CLASS X
BIOLOGY
CHAPTER 17
OUR ENVIRONMENT

NOTES

- **ENVIRONMENT** includes anything in our surrounding including living and physical components.
- The growth of human population increases in demand for food, water, shelter, electricity, roads, automobiles and numerous other commodities.
- These demands exert a tremendous pressure on our natural resources and bring about undesirable changes in physical, chemical and biological characteristic in our environment.
- The government has passed the **Environment Protection Act 1986 to protect and improve the quality of our environment**.
- Solid waste and sewage create great environmental problem when release to the environment beyond the capacity of nature to degrade them.
- Substances may be **biodegradable** or **non-biodegradable. Biodegradable** substances can be broken down naturally into harmless products and are usually natural. **Non-Biodegradable** substances cannot be easily broken down naturally into harmless products, usually man-made and persist in the environment for long period of time.
- The average output of waste is **~120 tonnes/day in Imphal City.**
- Due to lack of proper collection facility and disposal site, waste is dumped.

ECOSYSTEM: All the living organisms in an area interacting with the environment are known as **ecosystem.**

- An ecosystem has two components namely **biotic** (microorganisms, plants and animals) and **abiotic** components (temperature, rainfall, wind, soil, minerals etc.).
- **Decomposers** are agent of decomposition and release nutrients to the soil.
- **The differences between Abiotic and Biotic components**

Abiotic components	Biotic components
They are the non-living components of any habitat.	They are the living components of a habitat.
Examples include light, water, air, temperature, inorganic nutrients, etc	Examples include plants, animals, etc.

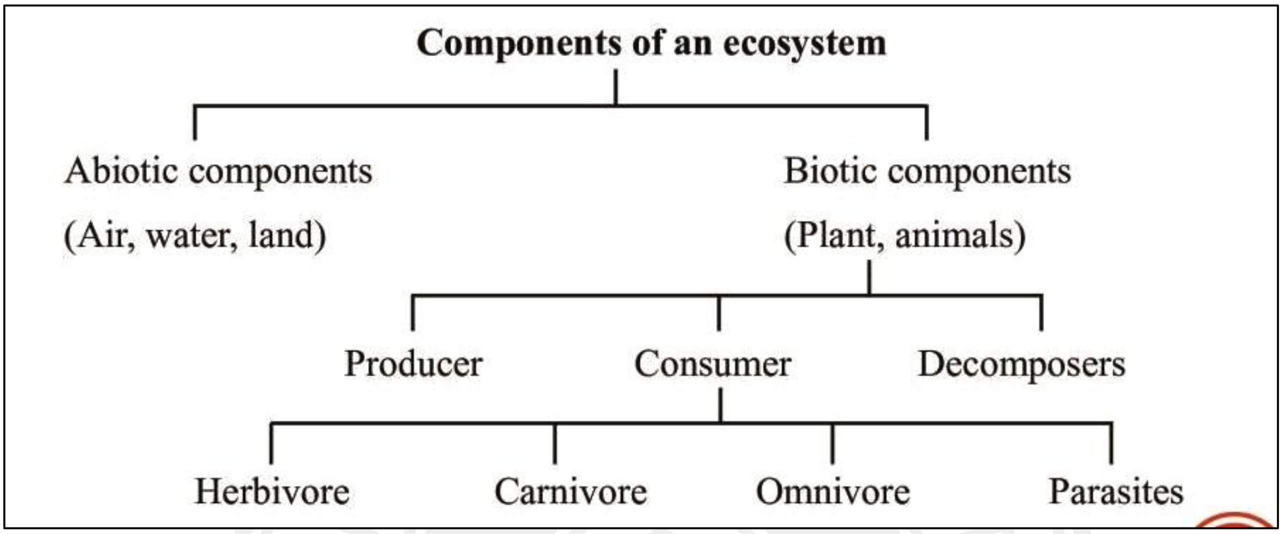


Fig. Components of an Ecosystem

NATURAL ECOSYSTEMS (Grassland, Forest, Pond etc.) and ARTIFICIAL ECOSYSTEMS (Garden and Crop field etc.):

