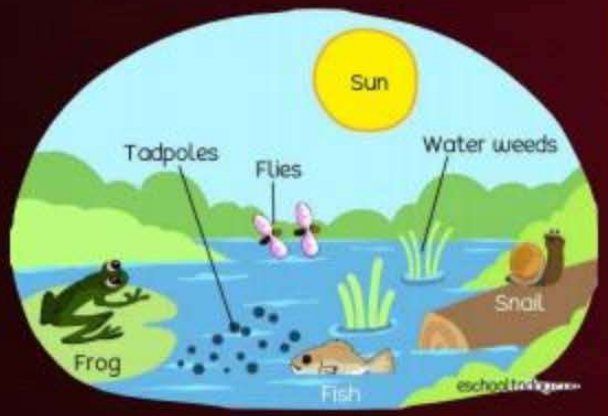
Ecosystem

COMPONENTS OF ECOSYSTEM

(Abiotic)
Non-living component of Ecosystem



Physical or climatic factor

- Soil
- Water
- Air
- Light
- Temperature
- Rainfall
- pH

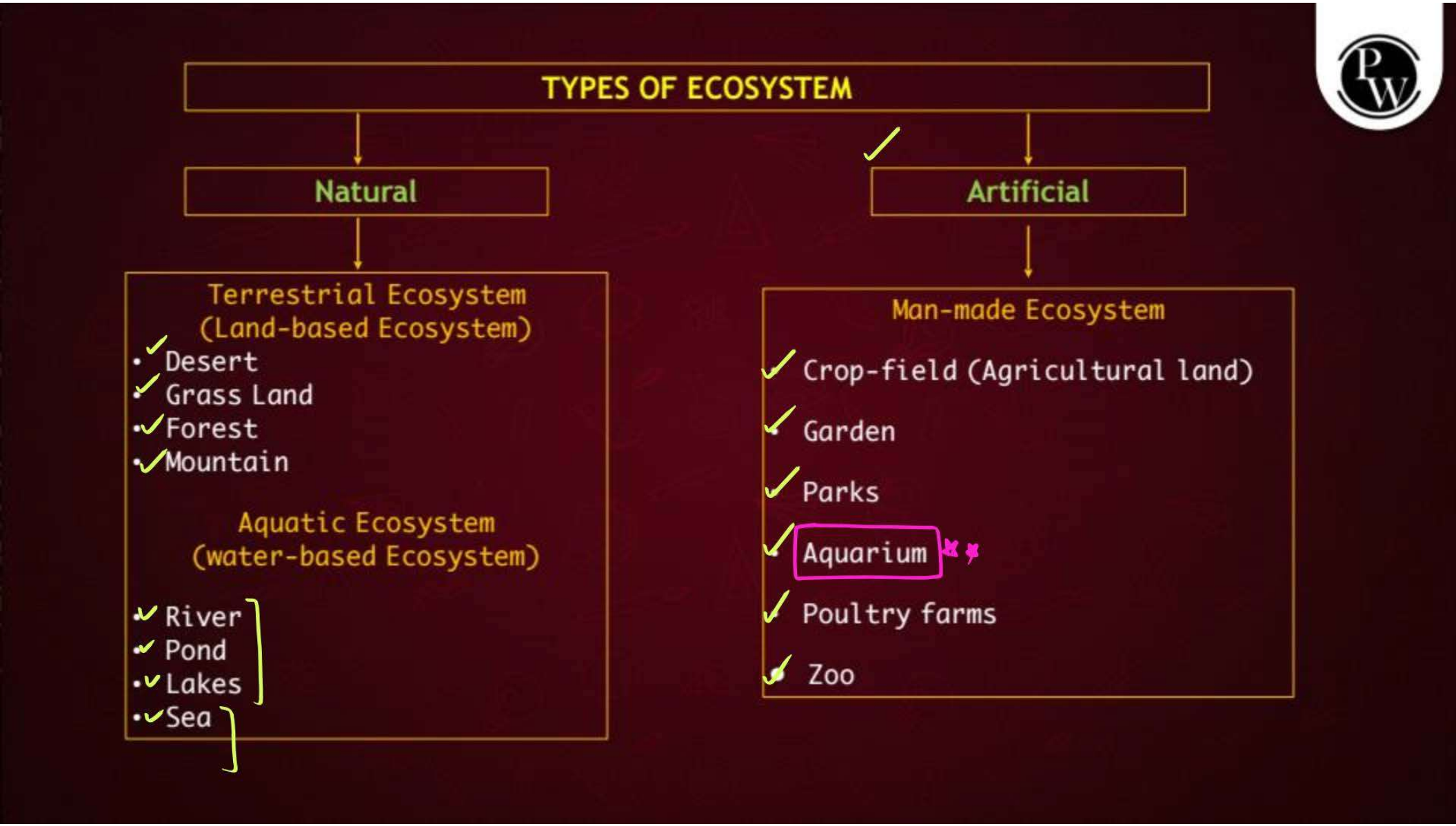
(Biotic)
Living Component of Ecosystem

Producer (Autotrophic)

- Green plants
- cyanobacteria

- **Consumer**
- Herbivores
- Carnivores
- Omnivores

- **Decomposer (Saprotrophic)**
