Chap. → 04

Our Environment.

Definition :- a) Our Surrounding Area is Called "Environment"

b) "Environment" includes our physical struc. (Air, land & water) and all the living org. (Plants, Animals, Humans, Bacteria & fungi)

→ Biodegradable & Non-biodegradable wastes :-

wastes :- wastes is any substance which is discarded after primary use.

They are Two types.

→ Biodegradable wastes :- waste materials which can be broken down to non-poisonous subst. in nature in due course of time by the action of micro organisms like certain Bacteria, are called → Biodegradable wastes.

Eg :- wheat, cotton, jute, Grass, fruit, Animal bones. etc.

→ Non-biodegradable wastes :- waste materials which can not be broken down into non-poisonous / Harmless subs. are called → Non-biodegradable wastes.

Eg :- Plastics, polythene bags, Ball point pen, Glass, Radioactive wastes. etc.

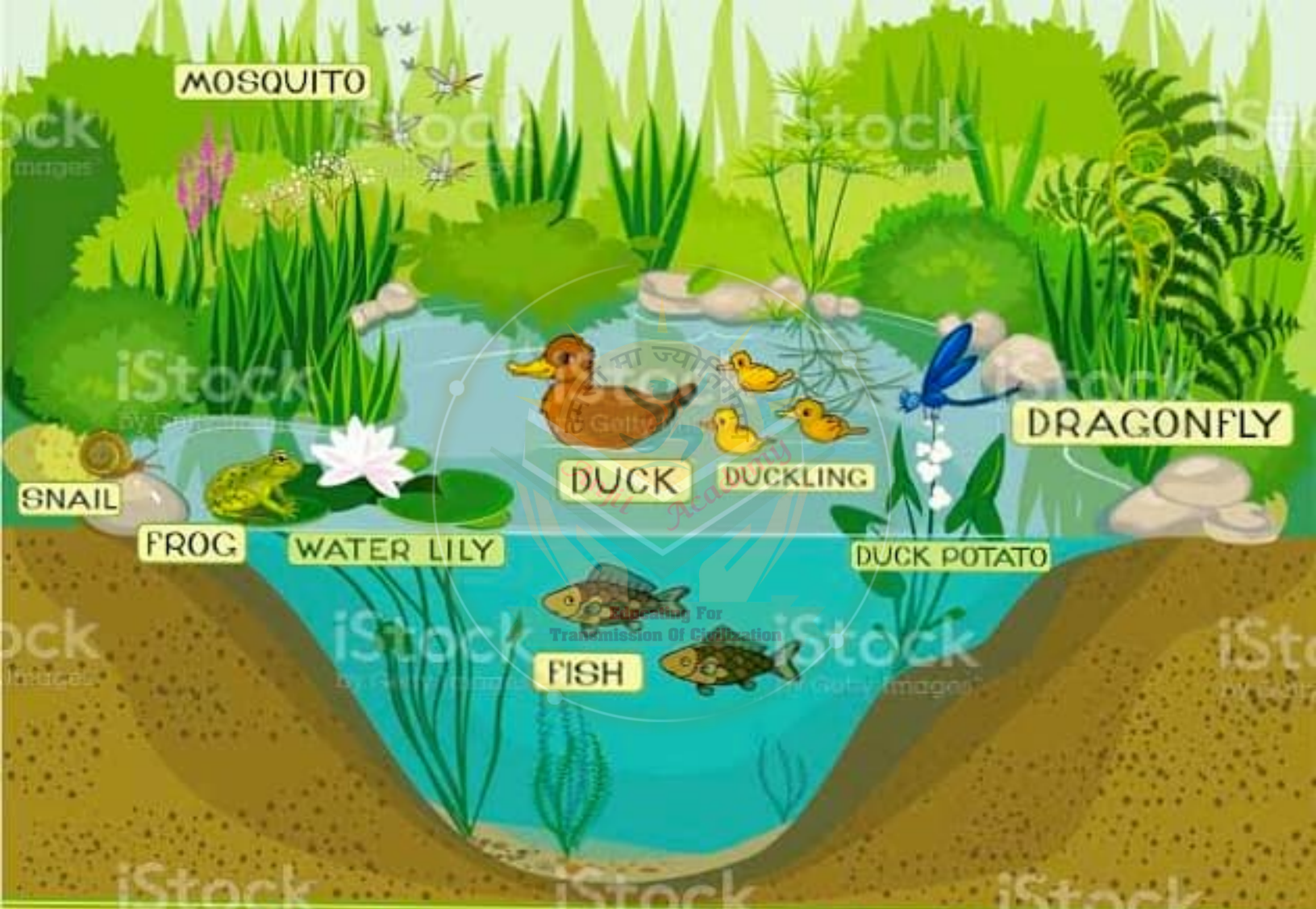
Ecosystem

↳ Ecosystem word is given by A.G. Tansley 1935.

↳ It is community or group of living organism which interact with each - other.

Ex :-

1) Grassland Ecosystem.
2) Forest —"—"— .
3) Desert —"—"— .
4) Mountain —"—"— .
5) Aquatic Ecosystem
   - Marine water
   - Fresh water


MOSQUITO
DRAGONFLY
SNAIL
DUCK
DUCKLING
FROG
WATER LILY
DUCK POTATO
FISH
POND ECOSYSTEM

Components of Ecosystem :- all the Ecosystem are made up of two main components.

1.) Abiotic Components :- a) Also called as → Non-living Components.

b) It includes the physical environments like → soil, water & Air.

c) Physical factors / climatic factors → Light, Temp, pressure & Humidity.

2.) Biotic Components :-

a) It includes → Living org.

b) They are folbwing →

a) Producers.

b) Consumers.

c) Decomposers.

Components of Ecosystem :- all the Ecosystem are made up of two main components.

1.) Abiotic Components :- a) Also called as → Non-living Components.

b) It includes the physical Environments like → soil, water & Air.

c) Physical factors / climatic factors → Light, Temp, pressure & Humidity.

2.) Biotic Components :-

a) It includes → Living org.

b) They are folbwing →

a) Producers.

b) Consumers.

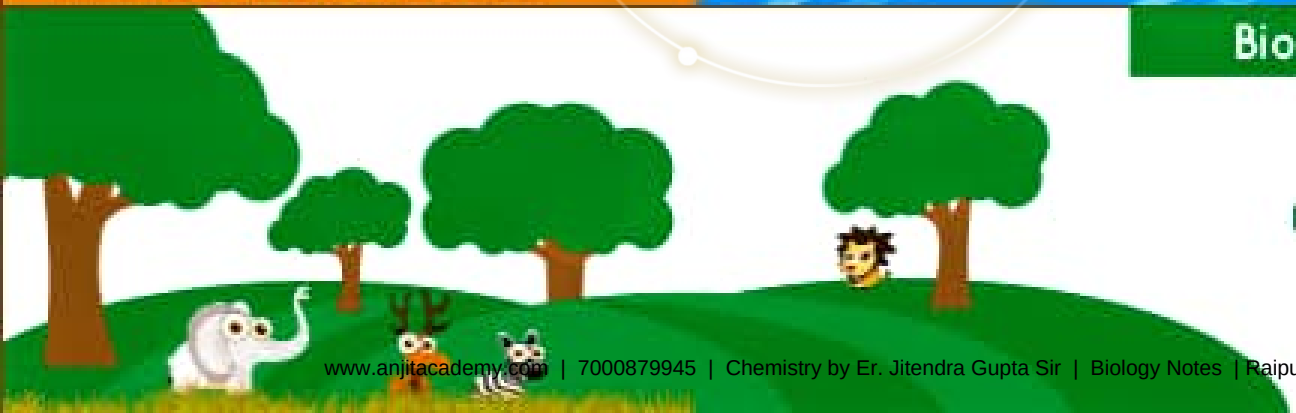
c) Decomposers.