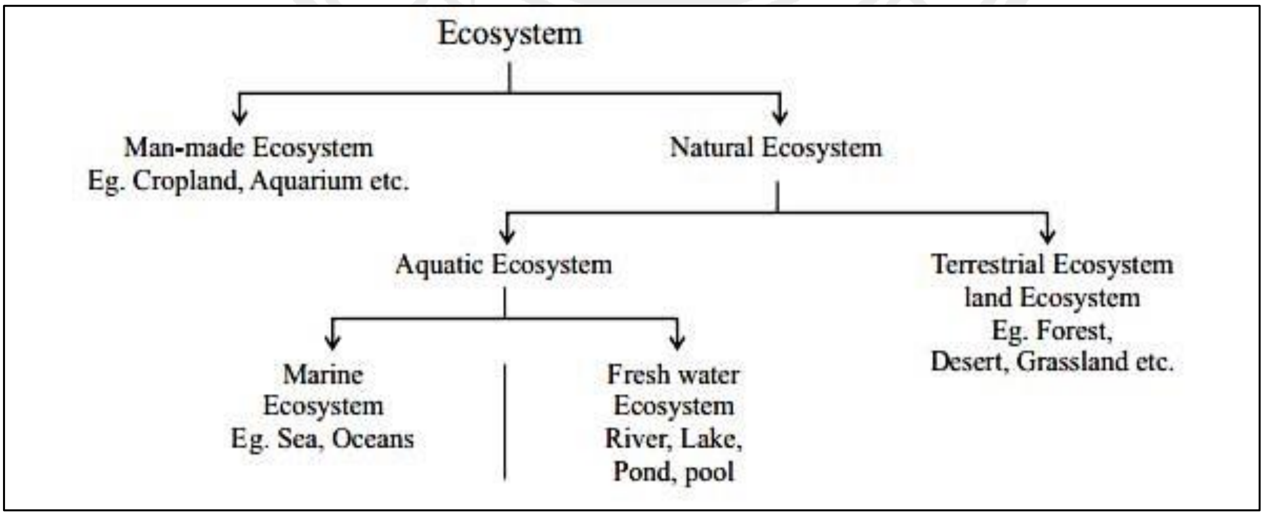


Fig. Types of an Ecosystem

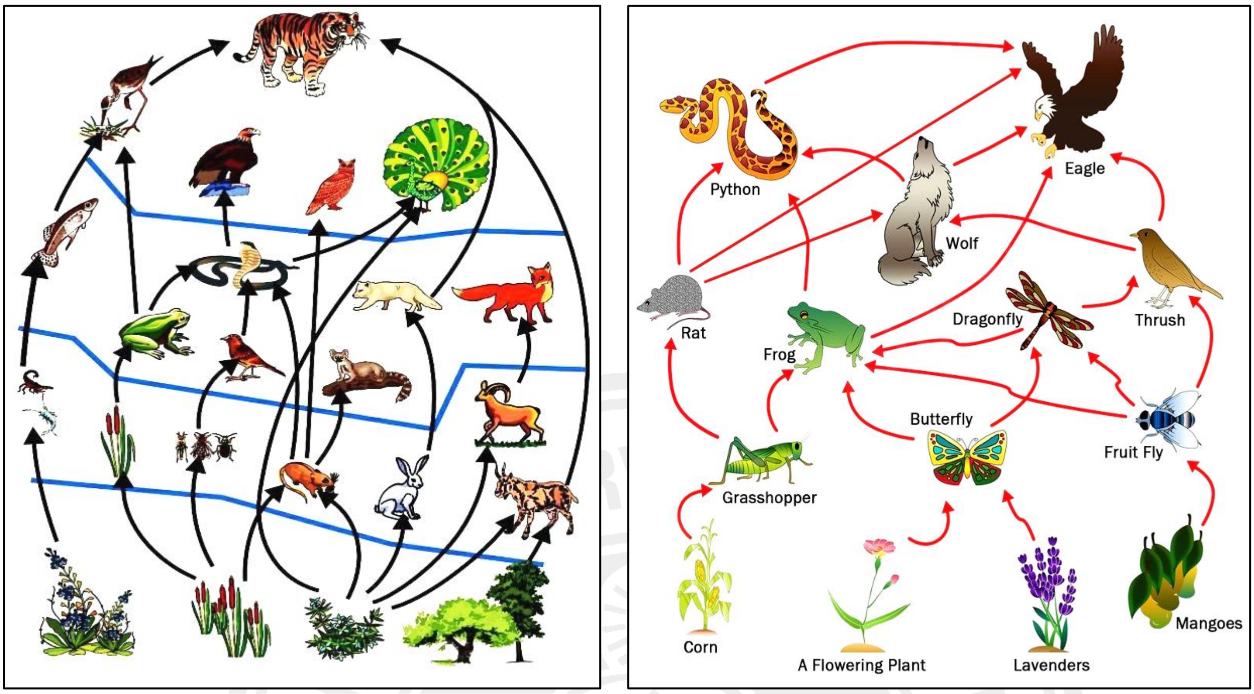