- Microorganisms (bacteria and fungi)


TYPES OF ECOSYSTEM
Natural
Artificial
Terrestrial Ecosystem
(Land-based Ecosystem)
Desert
Grass Land
Forest
Mountain
Aquatic Ecosystem
(water-based Ecosystem)
River
Pond
Lakes
Sea
Man-made Ecosystem
Crop-field (Agricultural land)
Garden
Parks
Aquarium
Poultry farms
Zoo

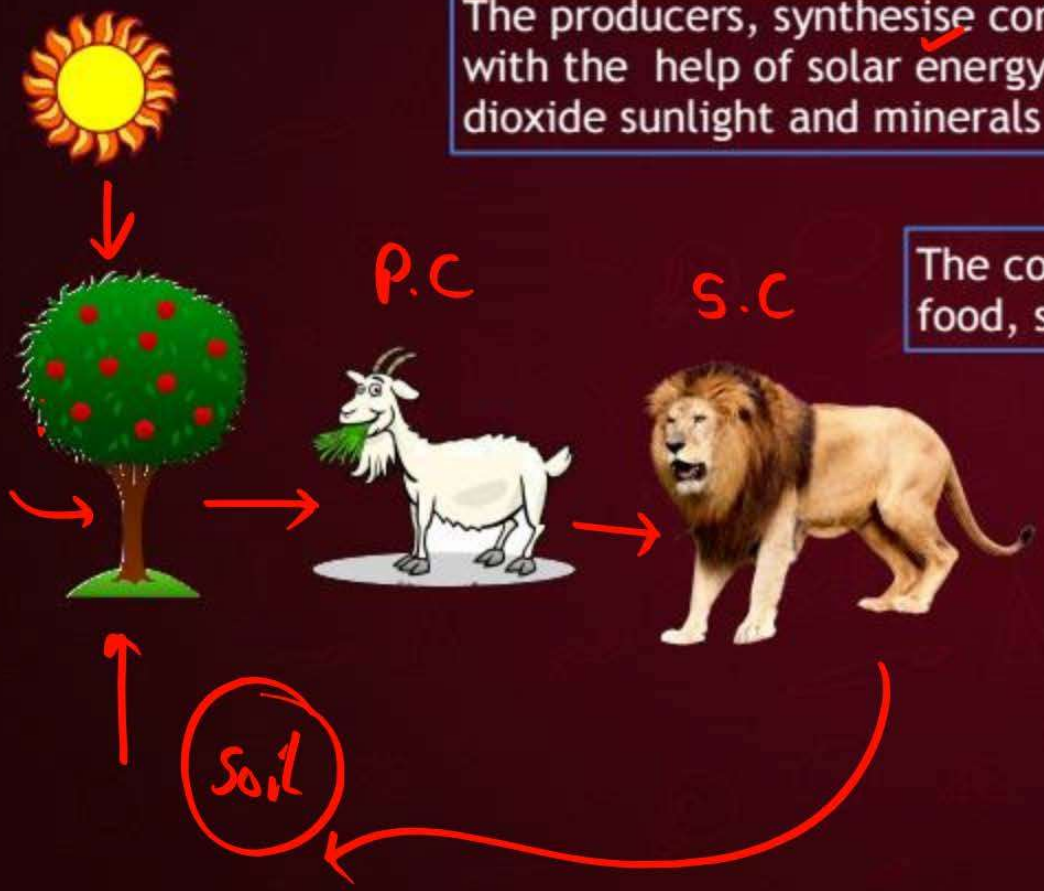
producer	primary consumer	secondary consumer	tertiary consumer