Ecosystem

Abiotic Factors

Sunlight
Temperature
Precipitation
Water or moisture
Soil

Biotic Factors

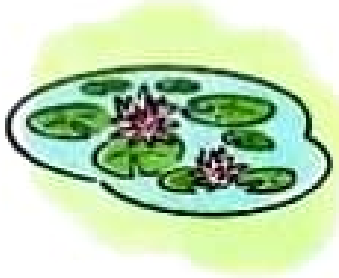


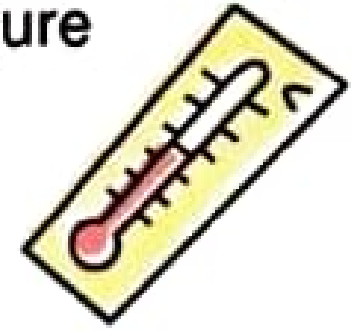
Primary producers
Herbivores
Carnivores
Omnivores
Detritivores

Biotic vs. Abiotic Factors

- Living
- Examples
  - Plants
  - Animals
  - Fungi
  - Bacteria

- Non-Living
- Examples
  - Water
  - Sunlight
  - Soil
  - Air
  - Temperature





1.) Producers :- Organism which can make their own food. called as → Producers.

Eg :- All green plants.

2.) Consumers :- Org. which can not make their own food, called as → Consumers.

* They are following 3 types.

a) Herbivores :-

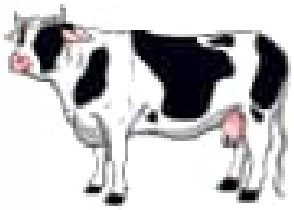
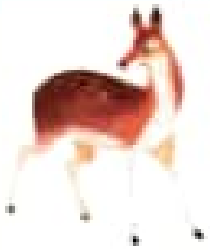
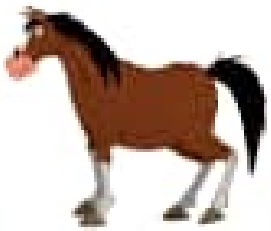
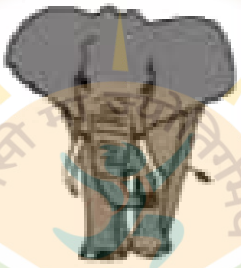
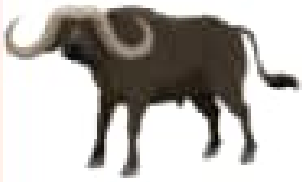
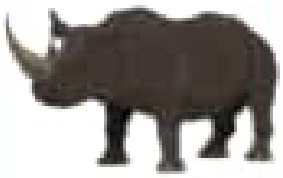
I) Those Animals which eat only plants are called → Herbivores.

↓

Also called primary Consumers.

II.) Eg :- Cow, Buffalo, Goat, Sheep, Horse.

Herbivores Animals

 Cow	 Deer	 Parrot	 Kangaroo	 Horse
 Goat	 Rabbit	 Elephant	 Sheep	 Camel
 Buffalo	 Zebra	 Hippopotamus	 Panda	 Llama
 Capybara	 Butterfly	 Koala	 Kakapo	 Moth
 Snail	 Rhino	 Impala	 Honey Bee	 Okapi

Carnivores :-

I) Those animals which Eat only other animals as food are Called, "Carnivores".

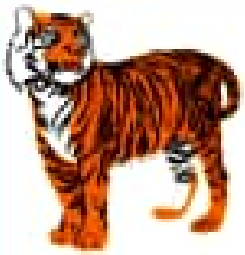
↓

Also Called

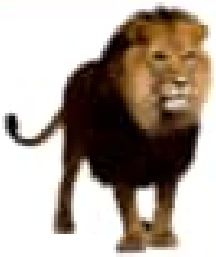
"Secondry Consumers"

II) Eg. → Lion, Tiger, frog, Vulture, Hawk, Snake.

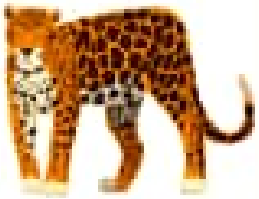
Carnivorous Animals


Tiger


Platypus


Lion


Walrus


Jaguar


Shark


Fox


Snake


Penguin


Crocodile


Frog


Wolf


Hyena

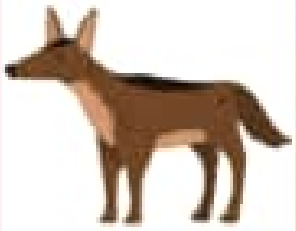

Otter


Cuttlefish

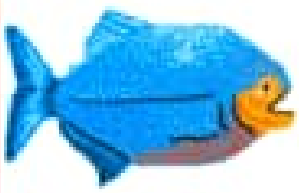

Eagle

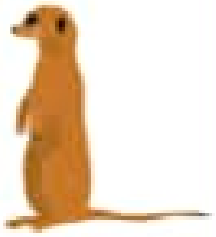

Octopus


Owls


Jackal


Crow


Piranha


Mongoose


Lizard


Dolphin


Polar Bear

c) Omnivores :-

I.) Those animals which Eat both, plants & Animals are Called → Omnivores.

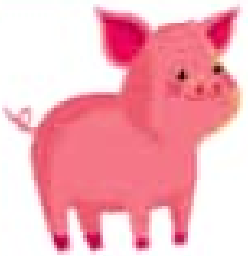
II.) Eg :- Man, Dog, Crow, Sparrow, Ant.

Omnivorous Animals


Dog


Cat

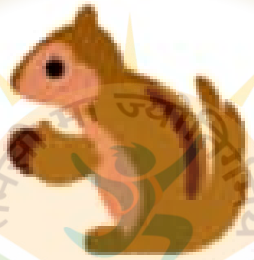

Crow


Pig


Hen


Cockroach


Ant


Squirrel


Peacock


Rat


Bear


Lizard


Ostrich


Bat

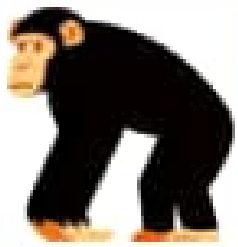

Opossum

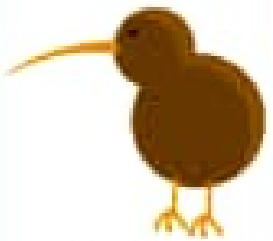

Raccoon


Magpie


Cassowary


Hedgehog


Chimpanzee


Kiwi


Skunk


Coati


Coyote


Civet

3) Decomposers :-

I) The micro-org. which break down the complex org substances into simple org. subs. are called → decomposers

II) Eg :- Bacteria & fungi.

Importance of Decomposers :-

a) They help in decomposing the dead bodies of plants & animals. & hence acts as → cleansing agents.

b) The Decomposers help in recycling the materials in the ecosystem.

Decomposers

→ Fresh water Ecosystem

Eg → Pond Ecosystem

↳ Abiotic Components :- water, Temp., Air.

↳ Biotic Components :-

Producers → green Algae, small plants.

Consumers →

Primary Consumers → small larva, Insect.

Secondry Consumers → Fish, Frog

Tertiory Consumers → Hawk, snake.

Decomposers → Bacteria & fungi.