Fig. Diagrams showing Food Webs consisting of many Food Chains

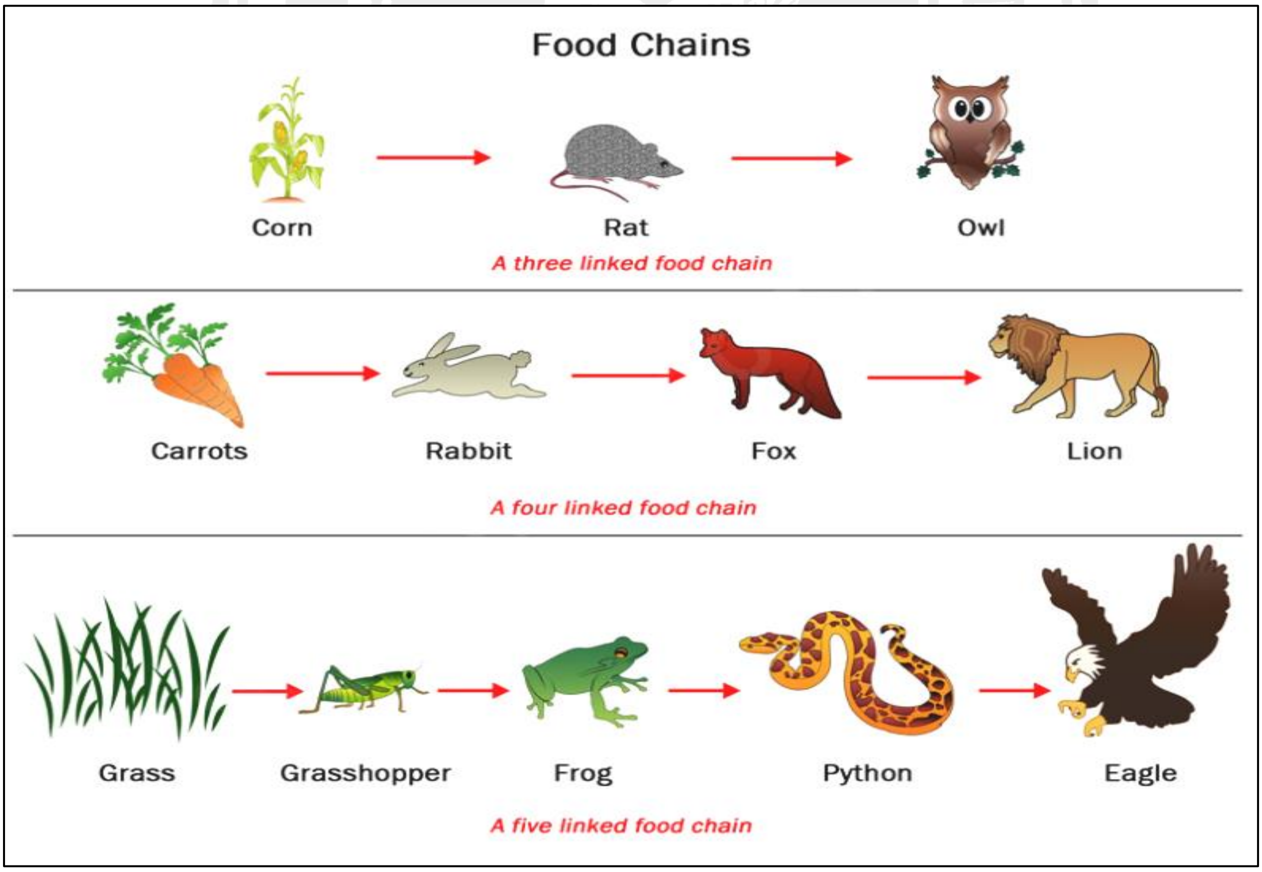


Fig. Diagrams showing