

Ecology and Environment

Very Short Answer Questions:

1. Define the term “ecology”?

A. The word “Ecology” was derived from the Greek terms - *oikos* and *logos* which means ‘house’ and ‘study’ and it can be defined as “the study of the relationship of organisms with their environment”. The term ecology was coined by Ernst Haeckel.

2. What is Autecology?

A. Autecology is the ecology of single species/population in relation to its environment.

3. What do you call the study of interactions of organisms of a community?

A. Synecology.

4. Define a community?

A. It is an association of the interacting members of populations of different autotrophic and heterotrophic species in a particular area.

5. What is an eco-system?

A. An ecosystem is a functional unit of the bio sphere in which members of the community interact among themselves and with the surrounding environment.

6. What is a biome? Name any two biomes you studied?

A. A ‘biome’ is a large community of plants and animals that occupies a vast region.

Ex: Tropical rain forest, desert, tundra (terrestrial biomes) fresh water biomes, marine biome (aquatic biomes).

7. How do the fish living in Antarctic waters manage to keep their body fluids from freezing?

A. Fishes store glycerol as anti-freezing agent in their blood to avoid freezing in winter.

8. How does your body solve the problem of altitude sickness, when you ascent tall mountains?

A. The body compensates low oxygen availability by increasing red blood cell production and increasing the rate of breathing.

9. Name the structural components of an ecosystem?

A. The structural components of ecosystem are biotic and abiotic factors. Abiotic components are light, temperature, water, pressure, etc. Biotic components are producers, consumers and decomposers.

10. Distinguish the terms Phototaxis and Photokinesis?

A. Phototaxis is oriented locomotion of an organism towards or away from the direction of light.

Ex: Euglena shows positive phototaxis, Earthworm shows negative phototaxis.

Photokinesis is the influence of light on non – directional movement of organisms

Ex: Larva of Mussel crab, *Pinnotheres maculatus*.

11. What are circadian rhythms?

A. Biological rhythms that occur in a time period of 24 hours are called circadian rhythms.

12. What is Photoperiodism?

A. i) The response of organisms for the photoperiod is called Photoperiodism.

ii) Photoperiod is the duration of light hours in a day.

Ex: Reproduction of flowers, migration of birds.

13. Distinguish between photoperiod and critical photoperiod?

A. **Photo Period:** Duration of light hours is known as photoperiod

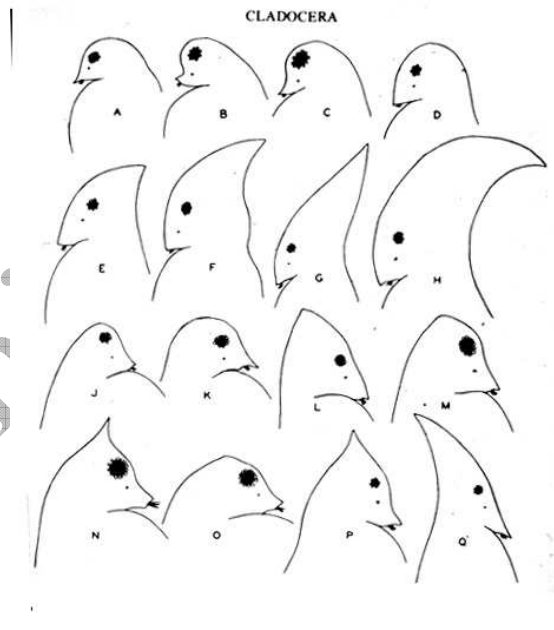
Critical Photoperiod: The specific day length which is essential for the initiation of seasonal events is called critical photoperiod.

14. Mention the advantages of some UV rays to us?

- A. 1) UV radiation kills the microorganisms present on the body surface of animals
2) UV radiation helps in the conversion of sterols present in the skin into vitamin D in mammals.

15. What is Cyclomorphosis? Explain its importance in Daphnia?

A. The cyclic seasonal morphological variations among certain organisms is called “Cyclomorphosis”. In the case of Daphnia it is an adaptation to “stabilize the movement” in water and can “resist the water currents better” to stay in the water rich in food materials.



16. What are ‘regulators’?

A. Organisms these are able to maintain homeostasis by physiological means which ensure constant body temperature, constant osmotic concentration are called “regulators”.

Ex: Mammals and birds.

17. What are Conformers?

- A. Living organisms which cannot maintain a constant internal environment are described as “conformers”.

18. Define Commensalism and give an example?

- A. This is the interaction in which one species benefits and other is neither harmed nor benefited.

Ex: Barnacles growing on the back of a whale benefit while the whale derives no noticeable benefit.

19. Define mutualism. Give one example?

- A. This is the interaction that benefits both the interacting species.

Ex: Lichens represent an intimate mutualistic relationship between a fungus and photosynthesizing algae.

20. Define Amensalism. Give one example?

- A. Amensalism is an interaction in which one species is harmed whereas the other one is unaffected.

