Lesson No.7
Energy flow in an Ecosystem – Extra Ques

Q. 1 What are the primary consumers directly dependent on ?
Ans- Primary consumers are directly dependent on Autotrophs also called as producers.

Q.2 The cyclic flow of nutrients within an ecosystem is called as the?
Ans. - Bio-geo-chemical cycle.

Q.3 How much percentage of the portion does nitrogen form?
Ans.- 78.

Q.4 Which animals in an aquatic food chain would contain maximum kcal of energy?
Ans- Phytoplankton in an aquatic food chain would contain maximum kcal of energy.

Q.5 What is the category of birds hovering an aquatic ecosystem?
Ans.- Apex consumers.

Q.6 Define food chain.
Ans- The continuous interaction that take place between the procedures, consumers and saprophytes in a definite sequence is called as a food chain.

Q.7 Describe the role of decomposers in a food chain?

Ans- a) The decomposers such as Fungi and other microbes obtain food by decomposition of dead organisms. They convert the complex organic substances into simple carbon compounds. b) These carbon compounds then mix with air, water and soil from where they get absorbed by plants and get integrated into the food chain. c) The decomposers play a significant role in the food chain.

Q.8 Which consumers use herbivores as their food?

Ans- Secondary consumers or carnivores

Q.9 What is the process by which plants convert carbon dioxide into carbohydrates

Ans- Photosynthesis

Q.10 Define food web.

Ans-Many food chains in an ecosystem interconnected at various levels is called food web.

Q. 11 Write a note on sedimentary cycle.

Ans.- a) The major source of abiotic nutrient materials is the lithosphere, the materials such as soil sediment and sedimentary rocks etc. in sedimentary type of cycle. b) It also includes soil components like iron, calcium, phosphorous etc. c) The bio geo chemical cycles are important for the transformation of matter from one form to another. d) This transformation is very much important as matter is available for organisms in specific form e) The bio-geo chemicals are very helpful to maintain the flow of nutrients which are required by all organisms for their growth.

Q.12 Micro organisms that use oxygen for respiration are known as aerobes. Is the following statement true or false?
Ans.- The following statement is true.

Q. 13 After the death of apex consumers to whom does energy becomes available to?
Ans.- After the death of apex consumers the energy becomes available to the decomposers.

Q.14 Give reason for following
The gaseous cycle and sedimentary cycle cannot be completely separated from each other.
Ans.- a) Sedimentary cycle include soil components like iron, calcium, phosphorous etc. Gaseous cycle includes nitrogen, oxygen, carbon dioxide, water vapor etc. b) In the atmosphere, nitrogen is present in the forms of gas, also in the form of its compounds as nitrogen oxide in the soil and sediments.
c) Carbon occurs in abiotic forms mainly in coal, granite, diamond, limestone, etc in earth's crust and as carbon dioxide gas in atmosphere. d) Carbon is usually present in plants and animals for less duration than it is in coal.

Q.15 What is an ecosystem ? Describe its types.
Ans- An ecosystem includes all living things like plants, animals and other organisms in given region, interacting with each other and also with non-living factors as sun, earth soil and also atmosphere. An ecosystem is divided as a) Natural ecosystem and b) Artificial or Manmade. The natural ecosystem is further divided into terrestrial ecosystem and aquatic ecosystem. Terrestrial ecosystem is further divided

into 1) Forest 2) Grassland 3) Desert, the aquatic ecosystem is further divided into marine water and fresh water ecosystem.

Q.16 Who studied the food chain and energy flow through it in 1942 ?

Ans- Lindeman studied the food chain and energy flow through it in 1942.

Q.17 Why is oxygen called ‘Life gas’? explain with Chemical reaction.

Ans:- (1) Oxygen is essential for the process of respiration.

(2) It is responsible for the liberation of energy from carbohydrates and fats.

(3) The energy thus released is necessary for the existence of life. This shows that the oxygen necessary for life.

Q.18 Define carbon cycle.

Ans.- The circulation and recycling of carbon from the atmosphere to living organisms and after their death back to the atmosphere is the carbon cycle.

Q. 19 Define Nitrogen cycle.

Ans- The circulation and recycling of nitrogen gas into the form of different compounds through various biotic and abiotic processes in nature is called nitrogen cycle.

Q.20 Explain food web

Ans.- a) An ecosystem consists of many food chains that are inter connected at various levels. This is called food web.

b) One organism can be the prey for many other organisms.

c) Let us take an example of an insect. An insect feeds upon the leaves of various plants but other animals as wall lizards,

birds, frogs etc feed on the insect. This forms complexly arranged web instead of forming a linear food chain. This elaborate network is called food web.

d) Generally food webs form anywhere in nature

Q. 21 What is trophic level ?

Ans- Each level in the food chain is called trophic level. In trophic level the organism obtains food in the chain. The amount of matter and energy gradually decreases from producers at lowest level to the top consumers at the highest level.