consisting of 3-5 linked Food Chains

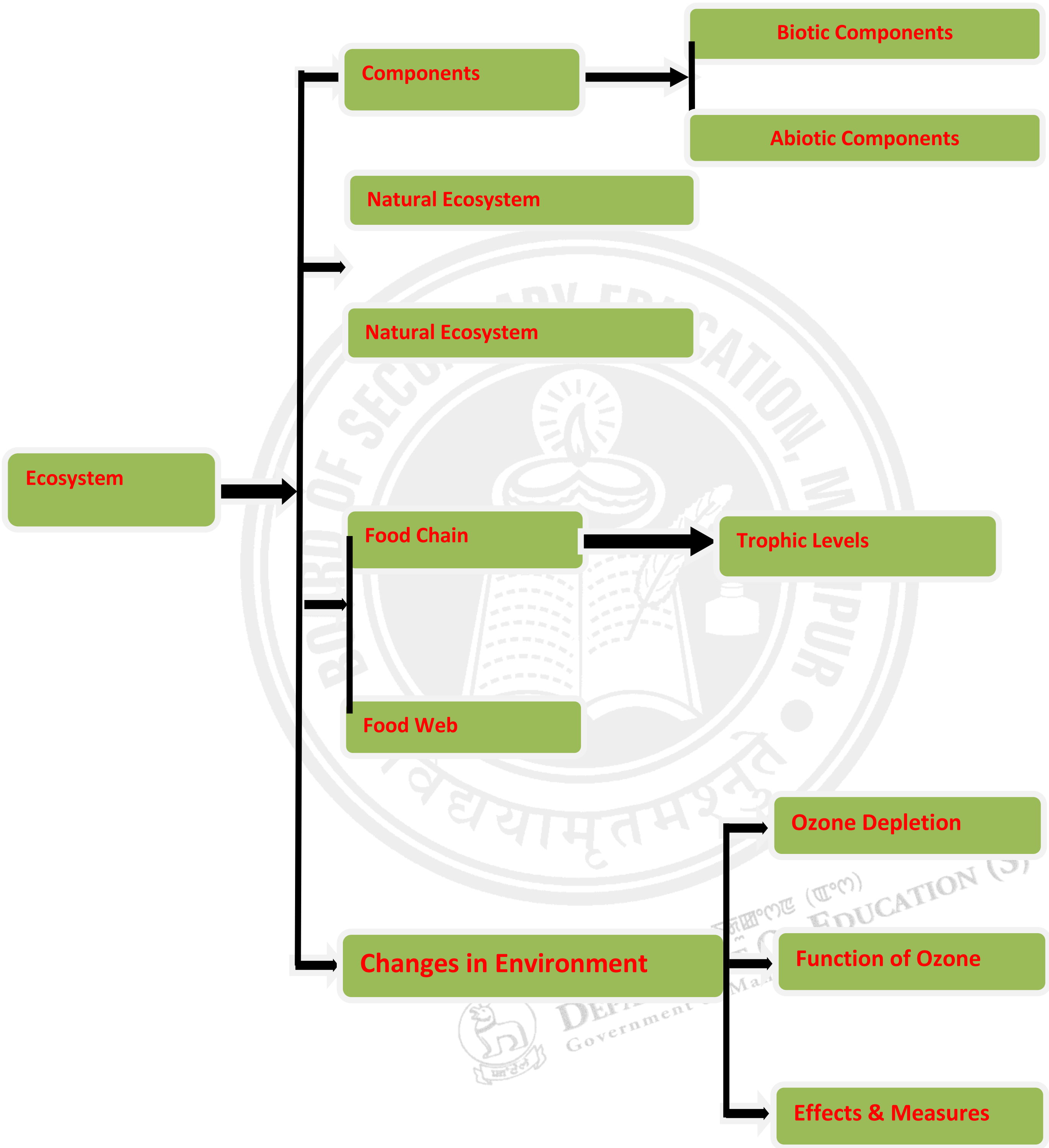
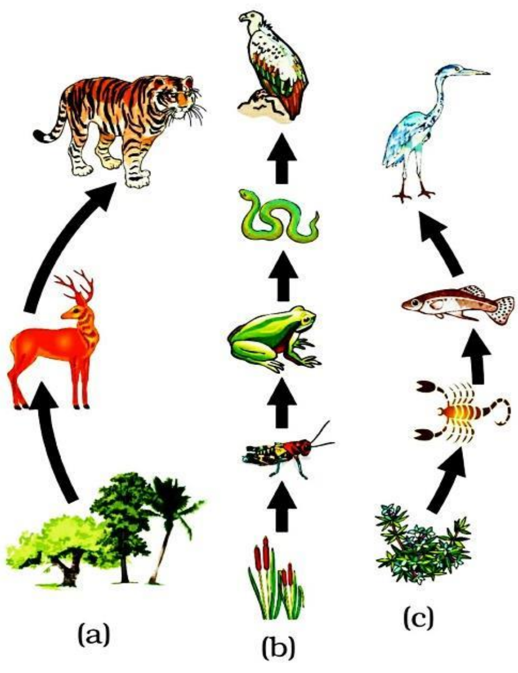