21. What is meant by interspecific competition? Give one example?

- A. A process in which the fitness of one species is significantly lower in the presence of another species is called interspecific competition.

Ex: Competition between visiting flamingos and resident fishes in shallow South American lakes.

22. What is camouflage? Mention its significance?

- A. Some species of insects and frogs are cryptically coloured to avoid being detected easily by the predator. This phenomenon is called “Camouflage”.

23. What is Gause's Principle? When does it applicable?

A. When the resources are limited, the competitively superior species will eventually eliminate the other species. It is relatively easy to demonstrate in laboratory experiments.

24. Name the association that exists in Mycorrhiza?

A. The association that exists in mycorrhiza is called "Mutualism".

25. Distinguish between phytoplankton and zooplankton?

A.

Phyto Plankton	Zoo Plankton
Microscopic organisms those bear chlorophyll and forms producers in the lakes. Ex: Diatoms, Green algae, Euglenoids.	Microscopic organisms those do not bear chlorophyll and move through water current and forms primary consumer level in the lakes. Ex: Daphnia, rotifers.

26. Distinguish between neuston and nekton?

Neuston	Nekton
The animals living in the air water interface constitute the "neuston". Ex: Water strides beetles, larvae of mosquitoes.	The animals capable of swimming constitute the "nekton". Ex: Water scorpion, back swimmer, diving beetles.

27. What is Periphyton?

A. The animals that are attached to/creeping on the aquatic plants are called "Periphyton".

Ex: Water snails, hydras, nymphs of insects, etc

28. What is meant by osmotrophic nutrition?

A. Intake of pre-digested food material through the body surface is known as osmotrophic nutrition.

29. Explaining the process of “leaching”?

A. When the water soluble inorganic nutrients go down into the soil and get precipitated as unavailable salts that entire process is called “leaching”.

30. What is PAR?

A. PAR means “Photosynthetically Active Radiation”.

31. What is the percentage of PAR, in the incident solar radiation?

A. Of the incident solar radiation less than 50% of it is PAR.

32. Define Entropy?

A. As per the second law of thermodynamics the energy dispersed is in the form of unavailable heat energy and constitute the entropy.

33. Explain the terms GPP, NPP?

A. GPP means Gross Primary Productivity, and
NPP means Net Primary Productivity.

34. Distinguish between upright and inverted ecological pyramids?

A.

Upright Pyramid	Inverted Pyramid
Producers (I – trophic level biomass) are more in number than other trophic levels. Ex: Grazing food chain	Producers are less in number biomass than other trophic levels. Ex: Parasitic food chain

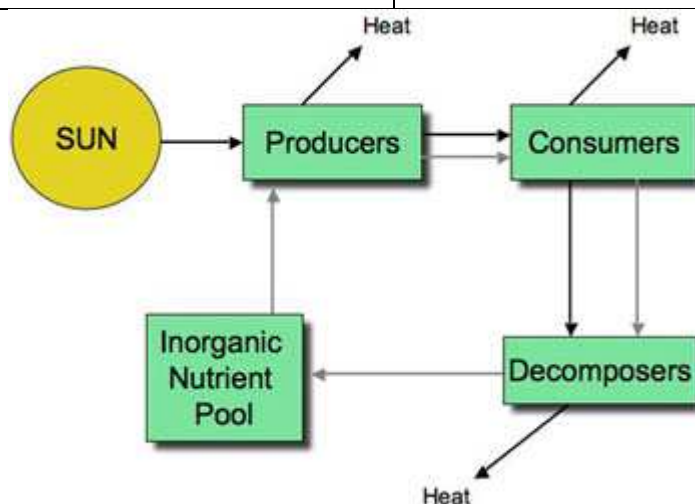
35. Distinguish between litter and detritus?

A. **Litter:** Litter is just like a manure that is formed by dead (Either plant (or) Animal clusters) organic matter. It is the primary food source in detritus food chain.

Detritus: It is a decaying organic matter being decomposed detritivores organisms.

36. Distinguish between primary and secondary productivity?

Primary Productivity	Secondary Productivity
1. The amount of biomass producer per unit area over a period of time by plants. 2. It can be divided into gross primary productivity (GPP), net primary productivity (NPP).	1. The rate formation of new organic matter by consumers. 2. It also can be divided into two types cross secondary productivity, net secondary productivity.



37. What is BOD?

A. BOD means Biological Oxygen Demand. It is a measure of the content of biologically degradable substances in sewage.

38. What is Biological Magnification?

A. Increase in the concentration of the pollutant (or) toxicant at successive trophic levels in an aquatic food chain is called “Bio – magnification”.

39. Why are incinerators used in hospitals?

A. Disposal of hospital wastes that contain disinfectants. Harmful chemicals and also pathogenic micro – organisms incinerators are used in hospitals.