Decomposer

Nutrients in soil

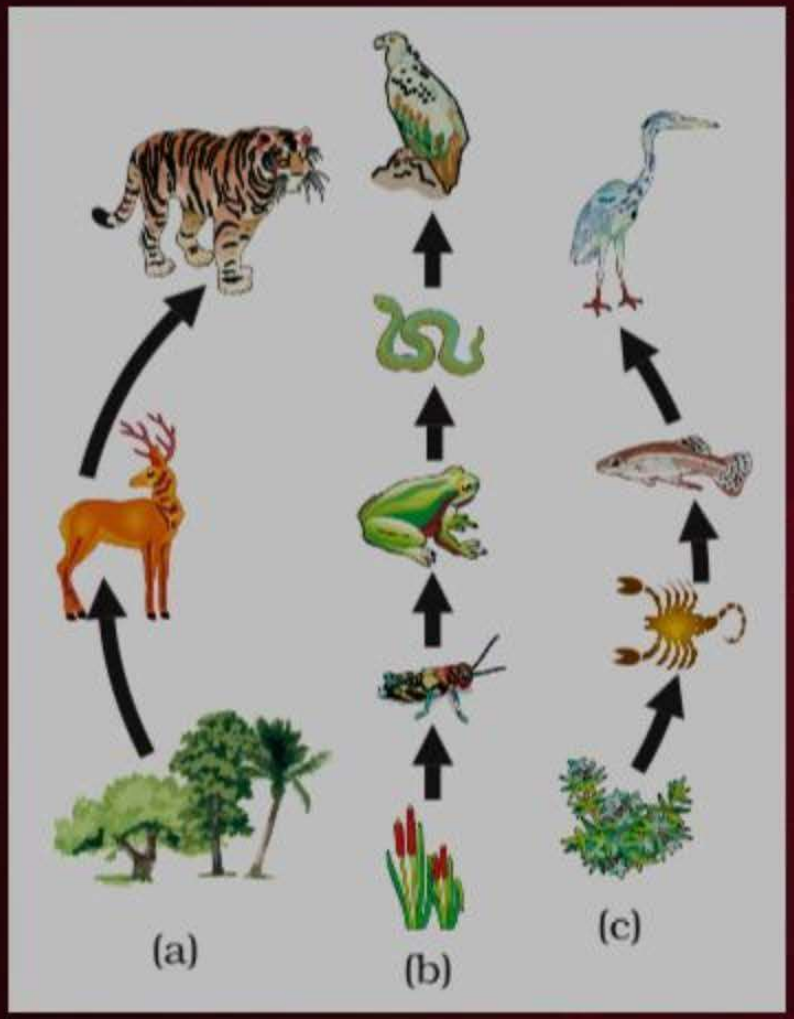
Functioning of Ecosystem

The producers, synthesise complex food with the help of solar energy, carbon dioxide sunlight and minerals (Soil)



The consumers eat up plants and other animals as food, so, energy is transferred to next organism

When plants and animals die, then decomposers act/feed on dead remains of their bpd and decompose them into simple materials like CO_2, water and minerals

