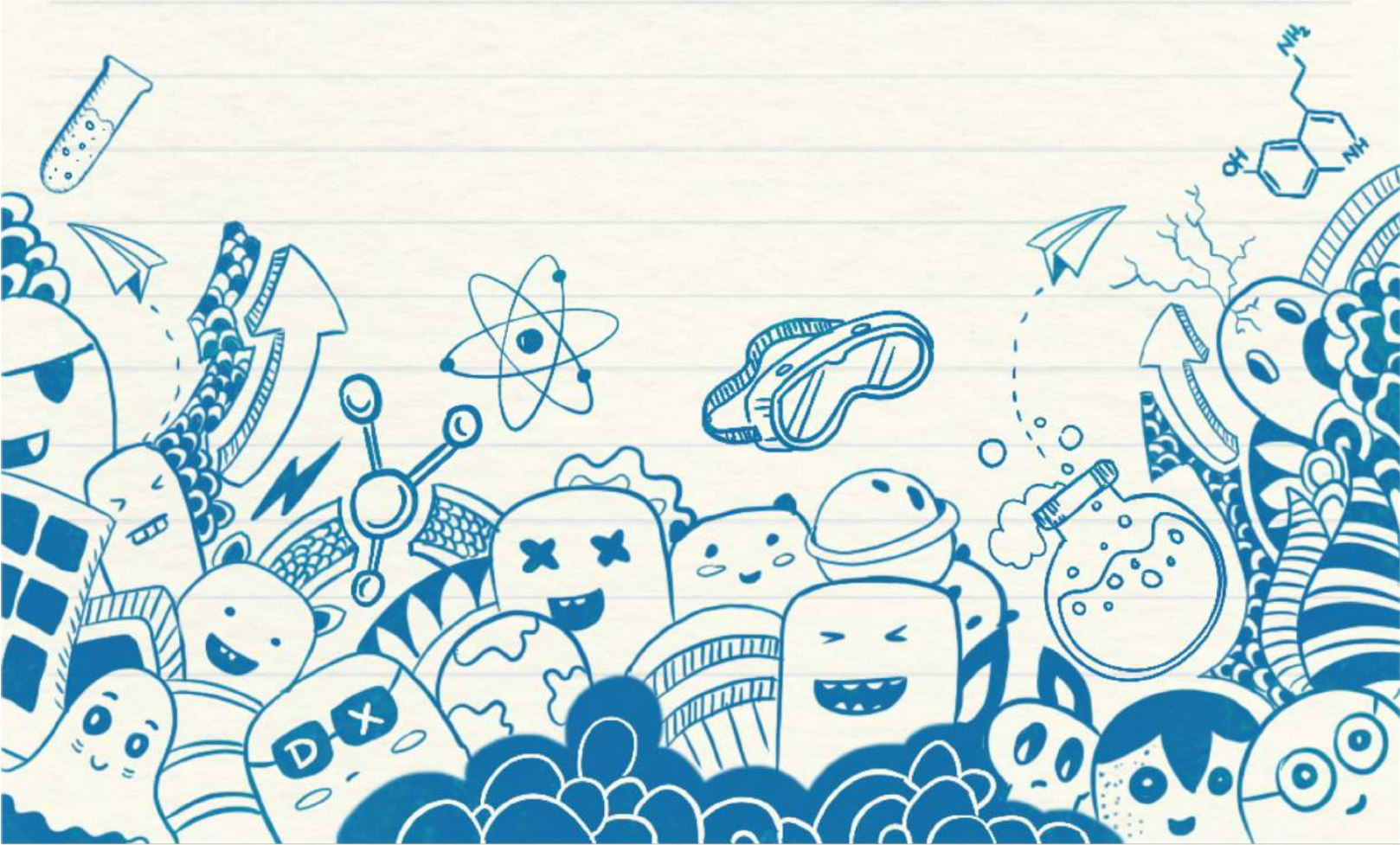
CHEMISTRY

BYJU'S

POST CLASS NOTES

Our Environment



Topics

1. Ecosystem
2. Food chains and webs
3. Human activities that affect environment

1. Ecosystem

Is a community or group of living and non-living constituents that interact with each other in a specific environment

1.1 Components

Biotic: Comprises of living organisms

Abiotic: Non-living constituents comprising physical factors like temperature, rainfall, wind, soil

