EVS

Unit 1: Basic Concepts of Environment

Environment :

Environment is the condition in which organisms live and which consist of air, water, soil and sunlight, and are the basic needs of all living beings and plant life, to carry on the life functions. It also consist of temperature, wind, energy etc.

Thus environment consist of both ~~bio~~ biotic and abiotic substances.

It creates the favourable conditions for the existence and development of living organisms.

Environment may be defined in a number of ways.

1. It can be defined as the circumstances or conditions that surround an organism or a group of organisms.

2. Environment is the sum of all social, economical, biological, physical or chemical factors which constitute the surroundings of man, who is both the creator and moulder of his life.

3. The complex of social or cultural conditions that affect an individual or community may also be termed as environment.

Component of Environment

1. Abiotic or non-living component (Physical)
2. Biotic ~~compo~~ or living component
3. Energy

1. Abiotic or Non-living component (Physical)

(a) Lithosphere (Solid)
(b) Hydrosphere (liquid)
(c) Atmosphere (gas)

2. The biotic or living Component consist of flora and fauna including man.

3. The energy component includes solar energy, geothermal energy, hydroelectric energy, atomic energy etc.

Segments of Environment :

There are four segments of the environment

1. Atmosphere : The unique atmosphere present on the earth is supporting property for existence of life. It is the protective blanket of gases surrounding the hostile environment of outer space. It absorb most of the cosmic rays from outer space and a major ~~no~~ portion of the

electromagnetic radition from the ~~Sun~~ Sun. It filters out tissue damaging ultra violet radiations.

The atmosphere plays a key role in maintaining the heat balance of the earth through absorption of infra-red-radiation emitted by the sun and re-emitted from the earth.

Composition of atmosphere

Major Component

N_2 (Nitrogen) = 78·09%.

O_2 (Oxygen) = 20·94%.

Minor Component

Ar (Argon) = $9·34 \times 10^{-1}$%.

CO_2 (Carbon dioxide) = CO_2 ($3·25 \times 10^{-2}$%)

Trace gases :

Neon, helium, methane, water vapour, krypton, nitrous oxide, xenon, hydrogen, sulphurdioxide, ozone, ammonia, carbon ~~monoxide~~, monoxide, nitrogen dioxide etc.

The atmosphere is the source of oxygen, essential for life on earth and CO_2 essential for plant photosynthesis. The atmosphere has Nitrogen which is essential for protein synthesis.

The regions of atmosphere

Region Range	Altitude Range(km)	Temp^n	Important Chemical Spcies
Troposphere	0 - 11	15·6 - 56	N_2, O_2, CO_2, H_2O
Stratosphere	11 - 50	-56 to -2	O_3
Mesosphere	50 - 85	-2 to -92	O^{2+}, NO^+
Thermosphere	85 - 500	-92 - 1200	O^{2+} O^+, NO^+

Similarly, The Ozone (O_3) present in the Stratosphere plays an important role by providing protective shield for life on earth from the injuries effects on the sun's ultra violet radiations.

The atmosphere has polluted, due to the different activities of human beings with the progress of science and technology.

2. Hydrosphere

Hydrosphere includes all types of water resources - oceans, seas, rivers, lakes, reservoirs, glaciers, polar icecaps and ground water. Earth contains a total volume of about 1400 million cubic kilometer covers 71% of earth's surface. Again, 97% of the earth's water supply is the ocean which is unfit for human consumption and for other uses because of its salinity. Only 3% ~~is available~~ fresh water is available for use in earth. Again, 79% of this 3% is locked in the polar icecaps and glaciers, 20% is locked as underground water and only 1% is readily available water (rivers, lakes, streams, reservoirs)

3. Lithosphere

This is the outer mantle of the solid earth consisting minerals and soil. Soil comprises a complex mixture of minerals organic matter, air and water. Soil is the most important part of Lithosphere. It is the storehouse of minerals, reservoir of water, producers of crops, home of wild life and livestock.

4. Biosphere

Life existing area of earth is known as Biosphere. This layer extends to about 6-8 km into the atmosphere and as much as 8-10 km below into the depth of the sea. This is the area of living organisms and their interactions with the environment. The biosphere and the environment are considerably influenced by each other.

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Environmental Problem

Natural → Earthquake, Volcanoes, eruption, Excessive rainfall, Drought, Landslides, Storms, Tsunamis etc.

Man made → Population increase, ~~Def~~ Depletion of Natural Resources, Pollution, Deforestation, Industrial and automobile exhausts, Burning of fossil fuel, War.