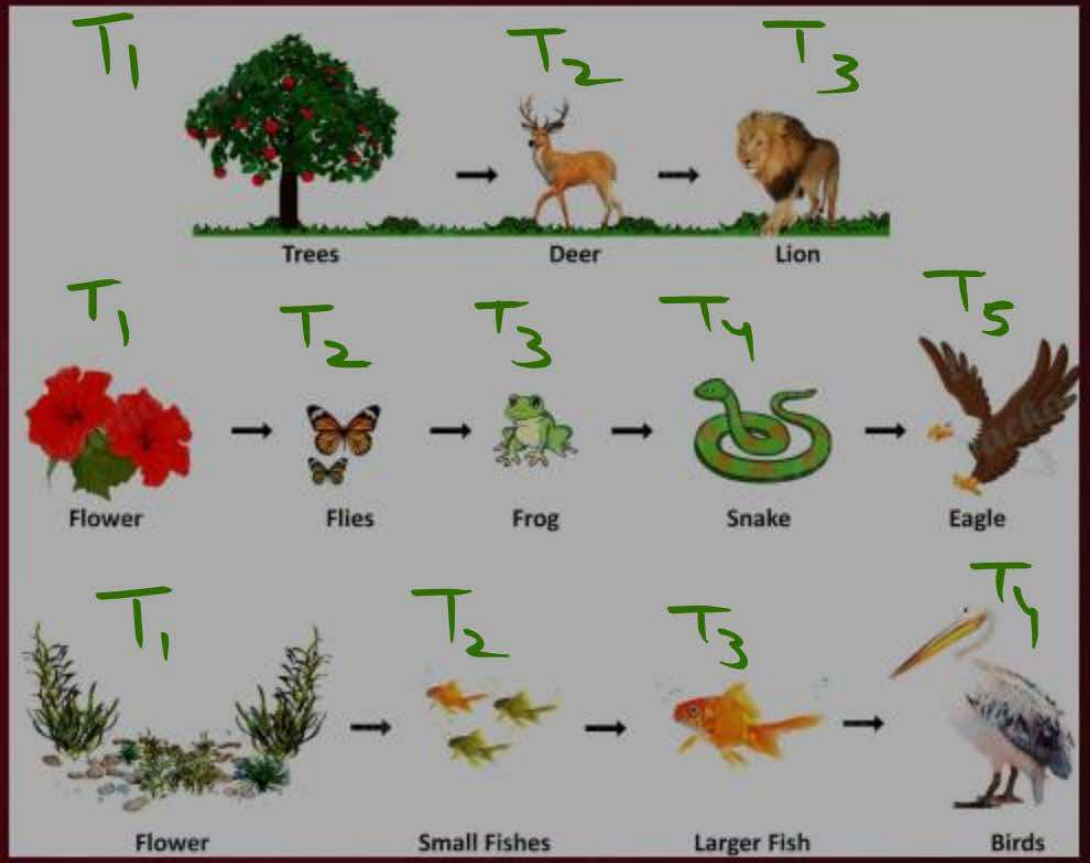

(a)
(b)
(c)