1.2 Examples

Natural ecosystem
Forests, ponds and lakes

Man-made ecosystem
Garden, aquarium

1.3 Classification of Organisms

Based on how an organism obtain its nutrition

Producers

- Produce food by photosynthesis
- Green plants

Consumers

- Depend on the producers either directly or indirectly for their sustenance
- Herbivores, carnivores, omnivores and parasites

Decomposers

- Break down complex organic dead matter into simple inorganic matter
- Bacteria and fungi

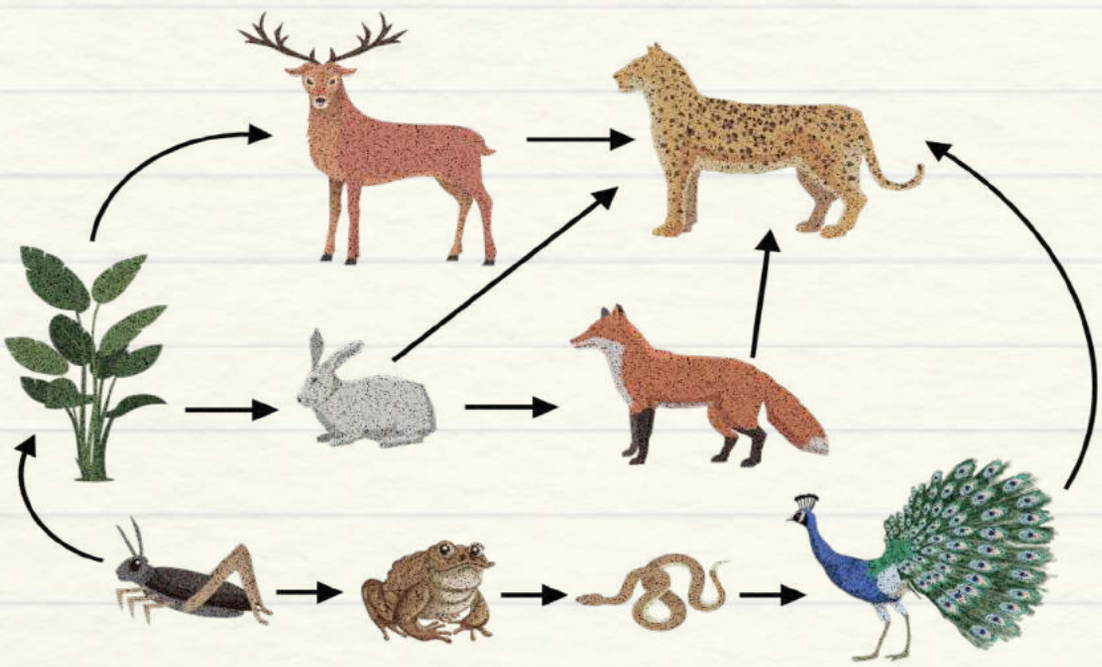
2. Food Chains and Webs

2.1 Food Chain

A linear sequence of organisms through which nutrients and energy pass as one organism eats another