Food Chains

↳ The food can be transferred from one org. to the other through food chains.

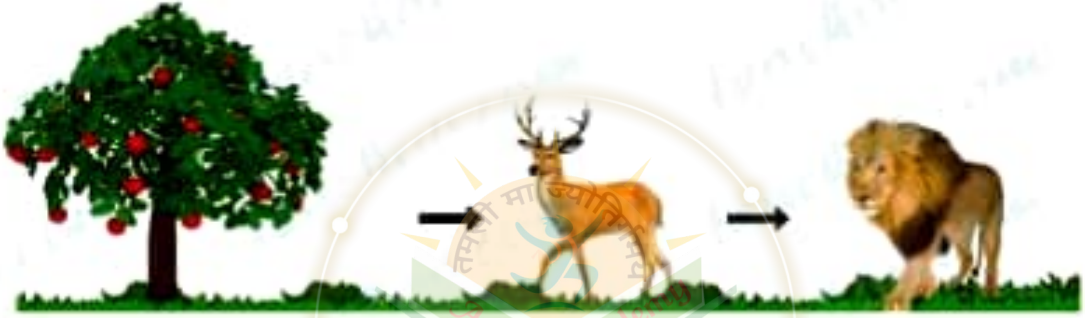
or

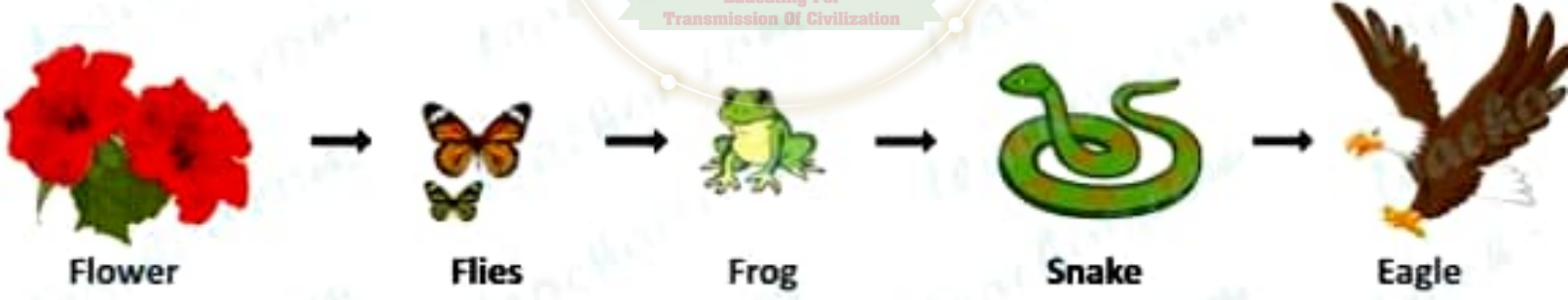
In simple words → "who eats whom".

is called → food chain.

* A food chain represents a single directional / unidirectional transfer of energy.

Food Chains





Food Chains

↳ The food can be transferred from one org. to the other through Food Chains.

or

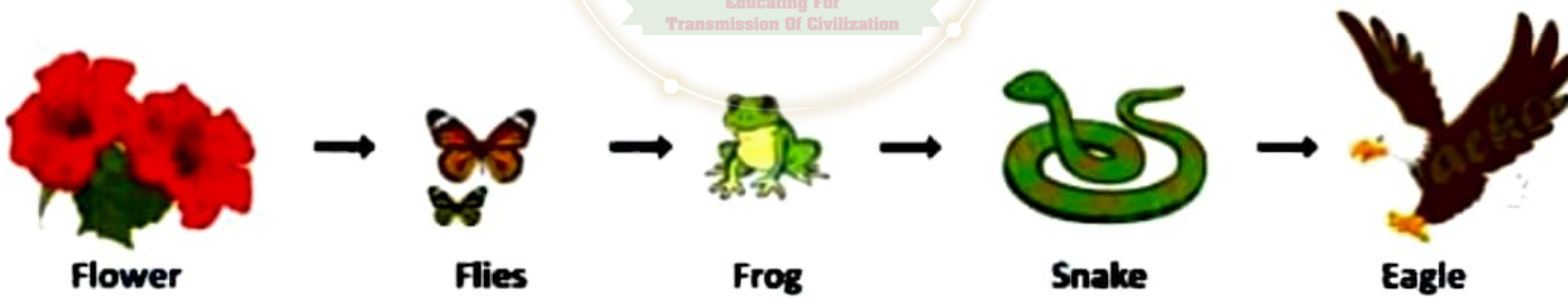
In simple words → "who eats whom", is called → food chain.

Grass → Deer → Lion.

(producer) (Herbivore) (Carnivore)

* A food chain represents a single directional / unidirectional transfer of Energy.

Food Chains



more Examples :-

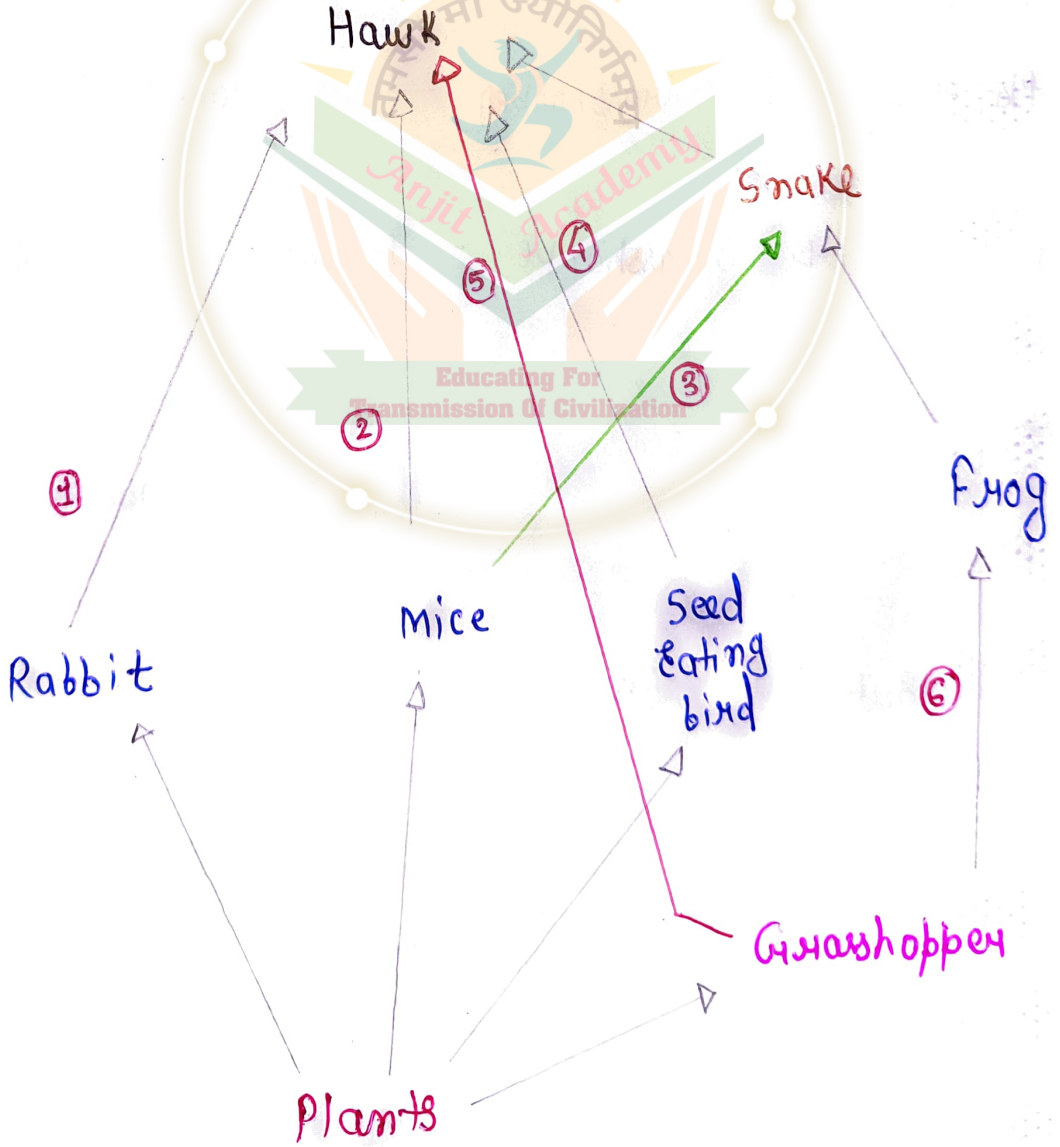
(I) Plants → Insect → Frog → Snake.