40. Why are catalytic converters used in automobiles?

A. Fitting “catalytic converters” in the automobiles having expensive metals namely platinum, palladium and rhodium acts as catalysts which reduce emission of poisonous gases.

Short Answer Type Questions

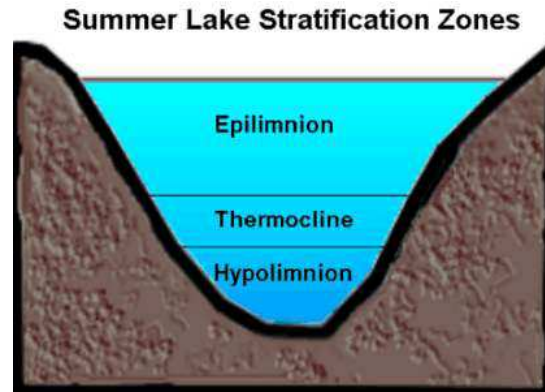
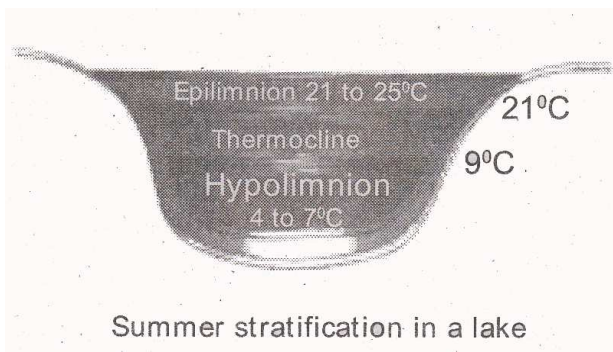
1. **Considering the benefits of a constant internal environment to the organism we tend to ask ourselves why the Conformers had not evolved to become Regulators. Explain.**

A. Thermoregulation is energetically expensive for many organisms. This is particularly true in small animals like shrews and humming birds. Heat loss or heat gain is a function of the surface area. Since small animals have a larger surface area relative to their volume, they tend to lose body heat very fast when it is cold outside. Then they have to spend much energy to generate body heat through metabolism. This is the main reason why very small animals are rarely found in the Polar Regions. During the course of evolution, the costs and benefits of maintaining a constant internal environment are taken into consideration. Some species have evolved the ability to regulate, but only over a limited range of environmental conditions, beyond which they simply conform.

2. **What is Summer Stratification? Explain?**

A. During summer in temperate lake, the density of the surface water decreases because of increase in its temperature (21–25°C). This 'upper most warm layer' of a lake is called epilimnion. Below the epilimnion there is a zone in which the temperature decreases at the rate of 1°C per meter in depth, and it is called thermocline or metalimnion. The bottom layer is the hypolimnion, where water is relatively cool, stagnant and with low oxygen content (due to absence of photosynthetic activity).

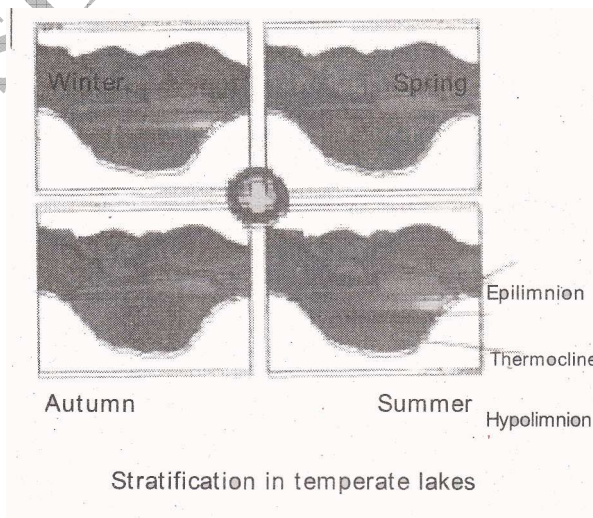
During autumn (also called fall). The epilimnion cools down, and the surface water becomes heavy when the temperature is 4°C and sinks to the bottom of the lake overturns bring about 'uniform temperature' in lakes during that period, this circulation during the autumn is known as fall. The upper oxygen rich water reaches the hypolimnion and the nutrient rich bottom water comes to the surface. Thus there is uniform distribution of nutrients and oxygen in the lake.