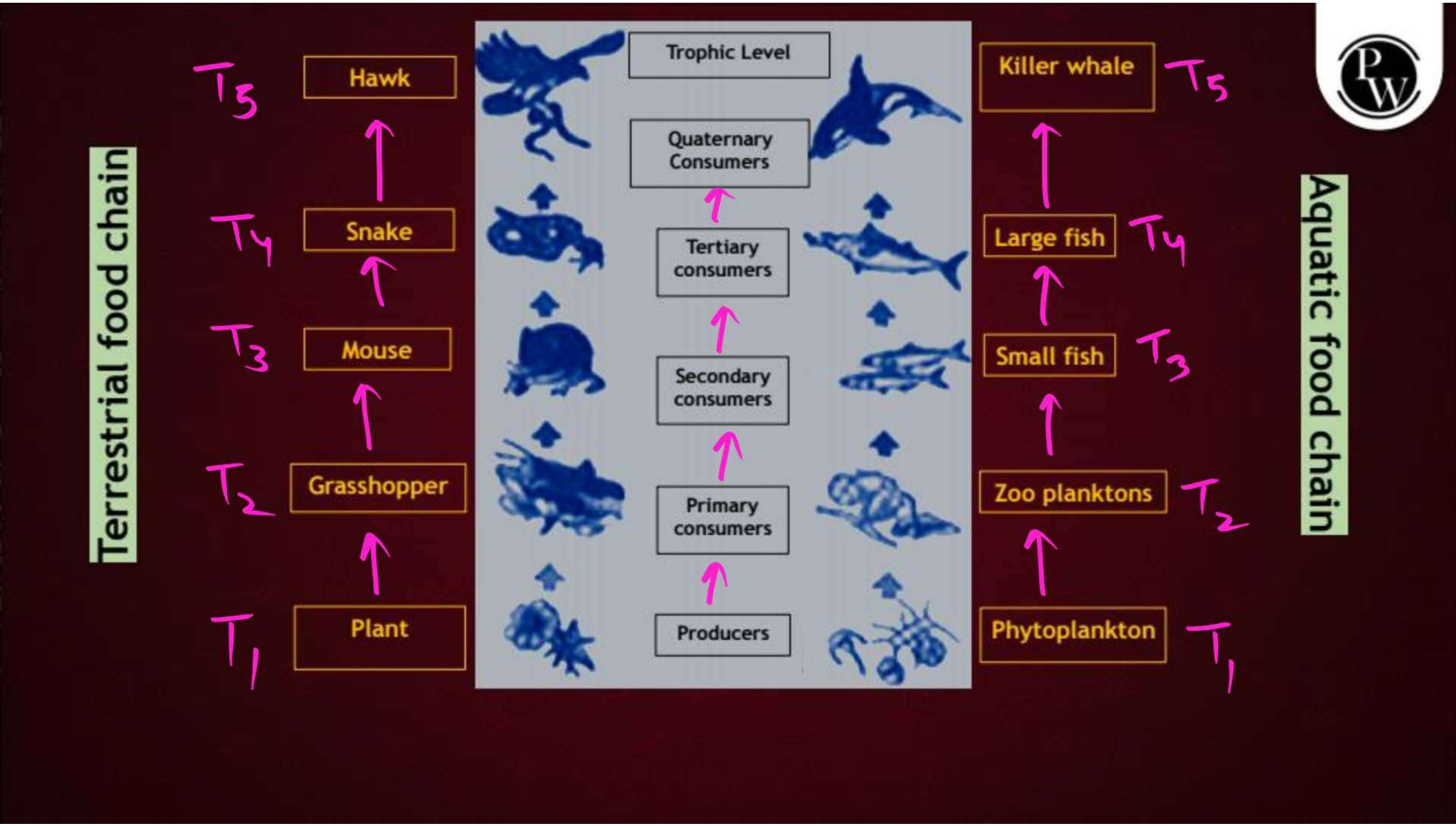
FUNCTIONING OF ECOSYSTEM

Food chain

Food Chain : The sequence of living organisms in which one organism consumes another organism to transfer food energy

