Solution 21
(a) The micro-organisms which break down the complex organic compounds present in dead organisms like dead plants and animals and their products like faeces, urine, etc., into simpler substances are called decomposers. Example - Bacteria and Fungi.
(b) The decomposers help in decomposing the dead bodies of plants and animals, and hence act as cleansing agents of environment.
Solution 22
(i) The animals which eat only plants are called Herbivores. All herbivores are primary consumers. Example - Goat
(ii) The small carnivores which feed on herbivores (primary consumers) are called secondary consumers. Example - Frog
(iii) The Large carnivores (or top carnivores) which feed upon the small carnivores (secondary consumers) are called tertiary consumers. Example - Lion
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Solution 23

Food chain in Grass land:

Grass (Producer) ⟶ Insect (Herbivore) ⟶ Frog (Carnivore) ⟶ Bird (Large Carnivore)

The secondary consumer is Frog.

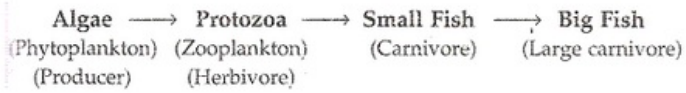
Solution 24
(a) Trophic Levels - The various steps in a food chain at which the transfer of food takes place are called trophic levels. In a food chain, each step representing an organism forms a trophic level.

Grass (Producer) ⟶ Insect (Herbivore) ⟶ Frog (Carnivore) ⟶ Bird (Large Carnivore)

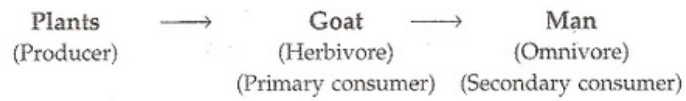
(b) If we kill all the organisms in one trophic level, then the transfer of food (and energy) to the next trophic level will stop due to which the organisms of next trophic level will starve and die or migrate to other areas. The killing of all the organisms in one trophic level will also lead to the overpopulation of organisms in the previous trophic level. These effects will cause an imbalance in the ecosystem. For example, if we kill all the herbivorous animals like deer, rabbits, etc., in a forest, then the carnivorous animals like lions, tiger, etc., will not get food. Due to this, the lions and tigers etc., will starve and die or migrate from forest and go towards human settlements and attack people. Moreover, in the absence of herbivores like deer, rabbits, etc., the population of the previous trophic level 'plants' (or vegetation) will increase too much (because there are no deer or rabbits to eat them). All these effects will create an imbalance in the ecosystem.
Solution 25
The organisms belonging to the first trophic level are producers which make their own food with the help of sun's energy. For example - Green plants. The organisms of third trophic level are

carnivores that feed upon herbivores. For example - Lion and Tiger.
Solution 26
No. The impact of removing all the organisms of a trophic level will be different for different trophic levels.
Solution 27
If all the lions are removed, then there will be no predator control over the population of deer due to which its populations will greatly increase and deer will eat all grass. Over grazing will eliminate the grass and other green plants completely and turn the lush green forest into a desert area having no vegetation at all.
Solution 28
Frogs eat up mosquitoes. In the absence of frogs, the number of mosquitoes increase too much and spread malaria.
Solution 29
Bioderghradable Wastes
1. Those waste materials which can be broken down to non-poisonous substances in nature by the action of microorganisms (like bacteria) are called biodegradable wastes.
2. They get recycled and therefore do not require dumping sites.
3. They do not cause any pollution to the soil.
Example:- Paper, Wood, etc.
Non-Biodegradable Wastes
1. Those waste materials which cannot be broken down to non-poisonous substances in nature are called non-biodergradable wastes.
2. They cannot be recycled easily and therefore are to be dumped which requires lot of space. This cause wastage of land.
3. The harmful chemical leach out of these wastes when they are dumped in soil. This leads to soil pollution.
Example:- DDT, Plastic and Polythene bags
Solution 30
Glass bottle - Non-biodegradable Paper - Biodegradable Ball point pen refill - Non- biodegradable Hay - biodegradable DDT - Non-biodegradable Wheat - Biodegradable Cake - Biodegradable Wood - Biodegradable Polythene Bag - Non-biodegradable Jute Bag - Biodegradable Cotton Cloth - Biodegradable Grass - Biodegradable Vegetable peels - Biodegradable
Solution 31
(a) We take a piece of paper and a plastic bag (Polythene Bag). Now dig the ground to about 15 centimeters depth and place the piece of paper and plastic bag in the dug up ground separately. After a month, we dig up the buried material and observe them. We will find that the piece of paper has been partially eaten up but the plastic bag has been remained unaffected. This means that the paper have been decomposed by the micro-organisms present in the soil. So paper is biodegradable. On the other hand, the plastic bag has not been decomposed by the micro ?organisms present in the soil, therefore It is non-biodegradable.
(b) It is due to the property of decomposer organisms of being specific in their action that some waste materials are biodegradable and other are non- biodegradable.
Solution 32

