7. Describe the components of an ecosystem.
Ans: The components of an ecosystem can be divided into two categories : biotic and abiotic.
(i) Biotic components:
(i) Producers - Green plants which can synthesize their own food.
(ii) Consumers - They do not synthesize their food. They may be

- Primary consumer/herbivores - consuming plants as food.
- Secondary and tertiary consumers or carnivores - They feed on either herbivores or carnivores.

(iii) Decomposers - These organisms breakdown the dead bodies or waste products of plants and animals into simpler inorganic compounds.
(ii) Abiotic components:
(i) Climatic components

- Light
- Temperature
- Wind
- Atmospheric gases
- Rain
- Atmospheric humidity

(ii) Soil factors

- Organic materials
- Minerals
- Soil, water
- Soil air

(iii) Topographic factors

- Altitude
- Direction and steepness slope

8. Define ecological pyramids and describe with examples, pyramids of number and biomass.
Ans: Ecological pyramid is a graphical method to show the number of organisms or biomass or amount of energy present at different trophic levels. Pyramid of number: Number of individuals at each trophic level is shown in pyramid. The pyramid of number (for example of a grassland) is upright. In this there is a decrease in the number of organisms starting from primary producers (plants) to top consumers (carnivores). Pyramid of biomass : Pyramid of biomass is graphic representation of amount of biomass per unit area sequence wise in rising trophic levels with producers at the base and top carnivores at the apex. Pyramids of biomass of a tree or . grassland ecosystem are upright and the pyramid of a pond ecosystem is inverted.