Q.22 Differentiate between

Gaseous cycle	Sedimentary cycle
a) It is an accumulation of the main abiotic gaseous nutrient materials found in the earth's atmosphere	a) It is an accumulation of the main aortic nutrient materials that are in soil, sedimentary rocks etc of earth.
b) It includes nitrogen, oxygen, carbon dioxide, water vapor etc.	b) It includes soil components like iron, calcium, etc

Q. 23 Explain the importance of oxygen

Ans- a) In the atmosphere the total percentage of oxygen is 21% Oxygen is also present in hydrosphere and lithosphere

b) Oxygen is required for different purposes as respiration process, combustion, decomposition, corrosion, rusting etc.

c) Oxygen is important for synthesizing the proteins, carbohydrates and fats.

d) It is also used in different chemical reactions.
e) Ozone (O_3) is produced from oxygen through various atmospheric processes. The ozone layer protects us from the harmful ultraviolet rays of the sun.

Q. 24 Write a note on ammonification ?
Ans.- a) The decay bacteria and fungi that are present in the soil, also called as decomposers, convert the dead remains of plants and animals into ammonia and ammonia compounds.
b) This process of releasing ammonia through decomposition of dead remains or excretory wastes of different organisms is termed as ammonification.

Q.25 Differentiate between carbon cycle and nitrogen cycle
Ans.-

Carbon cycle	Nitrogen cycle
a) Photosynthesis and respiration are the two important process involves in a carbon cycle	a) Different process as nitrogen fixation, ammonnification, nitrification and denitrification are the different process involves in nitrogen cycle.
b) The circulation and recycling of the carbon from the atmosphere to living organisms and after their death back in the atmosphere is called carbon cycle.	b) The circulation and recycling of nitrogen into form of different compounds that take place through different biotic and abiotic processes in nature is called the nitrogen cycle.
c) Carbon which is in the	c) Nitrogen is fixed by

form of carbon dioxide is directly absorbed by plants for photosynthesis.	nitrogen fixation process and then absorbed from the soil as nitrogen can't be directly absorbed by plants.

Q.26 Write a note on nitrification ?

Ans- a) Ammonia is converted into a nitrite and then nitrates this conversion is called nitrification.

Q.27 What are the important processes of nitrogen cycle.

Ans- a) Nitrogen fixation -The process of converting nitrogen into nitrates and nitrites through different processes as atmospheric, industrial and biological processes.

b) Ammonification - Release of ammonia through remains of dead bodies and excretory wasters of organisms.

c) Nitrification - Ammonia is converted into a nitrite and then nitrates, this conversion is called nitrification.

d) Denitification - The conversion of nitrogen components into gaseous nitrogen.

Q.28 In the process of photosynthesis, how do plants release oxygen in the environment ? explain with the Chemical reaction.

Ans.- Green plants during the process of Photosynthesis use carbon dioxide of the atmosphere and release oxygen to the atmosphere.

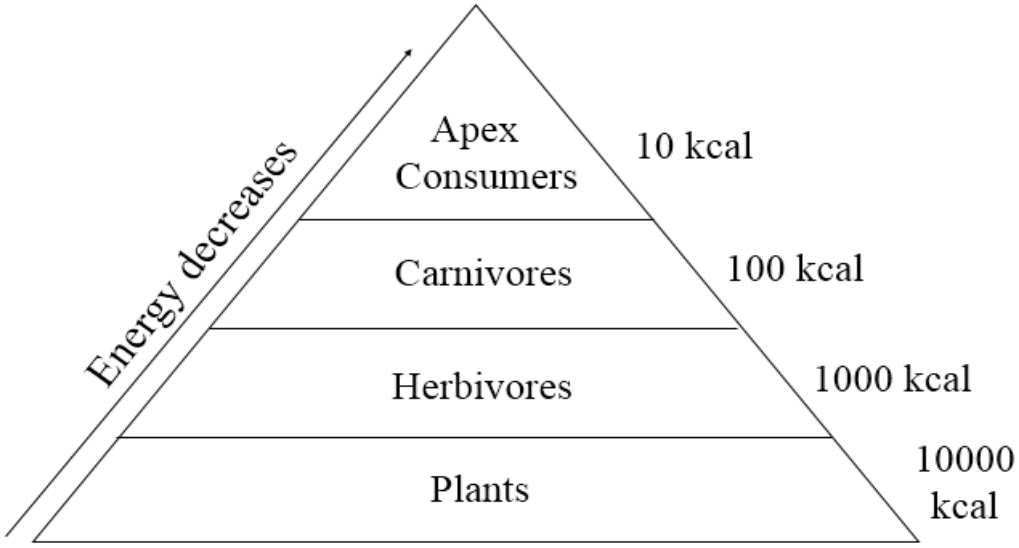
$$6CO_2 + 12H_2O \xrightarrow[Chlorophyll]{nlight} C_6H_{12}O_6 + 6H_2O + 6O_2 \uparrow$$