Trophic Level: Position of an organism in a food chain



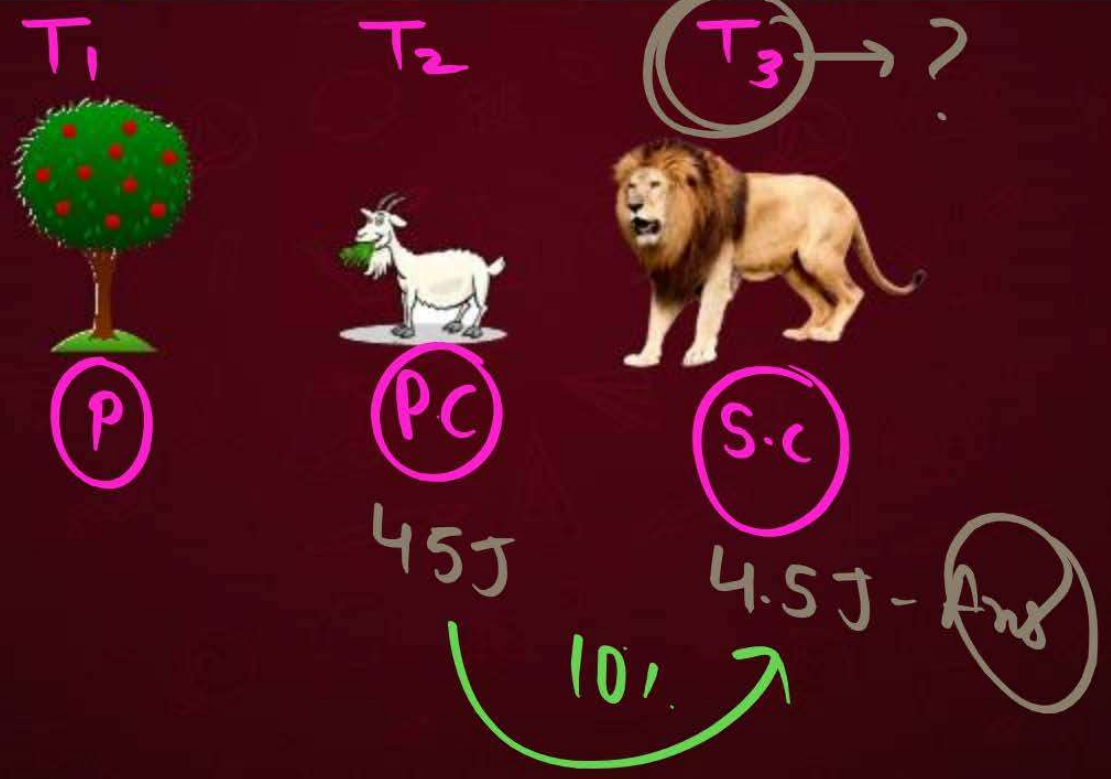

Terrestrial food chain
Aquatic food chain
Trophic Level
Quaternary Consumers
Tertiary consumers
Secondary consumers
Primary consumers
Producers
Hawk
Snake
Mouse
Grasshopper
Plant
Killer whale
Large fish
Small fish
Zoo planktons
Phytoplankton
T5
T4
T3
T2
T1

10 % (Ten percent) law of energy Transfer

- According to this law only 10 % of energy is transferred from one trophic level to next successive trophic level.

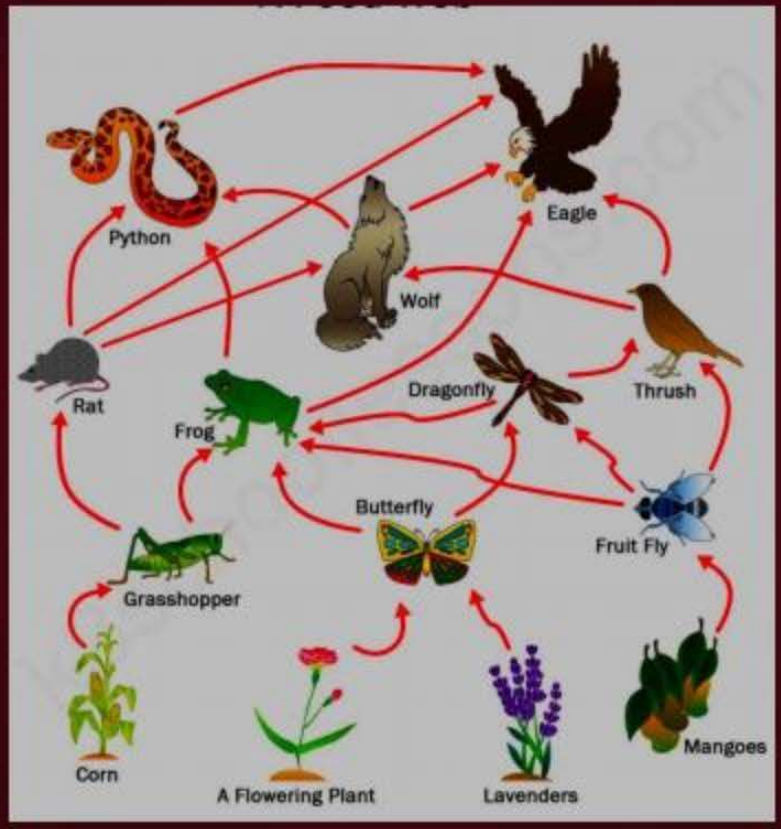
QUESTION

In the given food chain, suppose primary consumer has 45 J energy, what will be the energy available at the third trophic level?



Food Web

Food Web : The network of interlinked food chains.