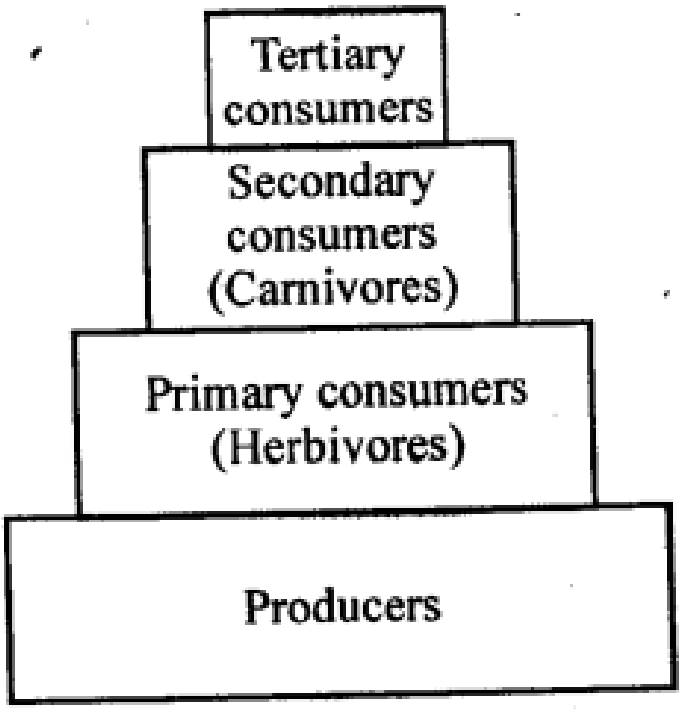

Fig. : Pyramid of number in a grassland ecosystem

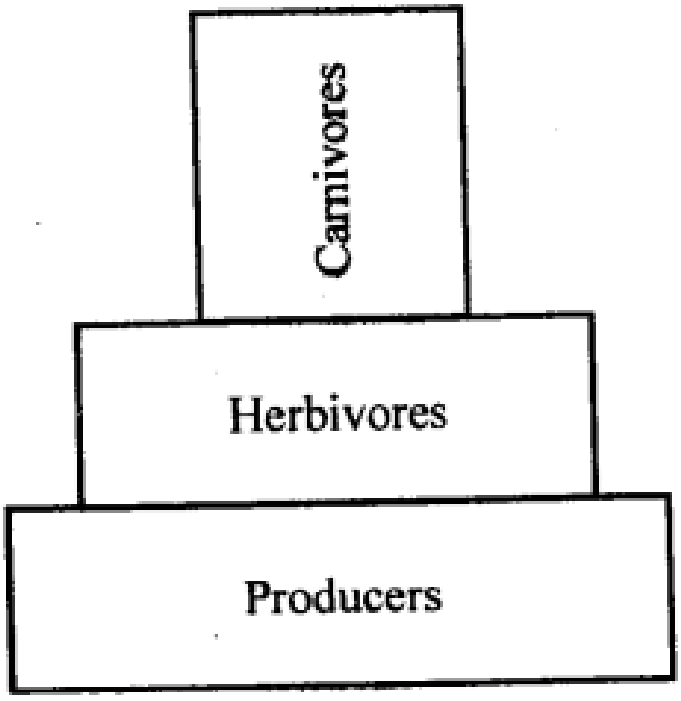

Fig. : Pyramid of biomass in a grassland ecosystem

9. What is primary productivity? Give brief description of factors that affect primary productivity.
Ans: Primary productivity of an ecosystem is the amount of energy fixed or biomass synthesized by primary producers or green plants per unit area per unit time during photosynthesis. Factors affecting primary productivity are -

- Plant species inhabiting a particular area
- Sunlight
- Temperature
- Soil water
- Nutrients

lit deserts, sunlight is abundant but water is scarce or nutrients are lacking. Therefore, in such areas, water & nutrients supply become the limiting factors.

10. Define decomposition and describe the processes and products of decomposition.
Ans: Decomposition is the breakdown of dead or waste organic matter by micro-organisms. Decomposition is both physical and chemical in nature.Process involved in decomposition are - fragmentation, catabolism & leaching.

- Fragmentation - The process primarily due to the action of detritus feeding invertebrate (detritivores) causes it to break into smaller particles. The detritus gets pulverized when passing through the digestive tracts of animals. Due to fragmentation, the surface area of detritus particles is greatly increased.
- Catabolism - Enzyme degradation of detritus into simpler organic substances by bacteria and fungi.
- Leaching - The process by which nutrients, chemicals or contaminants are dissolved & carried away by water, or are moved into a lower layer of soil.

Various inorganic and organic substances are obtained by decomposition. Inorganic substances are obtained in the process of mineralization while organic substances are obtained in humification. A dark coloured amorphous substance called humus is formed by decomposition. Humus is highly resistant to microbial action & undergoes extremely slow decomposition. It serves as a reservoir of nutrients.

11. Give an account of energy flow in an ecosystem.
Ans: Flow of energy in an ecosystem is unidirectional.The ultimate source of energy is sun. The solar energy is captured by the green plants which utilize it in synthesizing their own food. The energy fixed by the green plants is transferred to herbivores which feed on them. The energy is then transferred to higher trophic levels (carnivores). At every step, considerable amount of energy is lost. According to 10% law, only 10% of total energy stored in a trophic level is transferred to the next trophic level of a food chain.

12. Write important features of a sedimentary cycle in an ecosystem.
Ans: The movement of nutrient elements through various components of an ecosystem takes place by a biogeochemical cycle. It is of 2 types - gaseous and sedimentary. A nutrient that does not enter the atmosphere easily is said to have a sedimentary cycle. Sedimentary cycle involve cycling of sulphur, phosphorus etc. which are located in earth's crust.
Phosphorus is a very important element as it is present in various substances found in living beings. The cycling of phosphorus in an ecosystem occurs in such a way that plants obtain it from soil or rocks. The animals or primary consumers obtain it from plants. Secondary consumers or carnivores take it from herbivores while omnivores (like man) receive it both from plants and animals. Phosphorus present in organisms is also released during decomposition.

13. Outline salient features of carbon cycling in an ecosystem.
Ans: Carbon is an important constituent of living matter. Green plants take it in the form of CO_2 from atmosphere and fix it as carbohydrates. Carbon which is also present in proteins, fats etc. is transferred to the organisms of other trophic levels. Apart from being released in atmosphere as CO_2 during respiration, carbon is also released in atmosphere through burning of wood, fossil fuel and decomposition of organic matter by microbes.

********** END **********