(II) Grass → Deer → Jackal.

(III) Algae → Protozoa → Small fish → Big fish.

Food Web

The network of a large number of food chains existing in an ecosystem is called a food web.



1) Plants → Rabbit → Hawk

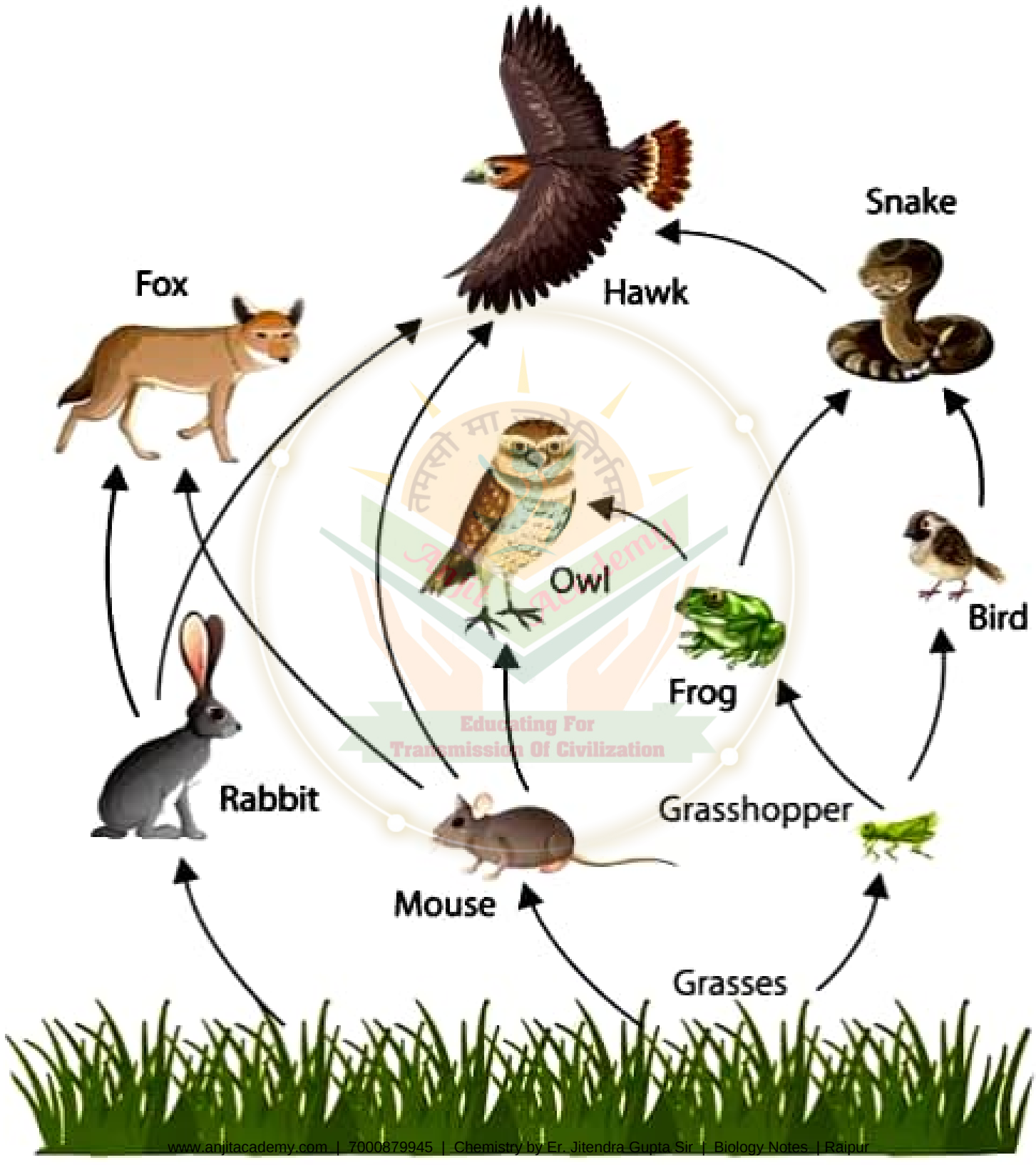
2) Plants → Mice → Hawk

3) Plants → Mice → Snake → Hawk

4) Plants → Seed eating bird → Hawk

5) Plants → Grasshopper → Hawk

6) Plants → Grasshopper → Frog → Snake → Hawk.



Trophic levels

↳ In a food chain, Each step representing an organism forms a trophic level.

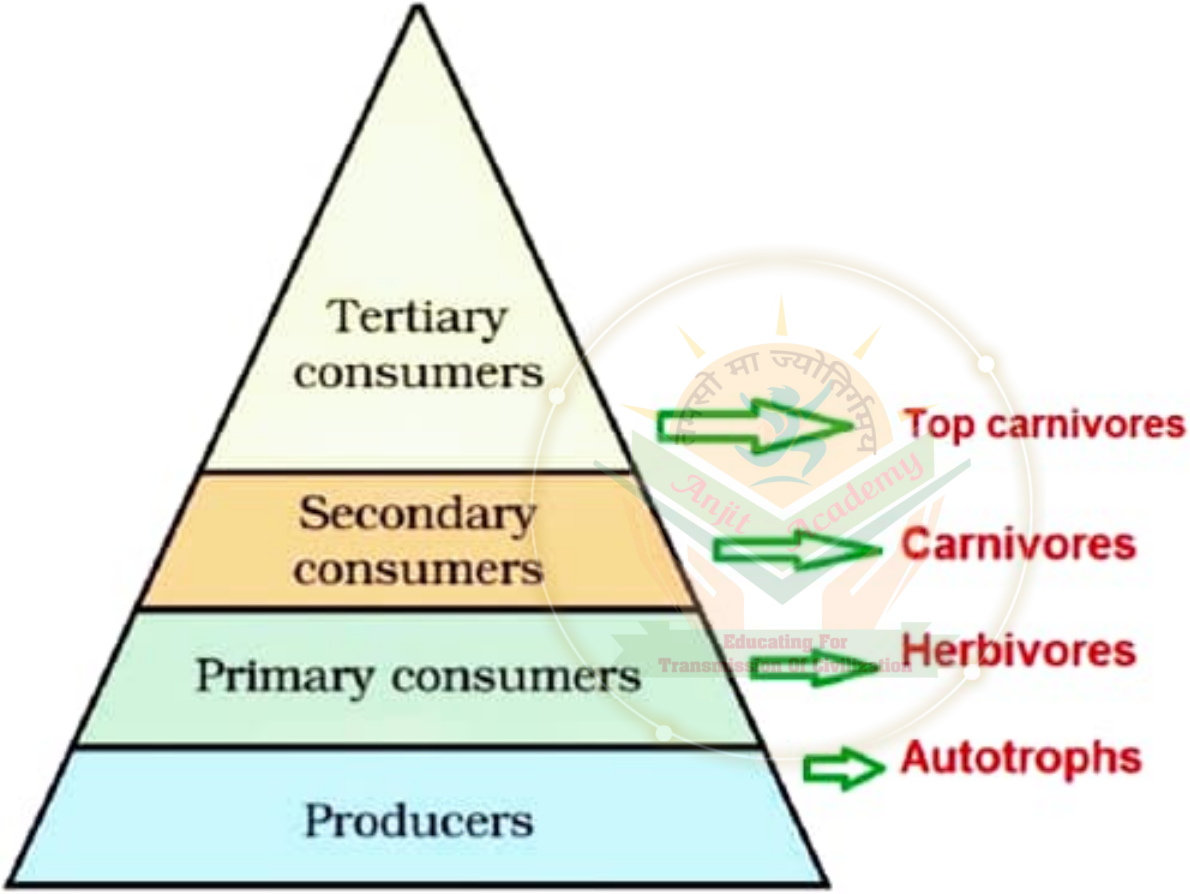
* Trophic level => "feeding level".