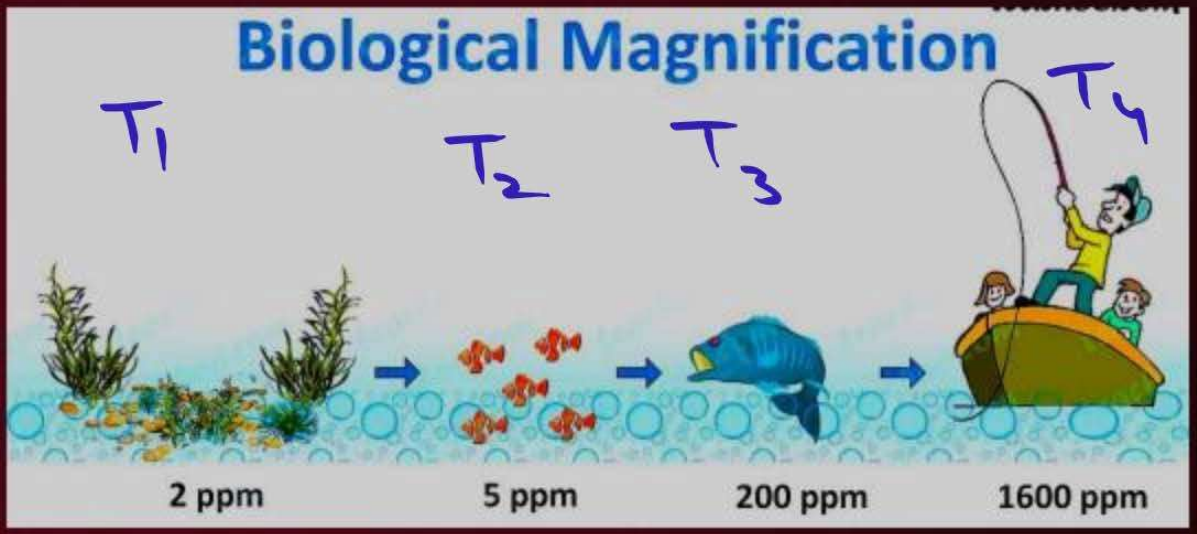


Biomagnification

Biomagnification: It is the increase in the concentration of toxins or non biodegradable substances in the body tissues of organisms as it moves from one trophic level to the next.

Non biodegradable and toxic chemicals such as-

Insecticides
Pesticides
Heavy metals etc



LAYERS OF THE ATMOSPHERE

Ozone gas

$$O_2 \xrightarrow{\text{U.V rays}} O + O$$

$$O_2 + O \longrightarrow O_3 \text{ ozone}$$

ENVIRONMENTAL PROBLEM AND ITS MANAGEMENT

Ozone Layer Depletion

Step 1: Chlorofluorocarbon (CFC) emissions reach the ozone layer.

Step 2: CFCs are broken down by the Sun's ultraviolet (UV) rays, releasing chlorine atoms into the ozone layer.

Step 3: Active chlorine atoms break down the ozone molecules, causing ozone layer depletion.

Step 4: More ultraviolet rays reach the Earth, threatening human health.

CFCs

Causes of Ozone Layer Depletion

- .Chlorofluorocarbon (CFC)
- Hydrochlorofluorocarbon
- Methyl bromide
- Methyl chloroform

Effects of Ozone Layer Depletion

- Skin cancer
- Cataract
- DNA damage
- Reduced Immunity
- Sunburns
- Low crop productivity
- Destruction of marine life

TYPES OF WASTE

Biodegradable Waste	Non-biodegradable Waste
Material that can be decomposed (broken down into simpler substances) by the action of microorganisms	Material that can not be decomposed (broken down into simpler substances) by the action of microorganisms
Safe for environment	Not Safe for environment and caused pollution
Made up of natural substances	Made up of synthetic materials
Biodegradable substances persist for less time in the environment.	Non Biodegradable substances persist for longer time in the environment.
E.g. Wool, paper, fruit vegetable peels ,wood etc.	E.g. Aluminium cans, iron nails, silver foil D.D.T. and radioactive waste

Waste Management

Preparation of compost:
Biodegradable wastes can be converted into compost by burying in a pit.

Land Fills:
Disposal of wastes by putting it in low lying area of ground and covering it with soil.