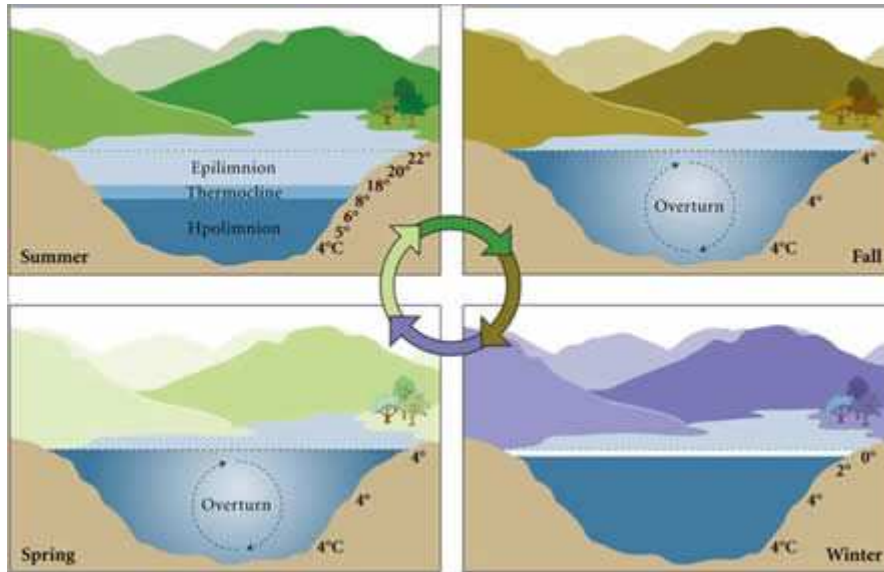


3. What is the significance of stratification in lakes?

A. Temperature variations occur with seasonal changes temperature regions. These differences in the temperature form thermal layers in water. These phenomena are called thermal stratification.

During autumn (also called fall), the epilimnion cools down and the surface water becomes heavy when the temperature is 4°C and sinks to the bottom of the lake. Overturns bring about uniform temperature in lakes during that period. This circulation during the autumn is known as the fall or autumn overturn. The upper oxygen rich water reaches the hypolimnion and the nutrient rich bottom water comes to the surface. Thus there is uniform distribution of nutrients and oxygen in the lake. In spring season the temperatures start rising when it reaches 4°C, the water becomes more dense and heavy and sinks to the bottom, taking oxygen rich water to the bottom. The upper oxygen rich water sinks down and bottom nutrient rich water reaches the surface.





4. Explain Van't Hoff Rule?

A. Van't Hoff, a Nobel Laureate in thermo chemistry proposes that with the increase of every 10°C , the rate of metabolic activities doubles. This rule is termed to as the Van't Hoff'Rule. Van't Hoff's rule can also be stated in reverse saying that the reaction rate is halved with the decrease of every 10°C . The effect of temperature on the rate of a reaction is expressed in terms of temperature coefficient of Q_{10} value. Q_{10} values are estimated taking the ratio between the rate of a reaction at $X^{\circ}\text{C}$ and rate of reaction at $(X-10^{\circ}\text{C})$. In the living systems the Q_{10} value is about 2.0. If the Q_{10} value is 2.0, it means, for every 10°C increase, the rate of metabolism doubles.

5. Unlike mammals the reptiles cannot tolerate environmental fluctuations in temperature. How do they adapt to survive in desert conditions?

A. Some organisms show behavioural response to cope with variations in their environment. Desert lizards manage to keep their body temperature fairly constant by behavioural means. They 'bask' (staying in the warmth of sunlight) in the sun and absorb heat when their body temperature drops below the comfort zone, but move into shade when the temperature starts increasing. Some species are capable of burrowing into the soil to escape from the excessive heat above the ground level.

6. How do marine animals adapt to hypertonic sea water?

- A. To overcome the problem of water loss, marine fishes have glomerular kidneys with less number of nephrons. Such kidneys minimize the loss of water through urine. To compensate water loss the marine fish drink more water and along with this water, salts are added to the body fluids and disturb the internal equilibrium. To maintain salt balance (salt homeostasis) in the body they have salt secreting chloride cells in their gills. Marine birds like sea gulls and penguins eliminate salts in the form of salty fluid that drips through nostrils. In turtles the ducts of chloride secreting glands open near the eyes. Some cartilaginous fishes retain urea and trimethylamine oxide (TMO) in their body to keep the body fluids isotonic to the sea water and avoid dehydration of the body due to exosmosis.

7. Discuss the various types of adaptations in fresh water animals?

- A. Animals living in fresh waters have to tackle the problem of endosmosis. The osmotic pressure of fresh water is very low and that of the body fluids of fresh water organisms is much higher. So water tends to enter into bodies by endosmosis. To maintain the balance of water in the bodies, the fresh water organisms acquired several adaptations such as contractile vacuoles in the fresh water protozoans, large glomerular kidneys in fishes etc. They send out large quantities of urine along which some salts are also lost. To compensate the 'salt loss' through urine fresh water fishes have 'salt absorbing chloride cells' in their gills. The major problem in fresh water ponds is – in summer most of the ponds dry up. To overcome this problem most of the fresh water protists undergo encystment. The fresh water sponges produce asexual reproductive bodies, called gemmules, to tide over the unfavourable conditions of the summer. The African lung fish *Protopterus*, burrows into the mud and forms a gelatinous cocoon around it, to survive, in summer.