↳ Plants are "Producers" and Constitute the → 1st trophic level.

↳ "Herbivores" Constitute the → 2nd trophic level.

↳ "Carnivores" Constitute the → 3rd trophic level.

↳ "Top - Carnivores" Constitute the → 4th trophic level.



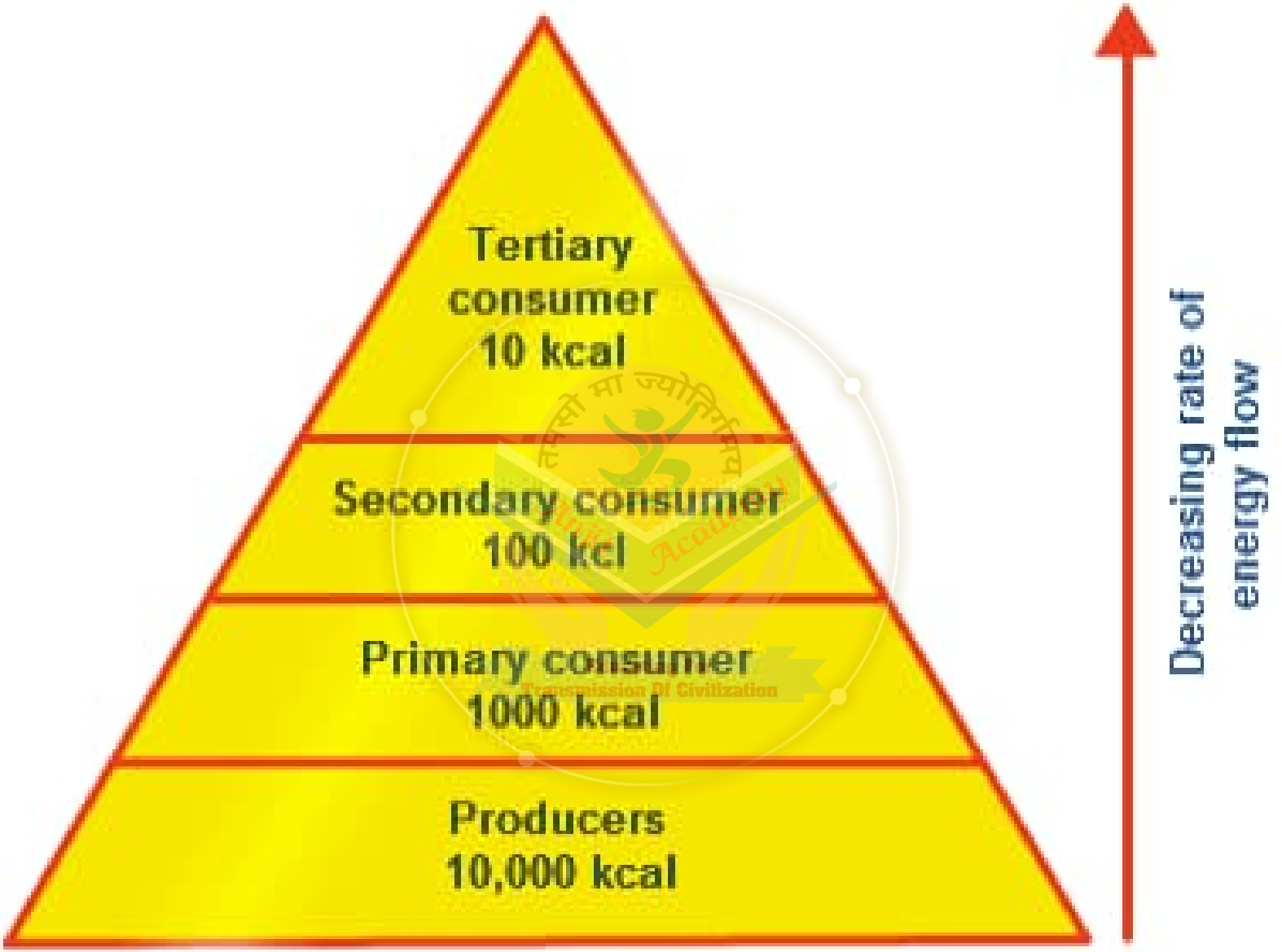
Trophic levels in a food chain

Ten Percent Law

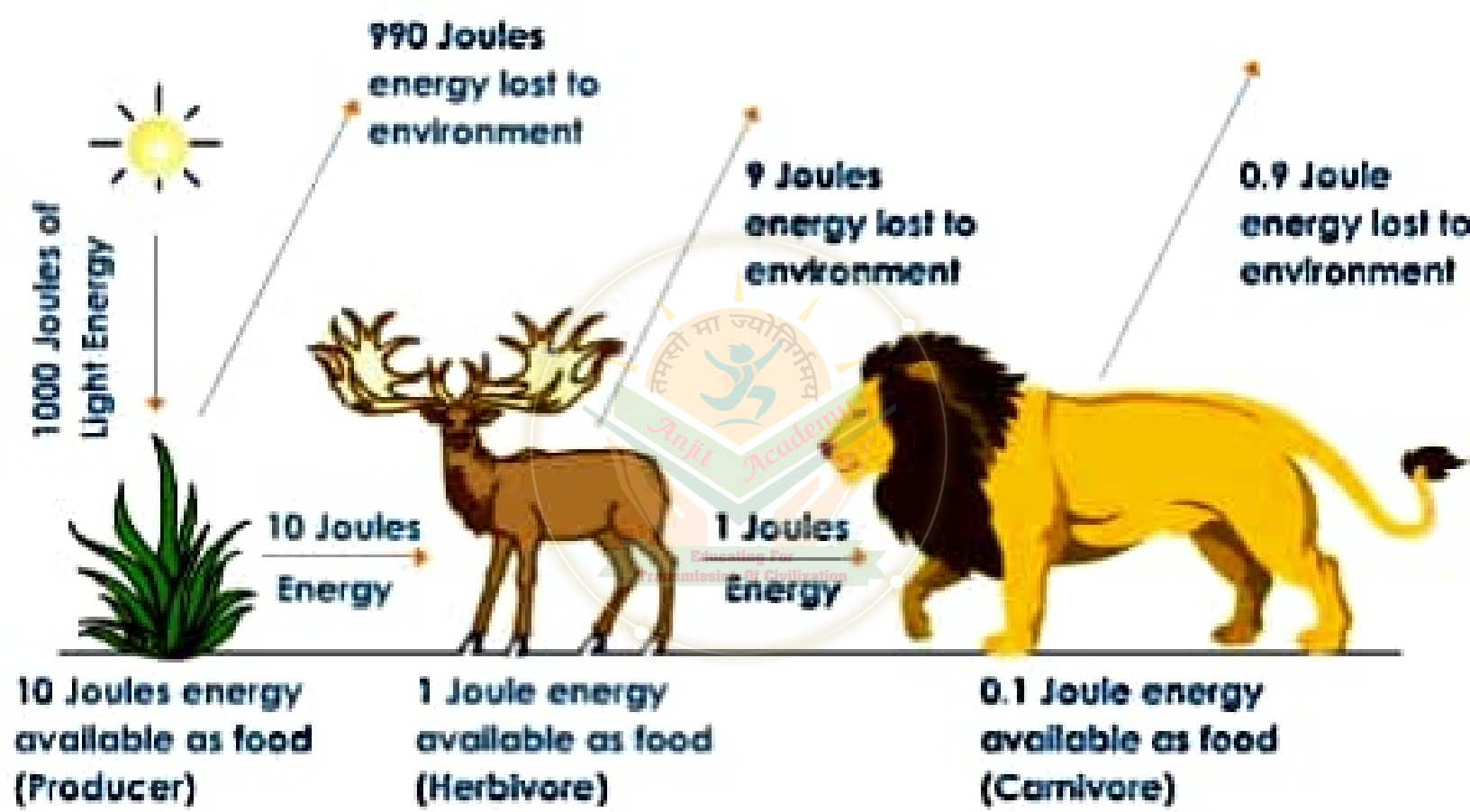
According to ten percent Law :- only 10% of the Energy entering a particular trophic level of org. is available for transfer to the next higher trophic level.

Or

The Energy available at each successive trophic level is 10% of the previous level.



Pyramid of Energy



Progressive Loss of Energy in Food Chain

Qu. → Why the no. of trophic levels in a food chain is limited.?

Solve :- Food Chain generally consist of 3 or 4 steps (3 to 4 organisms), because after that the energy available for the next organisms will be insufficient to sustain the life of that org.

* Biological Magnification :-

i) Also called as → Biomagnification & Bioamplification.

* The increase in concentration of harmful chemical substances like pesticides in the body of living organism."

* A Substance used to destroy pests (insects & weeds) called, Pesticides

↓

It is Non-biodegradable chemicals."

Ex: which of the following will have the max. Concentration of harmful chemicals in its body.

Peacock, Frog, Grass, Snake, Grasshopper.

Depletion of Ozone layer

↳ * The Ozone is an Allotrope of Oxygen.

* Allotrophy refers to an occurrence of one element in more than one form.

↳ * It is "Triatomic". ↳ It is made up of O_3 atoms of Oxygen combined together.

