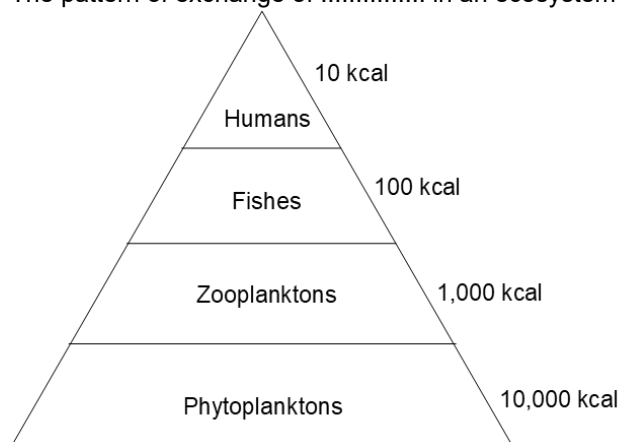


Chapter: 7

Q.1 Fill in the blank and rewrite the completed statements

1

- 1 The pattern of exchange of in an ecosystem is called 'Pyramid of Energy'.

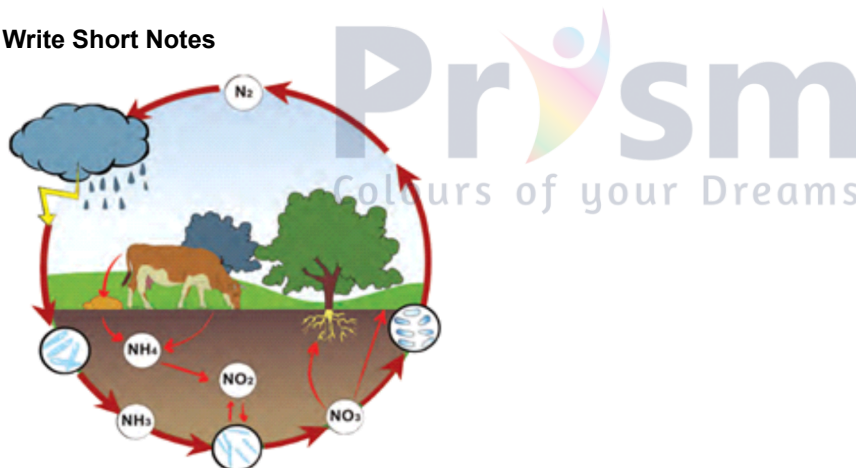


Ans The pattern of exchange of **energy** in an ecosystem is called 'Pyramid of Energy'.

Q.2 Write Short Notes

2

- 1



Identify the above diagram and write a note on it.

Ans The given diagram is of the nitrogen cycle.

- Nitrogen forms 78% i.e. the maximum portion of the atmosphere. It is necessary for the maintenance of the cycle of nature.
- The circulation and recycling of nitrogen gas into the form of different compounds through various biotic and abiotic processes in nature is called the nitrogen cycle.
- All organisms participate in the nitrogen cycle. It is an important component of proteins and nucleic acids.
- As compared to other elements, it is inactive and does not easily combine with other elements. Most organisms cannot use the free form of nitrogen.

Q.3 Attempt the following.

6

- 1 Correct and explain the given statement.
Carnivores occupy the second trophic level in the food chain. Justify.

Ans Justification: Carnivores are dependent on herbivores for food. Herbivores occupy first trophic level in the food chain and therefore, carnivores occupy the second trophic level in the food chain.

- 2 Correct and explain the given statement.
The flow of nutrients in an ecosystem is considered to be a 'one way' transport.

- Ans** Correct statement: The flow of nutrients in an ecosystem is 'cyclic'.
- All organisms need nutrients for their growth. These nutrients are continuously transferred from abiotic to biotic factors and biotic to abiotic factors within an ecosystem.
 - This cycle operates continuously through the medium of the biosphere which is formed by the lithosphere, atmosphere and hydrosphere. Therefore, the flow of nutrients in an ecosystem is 'cyclic.'
- 3** Correct and explain the given statement.
Plants in an ecosystem are called primary consumers.

Ans **Correct statement:** Plants in an ecosystem are called producers (autotrophs).
Justification: Plants are able to synthesize their own food by the process of photosynthesis. Therefore, plants in an ecosystem are called producers (autotrophs). Whereas, herbivores which depend on plants for food are known as primary consumers.

Q.4 Give scientific reasons

6

- 1** Flow of nutrients through an ecosystem is cyclic.

Ans

- All organisms need nutrients for their growth.
- Nutrients, necessary for the growth of organisms are continuously transferred from abiotic to biotic factors and biotic to abiotic factors within an ecosystem.
- This cycle operates continuously through the medium of the biosphere and every organism is benefited.
- If not in cyclic manner, the energy would become extinct and nutrients will be obtained only in one form which cannot be used by all the organisms.

- 2** Equilibrium is necessary in the various bio-geo-chemical cycles.

Ans

- In a bio-geo-chemical cycle, the element is produced and then used again and the cycle is continued.
- It is necessary to maintain the equilibrium so that the concentration of any element should not exceed the natural requirement.
- It can cause disturbance in the surroundings. Example, increase in carbon dioxide level causes increase in the temperature of the surroundings.
- Therefore, equilibrium is necessary in the various bio-geo-chemical cycles.

- 3** Energy flow through an ecosystem is 'one way'.