8. Distinguish between euryhaline and stenohaline animals?

A.

Euryhaline	Stenohaline
Organisms those are adapted to stand wide fluctuations in salinity are called Euryhaline animals. Ex: Salmon fish, Eel fish...etc.	Those that cannot stand with fluctuations in salinity such are known as stenohaline animals. Ex: Aromatic insects.

9. Many tribes living in high altitude of Himalayas normally have higher red blood cell count (or) total haemoglobin than the people living in the plants. Explain?

A. Some organisms possess adaptations that are physiological and allow them to respond quickly, to a stressful situation. If you had ever been to any high altitude place (E.g. > 3,500M Rohtang Pass near Manali and Manasarovar, in Tibet) you must experienced what is called altitude sickness. Its symptoms include nausea (vomiting sense), fatigue (tiredness) and heart palpitations (abnormality in heart beat). This is because in the low atmospheric pressure of high altitudes, the body does not get enough oxygen. But, you gradually get acclimatized and overcome the altitude sickness. How did your body solve the problem? The body compensates low oxygen availability by increasing red blood cell production and increasing the rate of breathing.

10. An orchid plant is growing on the branch of mango tree. How do you describe this interaction between the orchid and mango tree?

A. An orchid growing as an epiphyte on a mango branch gets the benefit of exposure to light, while the mango tree does not derive any noticeable benefit. So in this interaction one species (orchid) gets benefitted the other (Mango) is neither harmed nor benefitted. So the interactions between orchid and mango tree is commensalism.

11. Predation is not an association. Support the statement.

A. Predation is not association (it is feeding strategy), it is an interaction between two different species. The predator gets benefits at the cost of the prey. Besides, acting as pipelines for

energy transfer across trophic level, predators play other important roles. They keep the prey populations under control. In the absence of predators, the prey species could achieve very high population densities and cause instability in the ecosystem.

12. What is the biological principle behind the biological control method of managing pest insects?

A. The prickly pear cactus introduced in Australia in the early 1920s caused havoc by spreading rapidly into millions of hectares of rangeland (vast natural grasslands). Finally the invasive cactus was brought under control only after a cactus feeding predator (a moth) was introduced in the country. Biological control methods adopted in agricultural pest control are based on the ability of the predators to regulate prey populations.

13. Discuss competitive release?

A. Another evidence for the occurrence of competition in nature comes what is called competitive releases. Competitive release occurs when one of the two competing species is removed from an area, thereby releasing the remaining species from one of the factors that limited its distributional range dramatically when the competing species is experimentally removed. This is due to the phenomenon called competitive release, Connell's field experiments showed that, on the rocky sea coasts of Scotland the larger and competitively superior barnacle *Balanus* dominates the intertidal area, and excludes the smaller barnacle *Chthamalus* from that zone. When the dominant one is experimentally removed, the populations of the smaller ones increase. In general, herbivores and plants appear to be more adversely affected by competition than the carnivores.

14. Explain brood parasitism with a suitable example?

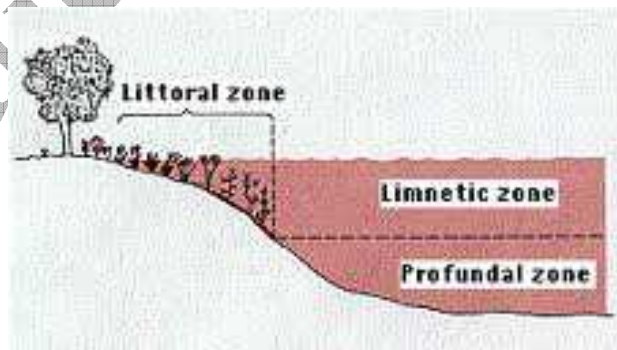
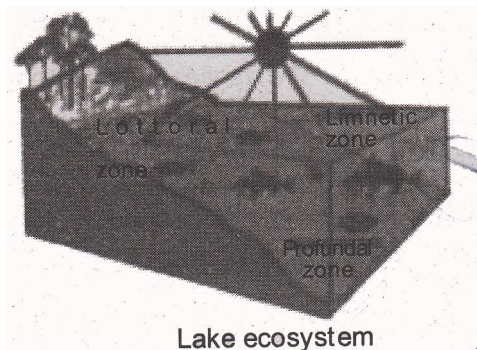
A. Certain birds are fascinating examples of a special type of parasitism, in which the parasitic birds lay its eggs in the nest of its host and let/allow the host to incubate them. During the course of evolution, the eggs of the parasitic bird have evolved to resemble the host's egg in size and colour to reduce the chances of the host bird detecting the foreign eggs and ejecting them from the host.

15. How do predators act as biological control?

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16. Write notes on the structure and functioning of an ecosystem?