↳ It's blue gas. & poisonous in Nature.

↳ It's found by ↳ Farman 1985 in Antartica

↳ At a height b/w 15 - 60 Km. there is a layer of O_3 gas.

Importance :- Ozone layer is very imp. for the Existence of life on earth because it absorbs most of the harmful ultraviolet radiations coming from the Sun.

Ozone depleting Substances → Reduction in the Concentration of ozone layer is called → Ozone depletion.

↓

It is caused by certain Chemicals called ODS

↓

Ozone depleting Substances

Eg :- CFCs - Chloro fluoro Carbons - (used in Refrigerators)
Halons, CCl_4, Aerosols, Methyl bromide, NO_2

Effects of Ozone depletion :-

1.) Skin cancer.

2.) Damage of Eyes.

3.) Damage of immune sys.

4.) Decreased crop yields.

5.) Smog formaⁿ.

6) Effects of Aquatic food chains.

Imp. Facts :-

1986 → UNEP - United Nations Environment Programme

↓

Its member Countries to freeze "cfc" producⁿ.

→ Managing The Garbage ←

↳ The household wastes is called → Garbage.

↳ Some of the important modes of waste disposal are

1) Recycle.

2) Preparation of Compost.

3) Incineration → 'Reducing to ashes'

↓

Burning of a substance at high temp. (More than 1000°C)

4) Sewage Treatment

5) Landfill.

→ Development of Embryo :- 1) When, the ovum is fertilised in the oviduct, then a zygote is formed.

2) Zygote divides rapidly by Mitosis to forms a → Embryo.

3) The Embedding of Embryo in the thick lining of the uterus is called → Implantation.

4) After Implantation, a disc - like spherical tissue develops the uterus wall

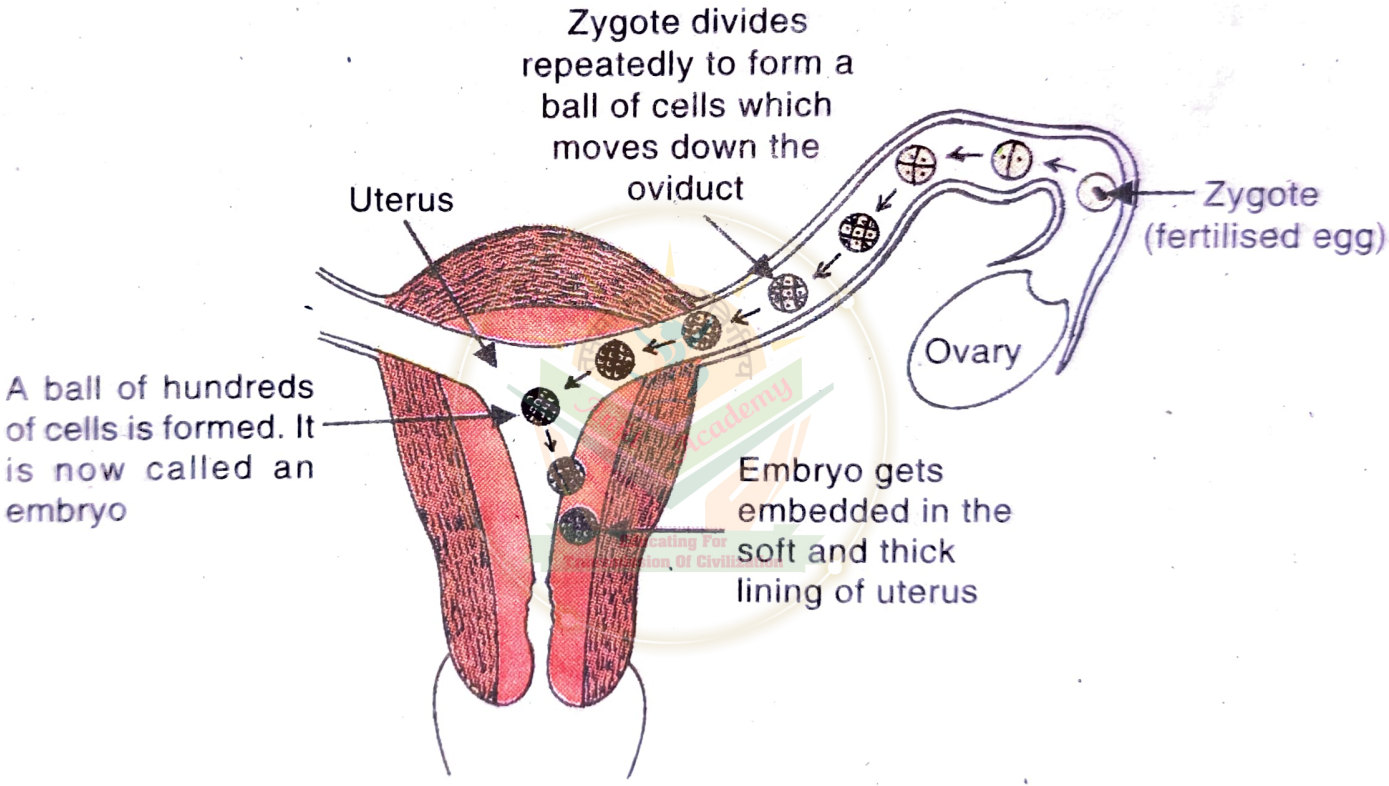


Figure 70. Implantation of embryo in the uterus.

