Important Questions of Our Environment Class 10 Science Chapter 15

Question 1.
Why is the maximum concentration of pesticides found in human beings?
Answer:
The pesticides are not biodegradable, they get accumulated progressively at each trophic level. As human beings occupy the topmost level in food chain, their concentration becomes maximum in our bodies.

Question 2.
Give one method which could be applied to reduce our intake of pesticides through food to some extent.
Answer:
By using biological methods for controlling insects in fields and by washing fruits and vegetables before eating could help to reduce our intake of pesticides through food to some extent.

Question 3.
Various steps in a food chain represent:
(a) food web
(b) trophic level
(c) ecosystem
(d) biomagnification.
Answer:
(b) trophic level

Question 4.
With regard to various food chains operating in an ecosystem, man is a:
(a) Consumer
(b) Producer
(c) Producer and consumer
(d) Producer and decomposer. (2020)
Answer:
(a) consumer

Question 5.
Food web is constituted by
(a) relationship between the organisms and the environment
(b) relationship between plants and animals
(c) various interlinked food chains in an ecosystem
(d) relationship between animals and environment. (2020)
Answer:
(c) various interlinked food chains in an ecosystem

Question 6.
What is an ecosystem? (Delhi 2017)
Answer:
An ecosystem is defined as a structural and functional unit of the biosphere. It comprises of living organisms and their non-living environment that interact by means of food chains and biogeo-chemical cycles resulting in energy-flow, biotic diversity and material cycling to form stable self-supporting system.

Question 7.
Why is a lake considered to be a natural ecosystem? (Delhi 2017)
Answer:
Lake is an ecosystem where living organisms grow, reproduce and interact among each other as well as with abiotic components and carry out other activities in nature by themselves without any human interference, therefore it is referred to as a natural ecosystem.

Question 8.
In the following food chain, plants provide 500 J of energy to rats. How much energy will be available to hawks from snakes?
Plants → Rats → Snakes → Hawks (AI 2017)
Answer:
In an ecosystem, only 10% of energy is transferred from one trophic level to next, i.e. 10 percent law and rest is dissipated into the environment. Therefore, if plants (being producers-1st trophic level)-transfer 500 J of energy to rats (2nd trophic level) then rats would transfer 50 J of energy to snakes (3rd trophic level) which in turn will transfer only 5 J of energy to hawks (4th or last trophic level) in a food chain.

Plants	→ Rats	→ Snakes	→ Hawks
5000 J	500 J	50 J	5 J

Question 9.
In the following food chain, 100 J of energy is available to the lion. How much energy was available to the producers?
Plants → Deer → Lion (AI 2017)
Answer:
As per 10% law of flow of energy in an ecosystem only 10% of energy is received by the next trophic level. Hence, in the given food chain : If 100 .J of energy is available to lion, the plants or producers have 10,000 J of energy available to them.

Plants	→	Deer	→	Lion
10, 000 J		1000 J		100 J

Question 10.
List two biotic components of a biosphere. (Delhi 2016)
Answer:
Two biotic components of a biosphere are:
(i) Producers – Include organisms which can produce their food using simple inorganic compounds, e.g., all green plants, blue green algae (cyanobacteria).
(ii) Consumers – Include organisms which are unable to synthesise their food, therefore, utilise materials and energy stored by the producers or eat other organisms, e.g., all the animals.

Question 11.
Why are green plants called producers? (Delhi 2016)
Answer:
Green plants are called producers because they manufacture their own food with the help of CO_2 and H_2O in the presence of sunlight and chlorophyll.

Question 12.
In a food chain of frog, grass, insect and snake, assign trophic level to frog. (AI 2016)
Answer:
In the given food chain, frog belongs to the third trophic level as shown here :

Grass	→	Insect	→	Frog	→	Snake
T_1		T_2		T_3		T_4

Question 13.
Why do producers always occupy the first trophic level in every food chain? (Foreign 2016)
Answer:
Producers are the green plants that can manufacture food using CO_2 and H_2O in the

presence of sunlight, i.e., they are autotrophs. They serve as a source of food for all non-producers or consumers directly or indirectly. Hence, producers occupy the first trophic level in a food chain.

Question 14.
We often use the word environment. What does it mean? (Foreign 2016)
Answer:
Environment can be defined as the physical or biological world where an organism lives. Literally speaking, an organisms immediate surrounding constitutes its environment which includes both biotic and abiotic components around him.

Question 15.
Which of the following are always at the second trophic level of food chains?
Carnivores, Autotrophs, Herbivores (AI 2015)
Answer:
Herbivores always occupy the second trophic level of food chains.

Question 16.
The following organisms form a food chain. Which of these will have the highest concentration of non-biodegradable chemicals? Name the phenomenon associated with it. Insects, Hawk, Grass, Snake, Frog (Foreign 2015)
Answer:
Among the following organisms of the food chain, hawk being top consumer is present at topmost trophic level, hence will have the highest concentration of non-biodegradable chemicals due to a phenomenon known as biomagnification.