A. 'An ecosystem' is a functional unit of nature, where living organisms interact among themselves and also with the surrounding physical environment. Ecosystem varies greatly in size from a small pond to a large forest or a sea. Many ecologists regard the entire biosphere as a global ecosystem on composite of all local ecosystems on earth. Since this system is too big and complex to be studied at one time it is convenient to divide it into two basic categories, namely natural and artificial. The natural ecosystems include aquatic ecosystems of water and terrestrial ecosystems of the land. Both types of natural and artificial ecosystems have several sub divisions.



17. Explain the different types of aquatic ecosystems?

A. Based on the salinity of water, three types of aquatic ecosystems are identified marine, fresh water and estuarine.

i) **The Marine Ecosystem:** It is the largest of all the aquatic ecosystems. It is the most stable ecosystem.

ii) **Estuarine Ecosystem:** Estuary is the zone where river joins the sea, sea water ascends up into the river twice a day (effect of high tides and low tides). The salinity of water in an

estuary also depends on the seasons. During the rainy season out flow of river water makes the estuary saline and opposite occurs during the summer. Estuarine organisms are capable of withstanding the fluctuations in salinity.

iii) The Freshwater Ecosystem: The fresh water ecosystem is the smallest aquatic ecosystem. It includes rivers, lakes, ponds, etc. It is divided into two groups the lentic and lotic. The still water bodies like ponds, lakes, reservoirs, etc., fall under the category of lentic ecosystems whereas, streams, rivers and flowing water bodies are called lotic ecosystems. The communities of the above two types are called lentic and lotic communities respectively. The study of fresh water ecosystem is called as limnology.

18. Discuss the main reason for the low productivity of ocean?

A. The primary productivity is very low in ocean ecosystem comparatively with terrestrial ecosystem.

Unlike terrestrial ecosystems, the majority of primary production in the ocean is performed by free living microscopic organisms called phytoplankton, large autotrophs such as the sea grasses and macro algae or sea weeds which are generally confined to the littoral zone.

The sunlight zone of the ocean is called the photic zone or euphotic zone. It is a thin layer upto 10 to 100m near the ocean's surface where there is sufficient light for photosynthesis to occur. Light attenuated down the water column by its absorption or scattering by the water itself. Net photosynthesis in the water column is determined by the interaction between the photic zone and mixed layer. In the deep water of ocean (Demersal) there is no light penetration for photosynthesis.

19. Discuss the factors that influence the process of decomposition?

(Or)

Define decomposition and describe the process and products of decomposition?

A. When organisms die, their bodies and the waste materials passed from the bodies of living organisms form a source of energy and nutrient for the decomposer organisms like saprotrophs detritivores and mineralisers. Saprotrophs absorb substances through general

body surface from the dead bodies. Detritivores ingest detritus as food. Mineralisers mineralize humus these decomposers are referred to as microconsumers of the ecosystem. Decomposition of organic matter includes three phases. In the first phase particulate detritus is formed by the action of Saprotrophs. Second stage is the rapid action of Saprotrophs and detritivores to convert detritus into humic substances. Third process is the slower mineralization of humus.

Decomposers also play an important role in an ecosystem by converting complex molecules of dead organisms into simpler and reusable molecules. The breakdown products of the dead organisms and waste materials are recycled in the ecosystem and are made available to the producers. The producers cannot continue to exist forever in the absence of the decomposers (as minerals are not returned to the environment).

20. What is primary productivity? Give a brief description of the factors that affect primary productivity?

A. Primary productivity is defined as the amount of biomass or organic matter produced per unit area over a period of time by plants, during photosynthesis. It can be divided into Gross Primary Productivity (GPP) and Net Primary Productivity (NPP).

a) Gross Primary Productivity: Of an ecosystem is the rate of production of organic matter during photosynthesis. A considerable amount of GPP is utilized by plants for their catabolic process (respiration).

b) Net Primary Productivity: Gross Primary Productivity minus respiratory loss (R), it the Net Primary Productivity (NPP). On average about 20 – 25 percent of GPP is used for the catabolic (respiratory) activity.

$$GPP - R = NPP$$

The Net Primary Productivity is the biomass available for the consumption of the heterotrophs (herbivores and decomposer).

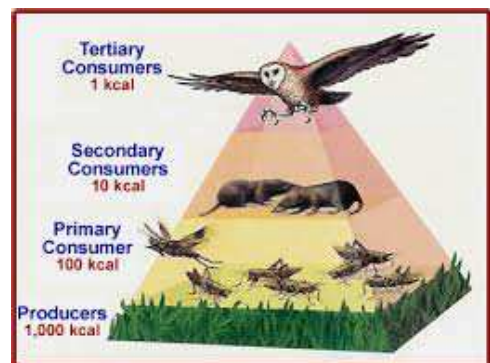
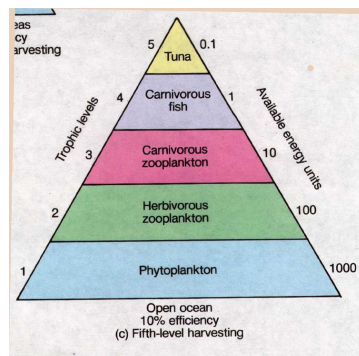
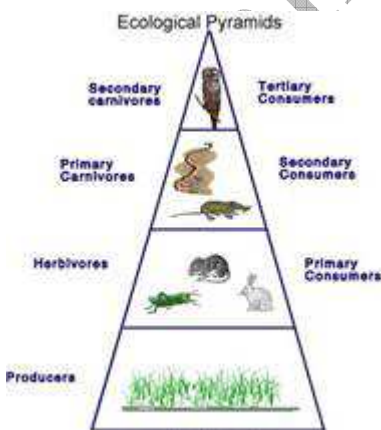
21. Define ecological pyramids and describe with examples, pyramids of numbers and biomass?