Fig. Flowchart of an Ecosystem

- The transfer of food energy from one population to another is known as **food chain.**
- The various steps through which food energy passes in a food chain are known as **trophic levels.**
- Green plants or producers constitute the first trophic level while top carnivores occupy highest trophic level. Plants trap solar energy to produce food by photosynthesis. Consumers depend directly on food produced by plants or indirectly by feeding on other consumers.
- Consumers may be **herbivores, carnivores or omnivores**. **Herbivores** feed on plants (plant tissue); **carnivores** feed on herbivores while **omnivorous** (human) eat both plants and animals.
- **Scavengers** (like vultures) live on dead and decomposing animal bodies.



Food chain in nature

USES OF INSECTS:

- Insects are **best pollinators** and also help in **dispersal of spores.** They are good prey for many animals like spider, toad and birds.
- Above all many insect larvae are also used as food and also have medicinal values.
- Some insects like grasshopper, thrips (insect) are harmful to our crops while others like mosquitoes & houseflies are vector for malaria and many other killer diseases.

CHANGES IN ENVIRONMENT:

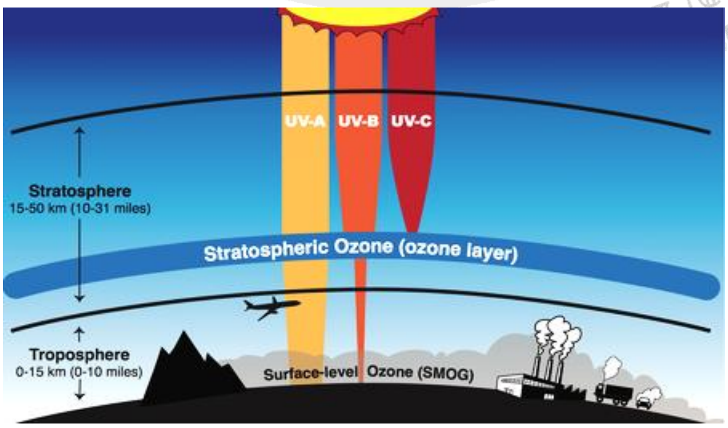


Fig. Diagram showing Stratospheric Ozone layer

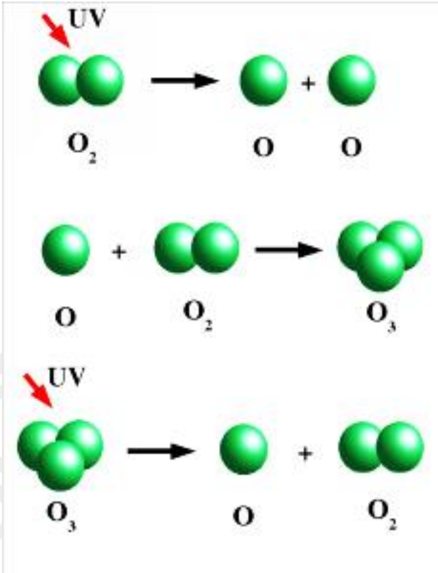


Fig. A schematic representation of the photochemical ozone formation and destruction

$$O_2 \xrightarrow{UV} O + O$$

$$O + O_2 \longrightarrow O_3$$

$$O_3 \xrightarrow{UV} O + O_2$$

- The thinning of the ozone shield in the atmosphere is called **ozone depletion.**
- The formation and destruction of ozone is a continuous process that requires UV energy. **Ozone** present in the **stratosphere** **filters away the ultraviolet radiation from sun and protects the earth from its harmful effect.**
- Chemicals like **CFCs** (which are used as refrigerant in **fire extinguisher, refrigerators, aerosol spray** etc.) affect ozone layer

EFFECTS OF OZONE LAYER DEPLETION

- The depletion of ozone damages environment and causes diseases like **skin cancer** or melanoma etc.
- As a global initiative in 1987, the **UNEP (United Nations Environment Programme)** succeeded in arriving at an agreement to reduce the level of CFCs to 50% by 1999.

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