Q.29 Write a note on “Pyramids of Energy “

Ans- 1)The pyramids of energy are also called as energy pyramids. Charles Elton developed the concept of energy pyramid. It is also called Eltonian pyramid. b) The energy pyramids begin at the producers level at the bottom. The producers are plants, then they increase to trophic levels like herbivores, carnivores etc. c) The highest level of the food chain is at the top, of the food chain. d) When the flow of energy takes place from one trophic level to another, there is considerable loss of energy in the form of heat. e) The plants contain more amount of energy. The least energy is available to apex consumers.

Hence pyramid of energy means the pattern of energy exchange in an ecosystem.

The energy pyramid:



Q. 30 Distinguish between food chain and food web

Ans-

Food chain	Food web
a) Food chain is a single linear sequence of organisms	a) An intricate network of food chains is called a food web
b) Members present at higher trophic level feed on single types of organisms.	b) One organism has alternate food sources.

Q.31 Plants in an ecosystem are called producers

Ans- Plants produce food themselves by using the energy in sunlight by process of photosynthesis. They use some food molecules to satisfy the energy requirements. The other food molecules are stored in bodies.

Q.32 The flow of nutrients in an ecosystem is considered to be a ‘one way’ transport

Ans- The flow of nutrients in an ecosystem is cyclic.

1) All the organisms need nutrients for growth.

2) Plants fulfill their need for nutrients by absorbing nutrients from air, water and soil. These nutrients are transferred from one trophic level to another trophic level.

3) At the last stage decomposers decompose the dead remains and the wastes of living organisms returns the nutrients back to air, water and soil.

4) These nutrients are again absorbed by the plants.

5) Hence, the flow of nutrients in an ecosystem is cyclic.

Q.33 What is bio geo-chemical cycle ?

Ans-The cyclical flow of nutrients within an ecosystem is called bio gas chemical cycle.

Q.34 What are the factors that affect the equilibrium of bio geo chemical cycles.

Ans- Climatic changes and human activities affect the speed, intensity and equilibrium of bio-geo chemical cycles.

Q.35. Which element produces ozone ?

Ans- Ozone (O_2) is produced from oxygen by various atmospheric pressures.

Q.36 What interactions take place between abiotic and biotic factors of an ecosystem ?

Ans.- a) Different living organisms depend on other abiotic factors to survive.

b) The abiotic factors of an ecosystem like type of soil, temperature, humidity etc affects the biotic factors of the ecosystem.

c) The survival of the organisms are dependent on the abiotic factors of an ecosystem.

d) Biotic factors take in or give out various factors Biotic factors are depleting or adding to the abiotic factors in the ecosystem.

e) The biotic factor affects the quality of the abiotic factor around itself and affects the lives of other biotic factors with which it shares the ecosystem.

Q.37 Match the pairs

Column A	Column B
1)Rabbit	Decomposer
2) Gaseous cycle	$CO_2 \rightarrow O_2$
3) Fungus	Producer
4) Sedimentary cycle	Primary consumer
5) Plant plankton	Phosphorous

Ans.-

Column A	Column B
1)Rabbit	Primary consumer
2) Gaseous cycle	$CO_2 \rightarrow O_2$
3) Fungus	Decomposer
4) Sedimentary cycle	Phosphorous
5) Plant plankton	Producer

Q.38 Write a note on importance of bio geo chemical cycles.

Ans- The Bio chemical cycles are very essential as they manage the elements necessary for life on earth by cycling them through the biological and physical factors of the world. Bio geo chemical cycles, help in maintaining the flow of nutrients which are required by all organisms for their growth. Hence bio geo chemical cycles are a form of natural recycling that allows the continuous survival of ecosystem.

Q.39 Describe the role of ammonification in the nitrogen cycle.

Ans.- Ammonification is carried out by bacteria that convert organic nitrogen to ammonia through decomposition of dead bodies and excretory waste of organisms.

Q.40 What is a food chain ?

Ans.- Food chain is a linkage of organisms within an ecosystem, in which each link depends on one before it for food and is fed on by the one after it.

Q.41 Differentiate between flow of matter and flow of energy in an ecosystem.