Placenta :- ① It is Connecting link b/w Mother & their baby.

2.) The Exchange of Nutrients, oxygen & waste products b/w the Embryo & the mother takes place through the placenta.

Gestation Period :- ① The time period from the fertilisation up to the birth of the baby is called → Gestation.

② The Average gestation period in humans → About 38 weeks ↓ Nine months.

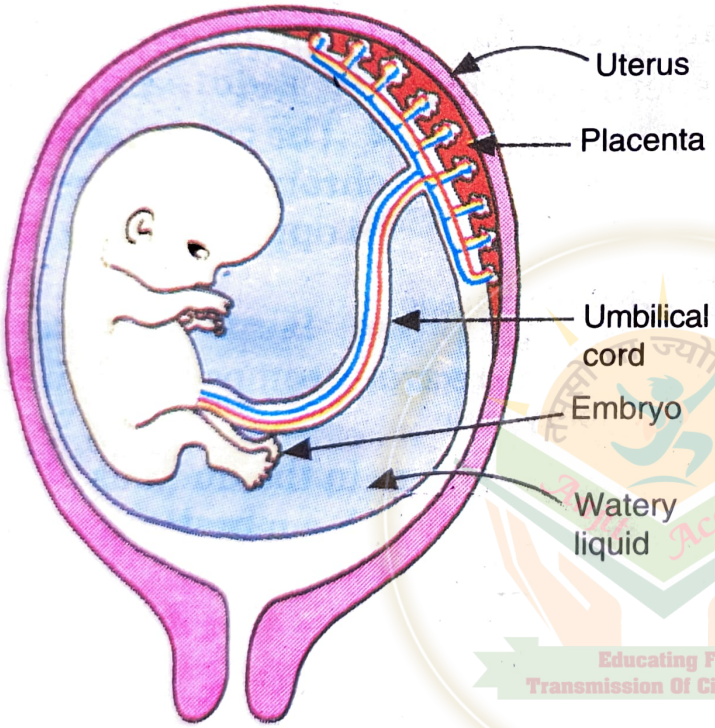


Figure 71. Placenta links the embryo to the mother through umbilical cord. In placenta, the embryo's blood vessels are close to mother's blood vessels but they are not joined. Because the two sets of blood vessels are close to each other, substances (like oxygen, nutrients and wastes) can pass between the two blood supplies.

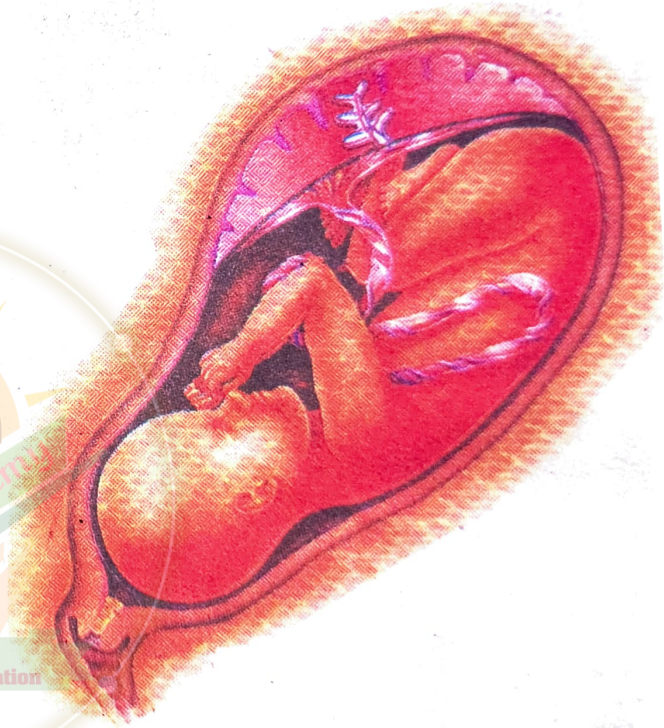
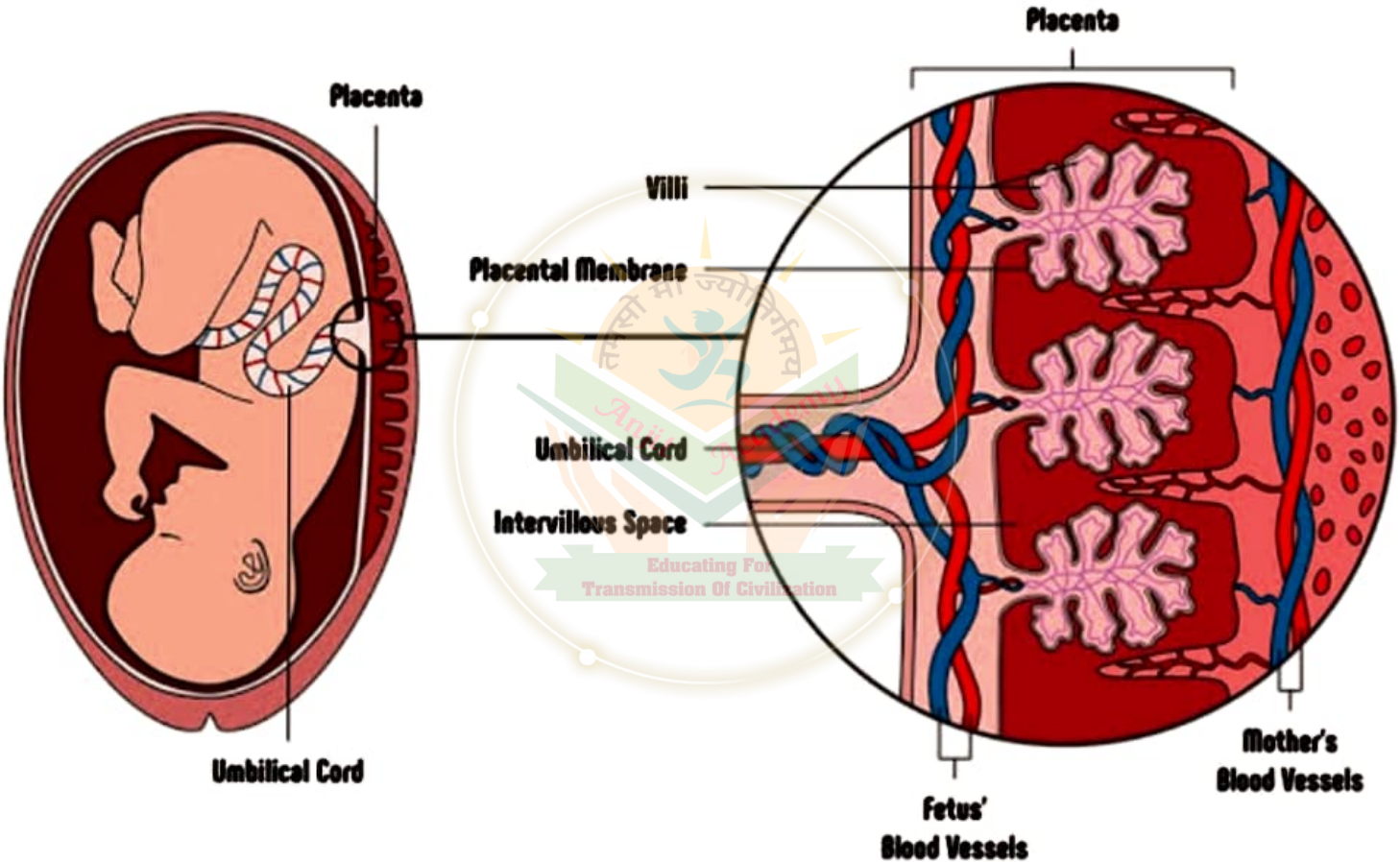