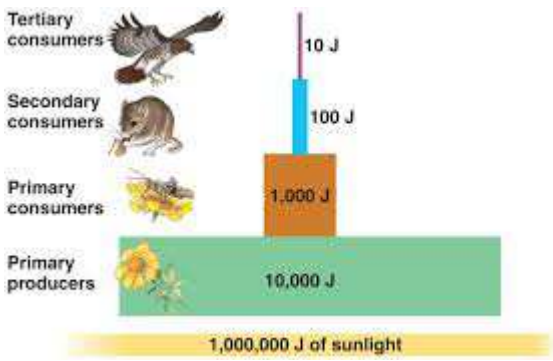
A. It is a graphical representation of the trophic structure and function of an ecosystem. The base of each pyramid represents the producers of the first trophic level, while the apex represents the tertiary or top level/top order consumers. The three types of ecological pyramids that are usually studied are (a) pyramid of number, (b) pyramid of biomass and (c) pyramid of energy. These pyramids were first represented by Elton, hence the name Eltonian pyramids/ecological pyramids.

Any calculations of energy content, biomass or numbers have to include all organisms at that trophic level. No generalizations we make will be true if we take only a few individuals of any trophic level into account. In most ecosystems, all the pyramids – of numbers, energy and biomass are uprights i.e., producers are more in number and biomass than the herbivores, and herbivores are more in number and biomass than the carnivores. Also energy (available) of a lower trophic level is always more than that at a higher level.

There are exceptions to this generalization. In the case of a parasitic food chain, the pyramidal numbers is inverted. A large tree (single producer) may support many herbivores like squirrels and fruit eating birds. On these herbivores many ectoparasites such as ticks, mites and lice (secondary consumers) may live. These secondary consumers may support many more top level consumers and also the hyperparasites. Thus in each trophic level from the bottom to the top, the numbers of organisms increase and form an ‘inverted pyramid’ of numbers.

The pyramid of biomass in sea is also generally inverted because the biomass of fishes far exceeds that of phytoplankton.

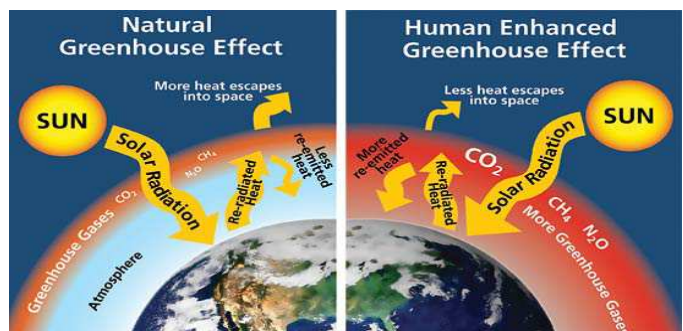
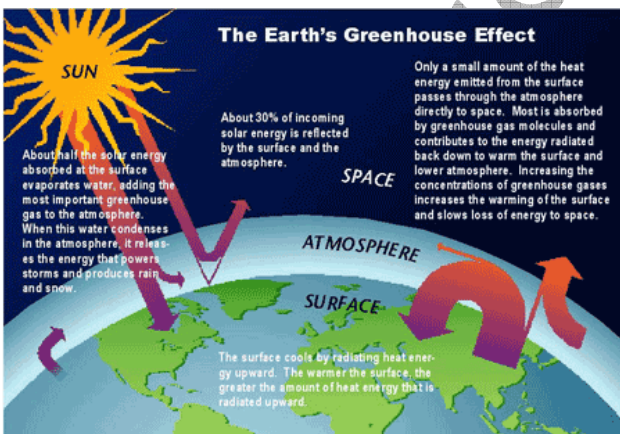




22. Discuss briefly the following:

- a) Green house gases
- b) Noise pollution
- c) Organic farming
- d) Municipal solid wastes

A. a) **Green House Gases:** The earth's surface re-emits heat in the form of infrared radiation but part of this does not escape into space as atmospheric gases (e.g., carbon dioxide, methane, etc) absorb a major portion of it. The molecules of these gases radiate heat energy, and a major part of which again comes back to the earth's surface, thus heating it up once again. The above mentioned gases – Carbon dioxide and Methane are considered as green house gases.