Ans.-

Flow of in an ecosystem	**Flow of nutrients in an ecosystem**
1) Flow of energy in an ecosystem is unidirectional.	1) Flow of nutrients in a ecosystem is cyclic.
2) The energy from producers to consumers is passed from one tropic level to the other trophic level.	2) Nutrients from producers is passed from primary consumers and from primary consumers and from primary consumers and from primary consumers to secondary consumers. Only decomposers make the nutrients available in a cyclic way.

Q.42 In the various bio geo chemical cycles, it is necessary to maintain equilibrium.

Ans.- a) The balance in bio geo chemical cycle occurs when there is balance in the cycling of the elements in biosphere.

b) Climatic changes and different human activities affect the speed, intensity and equilibrium of bio geo chemical cycles.

c) For a healthy ecosystem, equilibrium is important in the bio geo chemical cycles.

Q.43 Explain the food chain of aquatic ecosystem.

Ans.- Let us take example of fresh water aquatic ecosystem like a pond. The organisms in this food chain include algae, small animals, small fish, big fish and fish eaten by birds or animals.

Q.44 What happens to the energy during its transfer from producers to apex consumers ?

Ans.- The amount of energy slowly decreases during its transfer from producers apex consumers.

Q.45 Which cycle is more effective in temperate zone and why ?

Ans.- The temperate forests have a variety of species, soils and ecosystems carbon pool. The plant species growing here and deciduous, the leaves fall in winter season, decomposing increasing the carbon content of the soil. A wide variety of animals also are dwelling in the temperate forests. During respiration CO_2 is added to the atmosphere. The circulation and recycling of carbon atoms is more in temperate regions. Hence carbon cycle is more effective in the temperate zone

Q.46 Differentiate between producers and consumers.

Ans.-

Producers	Consumers
1) Producers are the first trophic level of food chain and food web.	1) Consumers are at the second, third and apex trophic level of food chain and food web.
2) Producers convert the solar energy into chemical energy	2) Consumers use the chemical energy of food and use it for its nutrition
3) Most plants are producers	3) Animals in the world are consumers.
4) Producers are autotrophic.	4) Consumers are heterotrophic

Q.47) The fertility of soil is deceased by denitrification.

Ans.- 1) In the process of denitrification, some bacteria convert the nitrogenous salts into molecular nitrogen.

2) According to Denitrification the availability of nitrogenous salts decrease in the soil.

3) The plants cannot use the molecular nitrogen. Hence, the fertility of soil is decreased by denitrification.

Q.48 Green plants are required to operate oxygen cycle in nature.

Ans.- Green plants release oxygen and make it available for the operation of oxygen cycle. This takes place during photosynthesis process. This oxygen is utilized by all the processes on earth. Hence if green plants are not present, then there will be no photosynthesis hence no releasing oxygen.

Hence, green plants are required for the oxygen cycle to operate.

Q.49) Why do we rarely see linear food chain in nature?

Ans.- (1) In any food chain, the first link is a producer and all others are consumers.

(2) Each consumer may be eaten by consumer of next trophic level.

(3) Different food chains usually intertwine among each other and then, there is a complex interaction seen with respect to feeding.

(4) One organism may feed on several different organisms.

(5) Therefore, food chains are observed to be rarely simple.

Q.50 Describe the oxygen cycle.

Ans.- 1) The air contains 21% of oxygen, the atmospheric oxygen is slightly soluble in water.

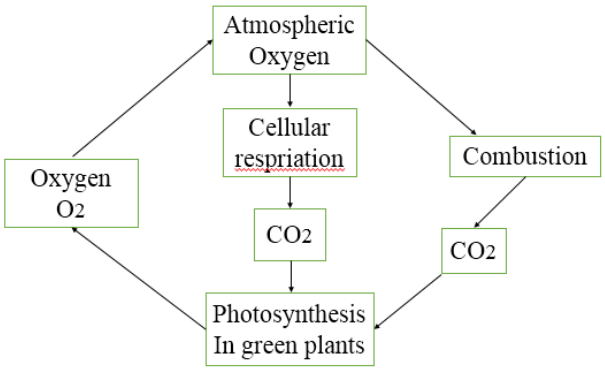
2) Terrestrial plants and animals obtain oxygen from air. Aquatic plants and animals use oxygen dissolved in water for respiration.

3) Fuels need oxygen for combustion. After combustion, with carbon dioxide, energy is released.

4) The processes of respiration and combustion take atmospheric oxygen and release carbon dioxide.

5) Plants use carbon dioxide from atmosphere, release oxygen during the process of photosynthesis.

6) Oxygen combines with air, and the cycle is completed.


Atmospheric Oxygen
Cellular respriation
Combustion
Oxygen O2
CO2
CO2
Photosynthesis In green plants

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