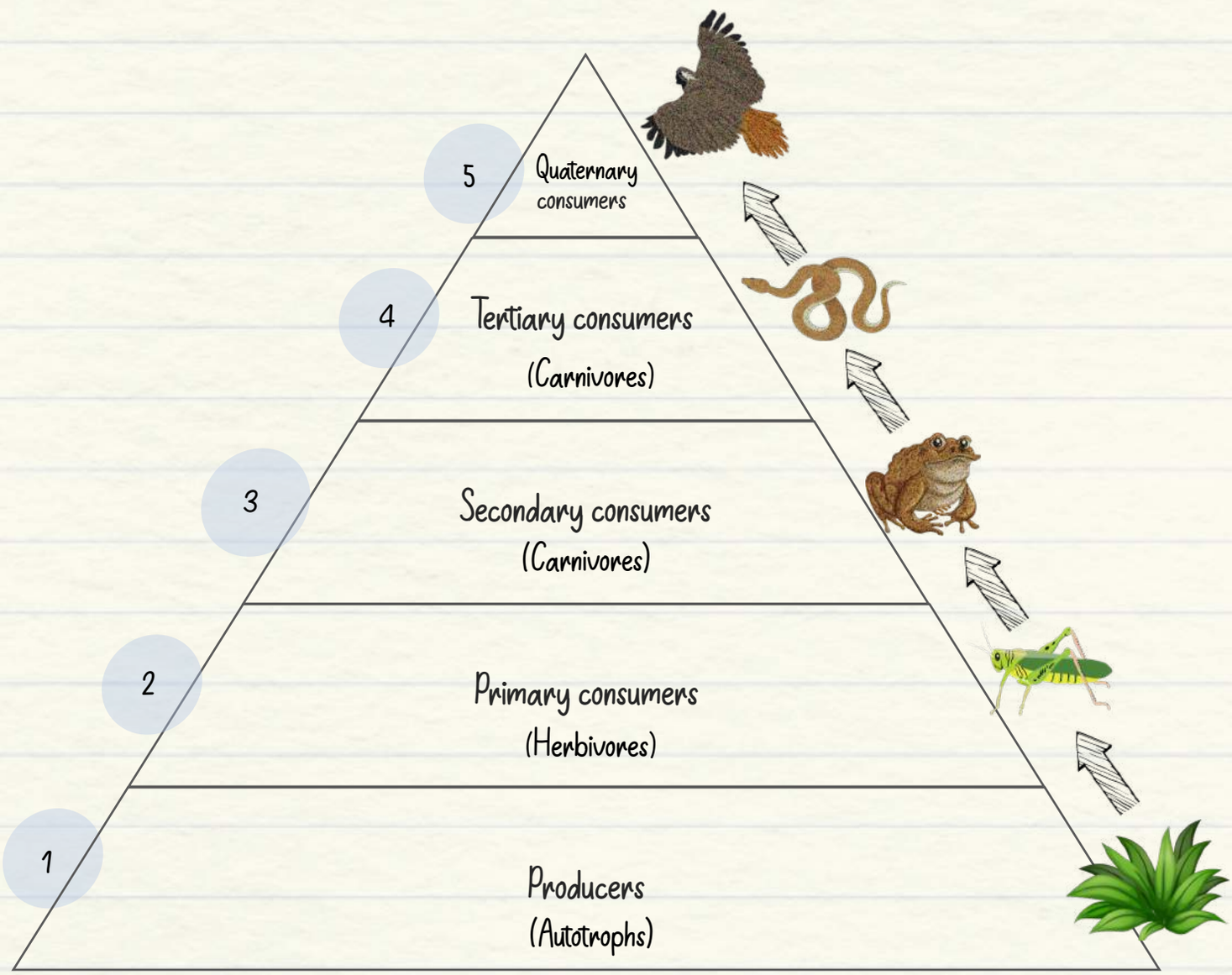
2.2 Food Web

An interconnection of various food chains



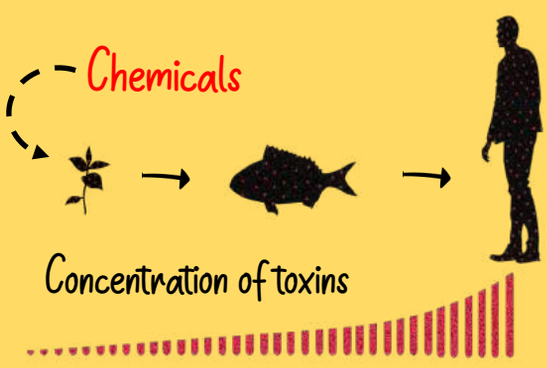
2.3 Trophic Levels

The trophic level of an organism is the position it occupies in a food chain



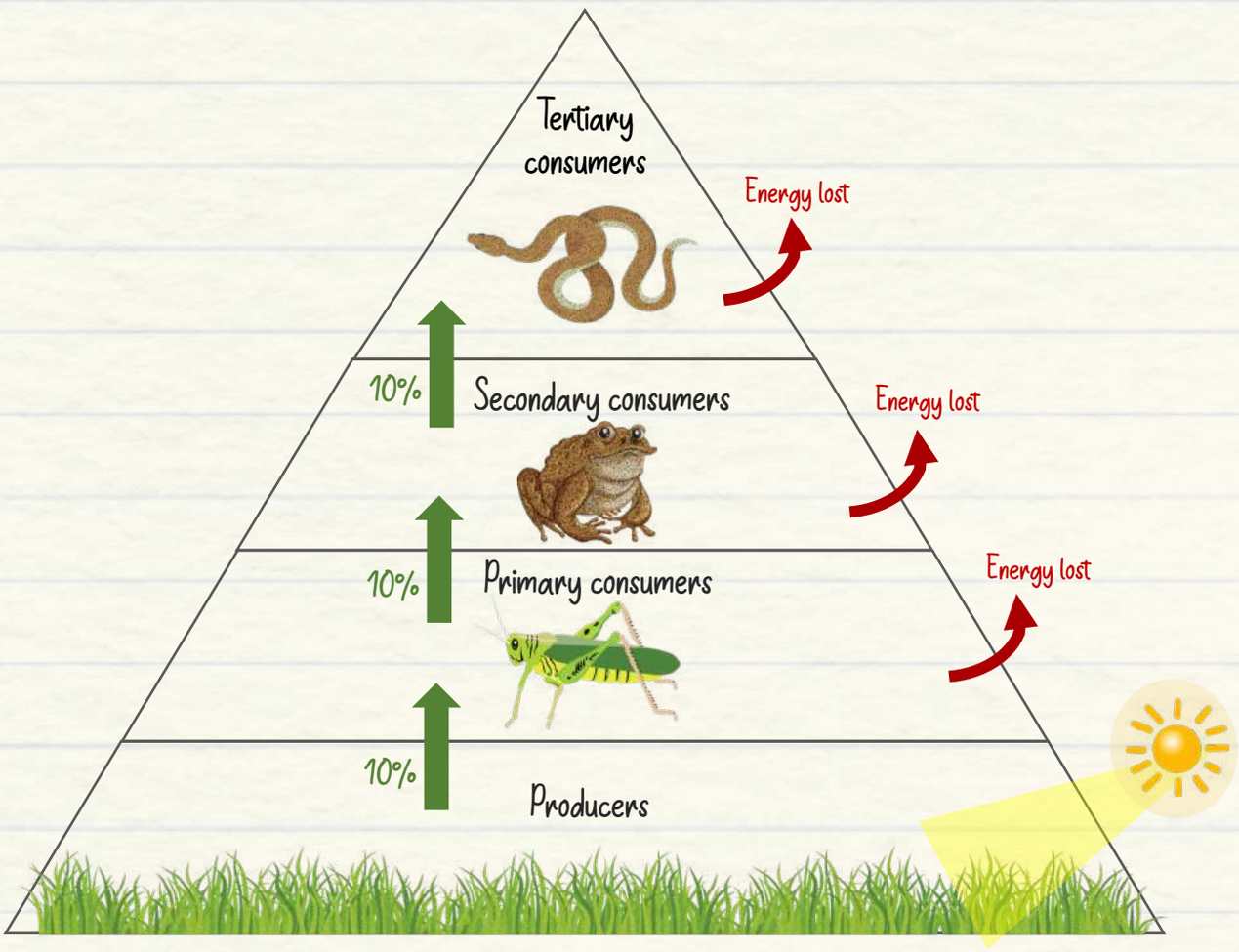
Biomagnification

The increasing concentration of toxins in organisms at successively higher trophic levels



2.4 Energy Flow in Food Chain

10% law of energy: Only 10% of the energy gets transferred from one trophic level to the next



- The green plants capture about 1% of the energy of sunlight and convert it into food energy
- The flow of energy is unidirectional
- Since so little energy is available for the next level of consumers, food chains generally consist of only three or four steps
- There are generally a greater number of individuals at the lower trophic levels of an ecosystem

3. Human Activities That Affect Environment

3.1 Ozone Layer Depletion

Ozone layer

A part of the Earth's atmosphere that absorbs almost all of the sun's harmful ultraviolet radiations

Ozone layer depletion

Thinning of the ozone layer due to pollutants

Causes

- Chlorofluorocarbons (CFCs) – used as refrigerants and in fire extinguishers

Effects

- Increased UV radiation levels at the Earth's surface
- Increased UV levels lead to certain types of skin cancers, eye cataracts and immune deficiency disorders

Preventive measures

- It is now mandatory for all the manufacturing companies to make CFC-free refrigerators throughout the world

Ozone (O_3)

- A molecule formed by three atoms of oxygen
- Formed at the higher levels of the atmosphere due to action of UV radiation on oxygen (O_2) molecule

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

3.2 Improper Waste Disposal

Types of waste

Bio-degradable

- Can be broken down by the action of bacteria
- Persist in the environment for a relatively shorter time
- Usually safe for the environment
- Food waste, paper waste

Non-biodegradable

- Cannot be broken down by the action of bacteria
- Persist in the environment for a long time
- Harmful to the environment
- Plastic bottles, metal cans

Waste management

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Reduce

Minimising waste generation

Reuse

Using items again for original or different purpose

Recycle

Turning a used material into a new product

Mind Map


Our Environment
Ecosystem and its components
Abiotic
Biotic
Classification of organisms
Decomposers
Consumers
Producers
Food chain and food web
Trophic level
Biomagnification
Energy flow in food chain
Human activities that affect the environment
Ozone layer depletion
Improper waste disposal