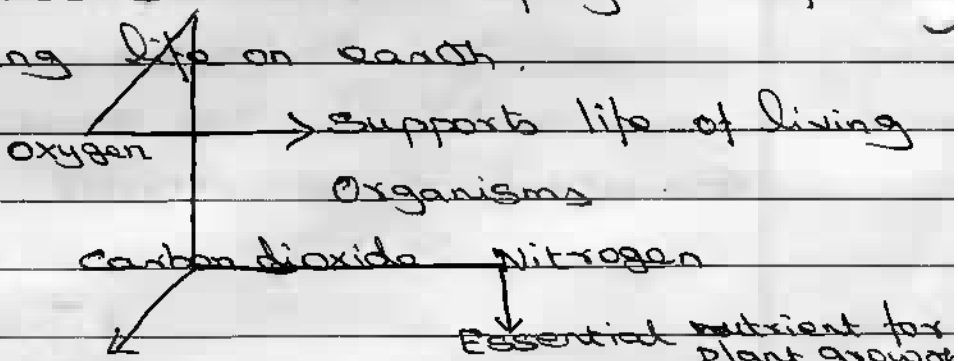
Exosphere:

- Upper most layer of the atmosphere
- H_2 & He.

Functions of atmosphere:

It maintains the heat balance on the earth by absorbing the IR radiations.

The Gaseous constituents play an important role in sustaining life on earth.



Lithosphere:

Soil + Rock → Lithosphere

Functions of Lithosphere:

It is a home for human beings & wildlife

It is a storehouse of minerals & organic matters

Hydrosphere

Aqueous envelope of the earth is called hydrosphere.

About 97% of earth's water is in oceans which is too salty & not fit for drinking

Only 3% is available as fresh water

Functions of hydrosphere

It is used for drinking purpose & also supports the aquatic life

It is used for power production, industries & transport

Biotic (or) Living Components

Living components of the environment are called biotic components

Ex: Animals, plants & micro organisms

Biosphere:

The biological environment where the living organisms live & interact with physical environment is called biosphere

Functions of biosphere:

plants through photosynthesis produce oxygen in the atmosphere

Animals inhale oxygen during respiration & give out CO_2, which is again utilised by plants during photosynthesis

Energy Components:

The Components of energy flows across biotic and abiotic Components, which play an important role to maintain the life of living Organisms

Ex:

Solar energy, Nuclear energy, geochemical energy.

Scope of environmental Studies:

* To get an awareness & Sensitivity to the total environment and its related problems.
* To motivate the active participation in environmental protection & improvement
* To develop skills for identifying and Solving environmental problems
* To know the necessity of Conservation of Natural resources.
* To evaluate environmental programmes interms of Social, economic, ecological and aesthetic factors

Importance or Significance of environmental Studies:

The air we breathe, the water we drink, the food we consume and the land we live on are all Contaminated by the industrial activities.

There is no zero pollution industry Because of the lack of self discipline & not worrying about our future generation, the valuable resources are polluted.

To Solve the above problems, the knowledge of environmental Studies is very important

• By environmental Studies people will understand the concept of "need of development without destruction of environment".

• Environmental Studies develop a concern and respect for the environment.

• Environmental studies have a direct relation to the quality of life we live.

• Environmental Studies inform the people about their effective role in protecting the environment by demanding changes in laws & enforcement systems.

• Through environmental studies, people can gain the knowledge of different types of environment and the effects of different environmental hazards.

Need for public awareness:

Increasing population, Urbanisation and poverty have generated pressure on the natural resources and lead to a degradation of the environment.

To protect or prevent the environment from the pollution, Supreme Court has ordered and initiated the environmental awareness to the public through Government and Non-Government agencies to take part to protect our environment.

Importance of public (or) Community participation

Environmental pollution cannot be removed by the laws alone.

But it can be achieved by active public participation only.

public participation plays a vital role in

in the protection of Environment

The public participation is useful in law making process and Controlling the pollution activities

Types of public participation:

* Pressure Group
* Watch dog
* Advisory Council
* Enforcing the environmental laws

Pressure Group: It may be formed to influence the Government on one hand and the industries on the other hand

Watch dog: The public can act as watch dog to protect the interests of public against environmental hazardous activities.

Advisory Council: The public can also act as advisory council and agencies, which is Constituted to keep the environment suitable for living.

Enforcing the environmental laws: The services of public can be utilized to enforce the environmental laws

Many Countries have accepted the Concept of public participation in environmental manageme