b) **Noise Pollution:** Undesirably high sounds constitute noise pollution. Sound is measured in units called decibels. The human ear is sensitive to sounds ranging from 0 to 180 db. O

db is threshold limit of hearing and 120 db is threshold limit for sensation of pain in the ear. Any noise above 120 db is considered to be a noise pollution. A brief exposure to extremely high sound level. 150 db or more generated by jet planes while taking off may damage ear drums causing permanent hearing impairment. Even long term exposure to a relatively higher level of noise of cities may also cause hearing impairment. Noise also cause auditory fatigue, anxiety, sleeplessness (insomnia), increased heart beat, altered breathing pattern thus causing considerable stress to humans.

c) Organic Farming: Integrated organic farming is a zero waste procedure, where recycling of waste products is efficiently carried out. They allow the maximum utilization of resource and increase the efficiency of production. A method practiced by Ramesh chandra Dagar, all these processes support one another and allow an extremely economical and sustainable venture. Natural bio – gas generated in the process can be used for meeting the energy needs of the farm. Enthusiastic about spreading information and helping in the practice of integrated organic farming, Dagar has created the Haryana Kisan welfare club.

d) Solid Waste: Anything (substance/material/articles/goods) that is thrown out as waste in solid form is referred to as solid waste. The municipal solid wastes generally consist of paper, food wastes, plastics, glass, metals, rubber, leather, textile, etc. The wastes are burnt to reduce the volume of the wastes. As the substitute for open – burning dumps, sanitary landfills are adopted. There is a danger of seepage of chemicals and pollutants from these landfills, which may contaminate the underground water resources.

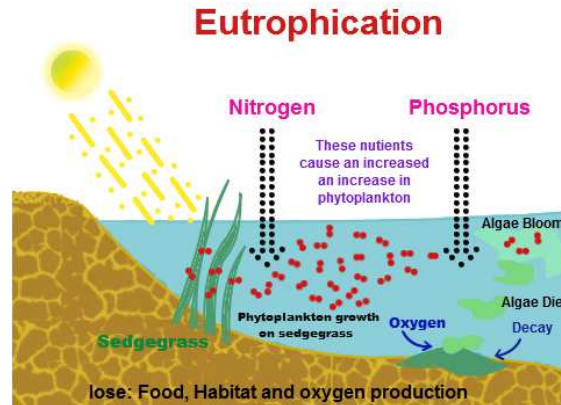
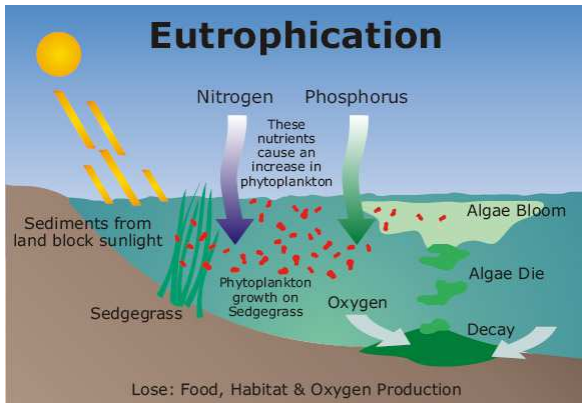
23. Write short notes on the following:

a) Eutrophication

b) Biological magnification

A. **a) Eutrophication:** Natural ageing of a lake by nutrient enrichment of its water is known as eutrophication. In a young lake, the water is cold and clear supporting little life. Gradually nutrients such as nitrates and phosphates are carried into the lake via streams, in course of time. This encourages the growth of aquatic algae and other plants. Consequently the animal life proliferates and organic matter gets deposited on the bottom of the lake. Over

centuries, as silt and organic debris piles up the lake grows shallower and warmer. As a result, the aquatic organisms thriving in the cold environment are gradually replaced by warm water organisms. Marsh plants appear by taking root in the shallow regions of the lake. Eventually the lake gives way to large masses of floating plants (bog) and finally converted into land.



b) Biological Magnification: Increase in the concentration of the pollutant or toxicant at successive trophic levels in an aquatic food chain is called biological magnification or Bio – magnification. This happens in the instance where toxic substance accumulated by an organism is not metabolized or excreted and this passes on the next higher trophic level. This phenomenon is well known regarding DDT and mercury pollution.

As shown in the above example, the concentration of DDT is increased at successive trophic levels. Starting at a very low concentration of 0.003 PPb (PPb part per billion) in water, which ultimately reached an alarmingly high concentration of 25 ppm (ppm = parts per million) in fish – eating birds through biomagnifications. High concentration of DDT disturb calcium metabolism in birds, which causes thinning of egg shell and their premature breaking, eventually causing decline in bird populations.