Figure 72. The embryo grows and develops inside the uterus (or womb) of the mother and becomes foetus. This picture shows the side view of developing foetus a few weeks before birth.


Placenta
Placenta
Villi
Placental Membrane
Umbilical Cord
Intervillous Space
Umbilical Cord
Mother's
Blood Vessels
Fetus'
Blood Vessels

Differences Between Zygote, Embryo and Foetus

A zygote is formed after fertilisation. A zygote develops and becomes an embryo. And finally, an embryo develops and becomes a foetus. The main differences between zygote, embryo and foetus are given below :

Zygote	*Embryo*	*Foetus*
1. A zygote is formed by the fusion of male and female gametes (sperm and egg)	1. An embryo is formed by the repeated cell division of a zygote.	1. A foetus is formed by the growth and development of an embryo.
2. A zygote is the beginning of the formation of a baby.	2. An embryo is an unborn baby in the uterus in the early stages of development (up to 8 weeks after fertilisation)	2. A foetus is an unborn baby in the uterus in the later stages of development (after 8 weeks till birth).
3. A zygote is a single cell. It is smaller than a full stop (.)	3. An embryo is multicellular. The body features of growing baby in the embryo are not much developed.	3. A foetus is also multicellular. The body features of developing baby (like hands, legs, head, eyes and ears, etc.) can be identified.

Menstruation Cycle

↳ The release of an ovum from an ovary is called, Ovulation.

↳ The breakdown & removal of the inner, thick & soft lining of the uterus alongwith its blood vessel, called → Menstruation

→ Menstruation occurs every 28 days because ovulation.

Ovulation occurs every 28 days.

* Menstruation stops temporarily when the ovum gets fertilised (Pregnancy)

&

Menstruation restarts after the birth of the baby.

* The Menstrual cycle is Controlled by Hormones.

Imp. Notes :-

1.) The 1st occurrence of Menstruation is called → Menarche. (At the age of puberty)

2) The Permanent Stoppage of Menstruation in a women is called → Menopause.

↓

It is the end of reproduction.

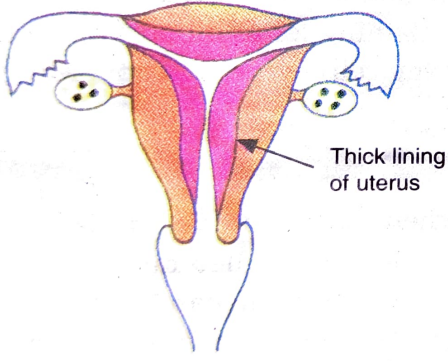


Figure 75. A thick lining grows in the uterus to receive the fertilised egg cell (if any).

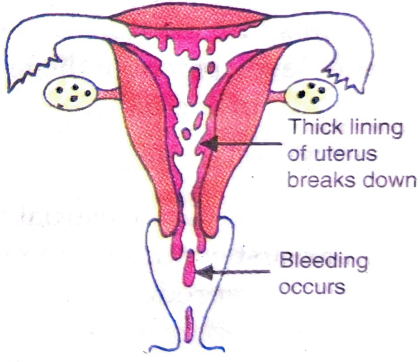


Figure 76. In case the egg cell is not fertilised, the thick uterus lining breaks down leading to bleeding. This is called menstruation (periods).

Birth Control Methods → "BCM"

↳ The prevention of pregnancy in women is called → Contraception.

↳ All the BCM are divided into 3 Categories.

I) Barrier Methods

1) In this types, the physical devices such as Condoms and Diaphragm

Condoms → Used by Males

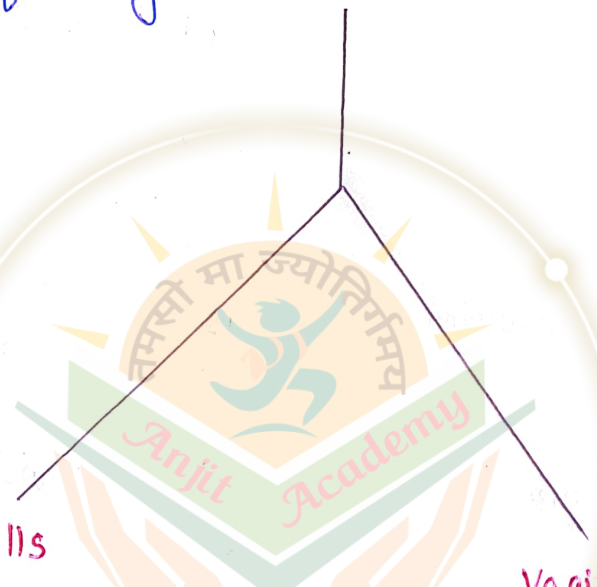
Diaphragm → Used by females.

* Both physical barrier prevent the Sperms from meeting the ovum by Acting as a Barrier b/w them.

2.) Chemical Methods

1.) It is chemical methods of preventing pregnancy.

2.) They are following "two" types



Oral pills

1.) Also called - OC
↓
Oral Contraceptive.

2.) The OC Contain "Hormones" which stop the ovaries from releasing ovum into oviduct.

Vaginal pills.

1.) This pills Contain the chemicals Called -> spermicides, which kill the sperm.

3.) IUCD

↳ Intra Uterine Contraceptive Device.

↓

Called → "Copper - T"

↳ It is also very effective in preventing pregnancy.

↳ Copper - T is placed inside the uterus.

*

↳ The IUCD / copper - T prevents the implantation of fertilised egg in the uterus.

4. Surgical Methods

↳ In Males, a small portion of the Sperm duct is removed by sugical operation.

↓

This process is called as

"Vasectomy".

↳ In Females, a small portion of the oviducts is removed by surgical operation. This prevents the ovum from entering into the oviducts.

↓

This process is called as

"Tubectomy".

STD

→ Sexually Transmitted Diseases.

↓

The disease are spread by sexual contact with an infected person., are called → STD

1.) Gonorrhoea.

2.) Syphilis,

3.) AIDS. – Acquired immuno deficiency syndrom.

* Gonorrhoea & Syphilis are caused by →

Bacteria.

* The common symptoms are → Burning Sensation at urination, passing of urethral discharge. (Pus)

& sores in the Genitals.

* Both are curable diseases.

* AIDS disease is caused by a virus → called → HIV. → Human Immuno deficiency virus.

↳ AIDS damages the body's immune system so that the body becomes weak & can not protect itself against infecⁿ.