Ans

- The sun is the most important source of energy in any ecosystem.
- Green plants of the ecosystem store some of the solar energy in the form of food.
- Before reaching the decomposers, this energy is passed on from one trophic level to the next.
- Decomposers dissipate some amount of energy in the form of heat.
- However, no part of the energy ever returns to the sun. Hence, such passage of energy is referred to as 'one way' transport.

Q.5 Give examples

2

- 1** Give any four abiotic processes through which carbon dioxide is released.

Ans Burning of fossil fuels, combustion of wood, forest fires and volcanic activity.

Q.6 Complete the table/ web/ flow chart

3

- 1** Complete the table given below.

Bio-geo-chemical cycles	Biotic processes	Abiotic processes
i. Carbon cycle
ii. Oxygen cycle
iii. Nitrogen cycle

Ans

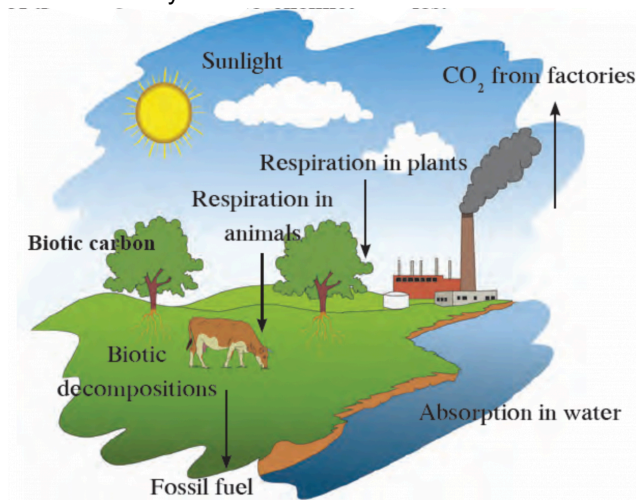
Bio-geo-chemical cycles	Biotic processes	Abiotic processes
i. Carbon cycle	Photosynthesis, respiration in plants and animals, Biotic decompositions.	Burning of fossil fuels, absorption of carbon compounds in water.

ii. Oxygen cycle	Photosynthesis, animal respiration, biodecomposition.	Combustion, corrosion, rusting.
iii. Nitrogen cycle	Nitrogen fixation by nitrogen fixing bacteria like Rhizobium.	Industrial and atmospheric nitrogen fixation.

Q.7 Write answers based on given diagram

3

1 The Carbon Cycle



- What is meant by carbon cycle?
- How is carbon converted from dioxide to carbohydrates?
- Which are the two main biotic processes involved in carbon cycle?

- Ans**
- The circulation and recycling of carbon from the atmosphere to living organisms and after their death back to the atmosphere is called the carbon cycle.
 - Plants convert carbon dioxide into carbohydrates by the process of photosynthesis.
 - Photosynthesis and Respiration.

Q.8 Answer the following

12

1 Explain in detail the inter-relationship between the food chain and food web.

- Ans**
- A definite sequence in the interaction between producers, consumers and saprophytes is called food chain.
 - Each food chain consists of four, five or more links. For example, an insect feeds upon leaves of different plants but at the same time this insect is the prey for various animals like frog, which is again a prey for snake, snake is the prey for eagle or kite. In the similar way rabbits are prey for wild cat and jackals which are again prey for lions.
 - An ecosystem consists of many such food chains which are interconnected at various levels forming an intricate web instead of a linear chain. This kind of intricate network is called a 'food web'.

2 What are the differences between flow of matter and of energy in an ecosystem? Why?

- Ans**
- Flow of matter (nutrients in an ecosystem) is cyclic.
 - However the flow of energy in an ecosystem is 'one way' transport.
 - All organisms need matter (nutrients) for their growth. These nutrients are continuously transferred from abiotic to biotic factors and from biotic to abiotic factors within an ecosystem. Thus flow of matter (nutrients) in an ecosystem takes place in a cyclic manner.
 - During flow of energy, no part of it ever returns to the sun. Therefore, flow of energy in an ecosystem is considered to be a 'one way' transport.

3 What would you do to help maintain the equilibrium in the various bio-geo-chemical cycles? Explain in brief.

- Ans**
- Bio-geo-chemical cycle involves the cyclic flow of nutrients within an ecosystem.
 - Climatic changes and various human activities such as deforestation, air pollution, release of harmful chemical substances into water bodies etc. seriously affect the speed, intensity and equilibrium of bio-geo-chemical cycles.
 - To maintain the equilibrium in the various bio-geo-chemical cycles we must avoid release of harmful chemical substances in water bodies, minimize the use of private vehicles which would help us to reduce air pollution.
 - Plants also play a significant role in maintaining the equilibrium of oxygen and carbon dioxide in the

atmosphere. So we must do tree plantation on larger scale.

v. We must avoid unnecessary deforestation for construction and various other purposes.

4 What type of changes occur in the amount of energy during its transfer from plants to apex consumers?

Ans i. All the plants in the ecosystem are producers.

ii. These plants store some of the solar energy in the form of food.

iii. This stored energy is passed on from one trophic level to the next.

iv. When energy flows from one trophic level to the next, some of the energy is lost as heat at each step.

v. Apex consumers occupy the 3rd position in trophic level.

vi. So the amount of energy decreases during its transfer from plants to apex consumers.