(a)



(b)



(c) Plants ⟶ Grasshopper ⟶ Frog ⟶ Snake ⟶ Hawk

Solution 33
(a) Third trophic level
(b) Second trophic level
(c) Third trophic level
(d) Second trophic level
(e) Fourth trophic level
Solution 34
(a) Weed Tadpole Water beetle
(b) Three
Solution 35

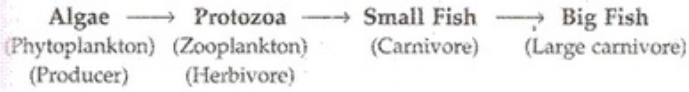
(a)

Algae ⟶ Protozoa ⟶ Small Fish ⟶ Big Fish ⟶ Man

(b)

Plants ⟶ Man

Solution 36
(a) Jute bags should be used for shopping because these are biodegradable whereas plastic bags are non- biodegradable.
(b)



Solution 37
Pond is a complete eco system having decomposer organisms which are the cleansing agents themselves. Aquarium is an incomplete ecosystem and does not have decomposer organisms for cleansing purposes.
Solution 38
In the absence of decomposers, the dead bodies of plants and animals would keep lying as such and the elements of plant and animal bodies would never be returned to their original pool like soil, air and water. The cycling process of life and death would be disrupted. The nutrient pool will not be replenished and would exhaust soon.
Solution 39

Food Chain	Food Web
1. Food Chain is a straight sequence of organisms.	1. Food web is a complex network formed of many food chains.
2. Food chain do not have any cross linkages.	2. Food web has many cross linkages.

Solution 40
(a) Trophic Level

(b) Abiotic components
(c) Consumers
(d) Environment
(e) Ecosystem
Solution 41
(a) The waste materials which can be broken down to non-poisonous substances in nature in due course of time by the action of micro-organisms like certain bacteria are called biodegradable waste materials. Example ? Paper and wool.
(b) Aluminum wire and Synthetic fibre.
Solution 42
(a) The waste materials which cannot be broken down into non-poisonous or harmless substances in nature are called non-biodegradable waste materials. Example - D.D.T and Plastics. (b) Animal Bones and Leather Belts.
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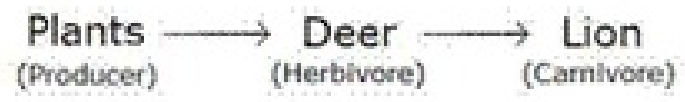
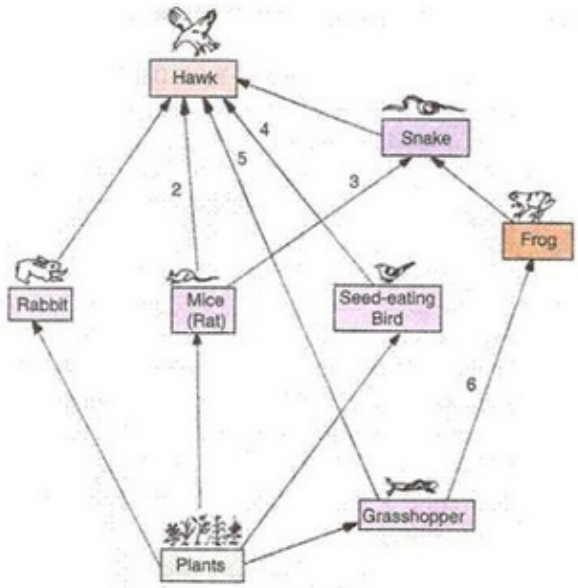
Solution 43
(a) An eco system is a self contained unit of living things(plants, animals and decomposers), and their non living environment (soil, air and water). Example - a grassland and a forest.
(b) (i) Biotic component - The biotic components of the ecosystem is a community of organisms which is made up of many different inter-dependent populations. It includes - producers, consumers and decomposers.
(ii) Abiotic components - The abiotic components of the ecosystem (non living components) include the physical environment like soil, water and air alongwith the in organic substances like carbon dioxide, nitrogen, water and phosphorous.
Solution 44
(a) The sequence of living organisms in a community in which one organism consumes other organisms to transfer food energy is called a food chain. The simple food chain operating in grass land is:



Solutions-44

(b) The interconnected food chains operating in an ecosystem which establish a network of relationships between various species is called a food web.



This is a food web.

In this food web, we can see a network of numerous pathways along which the food flows within grass land community. This food web starts from the plants which is producer and end in top carnivore hawk.

Solution 45

(a)The physical and biological world together is called environment.

(b) The non- biodegradable wastes pollutes the environment like plastic and polythene bags.

(c) Human beings are the only organisms which change the natural environment to fulfill their needs. The uncontrolled activities of human beings are damaging the balanced and healthy environment.

(d) Paper bags should be used for shopping because these are biodegradable whereas plastic bags are non- biodegradable.

********** END **********