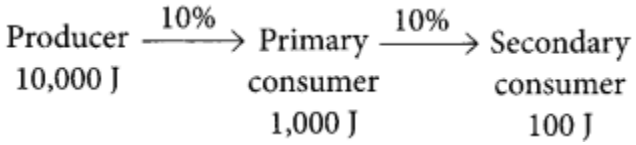
Question 17.
List two examples of natural ecosystem. (Foreign 2015)
Answer:
The two examples of natural ecosystem are :

- Forest ecosystem
- River ecosystem

Question 18.
What is meant by the term ‘Biomass? (Board Term I, 2014)
Answer:
Biomass is the total amount of living or organic matter in an ecosystem at any time.

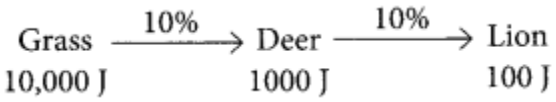
Question 19.
Bacteria and fungi are called decomposers. Why? (Delhi 2012, Foreign 2011)
Answer:
Bacteria and fungi are called decomposers because these microorganisms break down the complex organic matter present in dead plants and animals into simpler substances.

Question 20.
In a food chain, if 10,000 joules of energy is available to the producer, how much energy will be available to the secondary consumer to transfer it to the tertiary consumer? (AI 2012)
Answer:
According to ten percent law, 10% of the energy of producer will be available to primary consumer, and 10% of this energy will be available to secondary consumer and so on.



Hence, 100 J of energy will be available to the secondary consumer to transfer it to tertiary consumer.

Question 21.
Consider the following food chain which occurs in a forest:
Grass → Deer → Lion
If 10000 J of solar energy is available to the grass, how much energy would be available to the deer to transfer it to the lion? (Foreign 2012)
Answer:
The energy available to the deer is 1000 J to transfer it to the lion. This can be depicted as follows:



Question 22.
What is meant by biological magnification? (AI 2011)
Answer:
Biological magnification or biomagnification refers to the process of accumulation of non- biodegradable chemicals (pesticides, etc.) into the body of organisms through the food chain which go on increasing in its concentration at each trophic level.

Question 23.
Give an example to illustrate that indiscriminate use of pesticides may result in the degradation of the environment. (AI 2011)
Answer:
Pesticides are the chemicals used to kill plant and animal pests. They are non-biodegradable and toxicants. For example, excessive use of DDT resulted in reduced population of fish eating birds. DDT accumulated in such birds through the food chain. It interfered with the egg shell formation. The shell being thin broke due to weight of the bird during incubation. Hence, their population declined.

Question 24.
What are decomposers? List two important roles they play in the environment. (AI 2014)
Answer:
Decomposers are microorganisms including bacteria and fungi which decompose or break-down the complex organic compound present in dead plants and animals into simpler substances. Role of decomposers in environment are-

- They help in decomposing dead bodies of plants and animals and hence act as cleansing agents of environmcnl.
- 'They help in recycling of materials in the ecosystem lo maintain its stability.

Question 25.
List two reasons to show that the existence of decomposers is essential in an ecosystem. (AI 2014)
Answer:
The existence of decomposers in an ecosystem is essential because:
(i) If there were no decomposers, then the dead bodies of plants and animals would keep lying as such and the elements constituting plant and animal bodies would never be returned to their original pools like soil, air and water. In such case the organic waste go on accumulating and the cyclic process of life and death would be disrupted.

(ii) Decomposers make the soil fertile by providing/replenishing nutrients to it, thus forming the integral part of ecosystem.

Question 26.
State with reason any two possible consequences of elimination of decomposers from the earth. (AI 2014)
Answer:
Consequences of elimination of decomposers are:

(i) There would be no recycling of nutrients and therefore, raw materials to produce food will not be available to producers. Hence, the food chains will get affected.
(ii) The dead bodies of plants and animals will go on accumulating in the absence of decomposition thereby polluting the environment.

Question 27.
What does a trophic level represent in a food chain? State the position of autotrophs and herbivores in a food chain. (Delhi 2013C)
Answer:
Trophic level represents each of several hierarchical levels of a food chain operating in an ecosystem, consisting of organism sharing the same function in the food chain and the same nutritional relationship to the primary sources of energy.

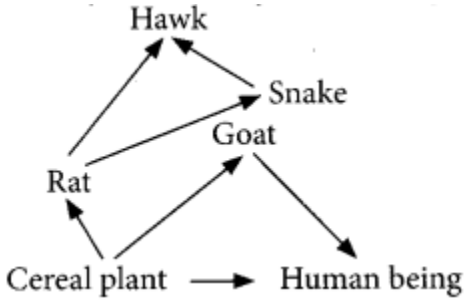
The position of producers (or autotrophs) in a food chain constitute the first trophic level. They fix up sun's energy and make it available for consumers. The herbivores or primary consumers (which feed upon plants) constitute the second trophic level in a food chain.

Question 28.
(a) From the following group of organisms create a food chain which is most advantageous for human beings in terms of energy.
Hawk, Rat, Cereal plant, Goat, Snake, Human being
(b) State the possible disadvantage if the cereal plant is growing in soil rich in pesticides.
(c) Construct a food web using the organisms mentioned above. (2020)
Answer:
(a) A food chain which is most advantageous for human beings in terms of energy is:
Cereal plant → Human being

(b) If the cereal plant is growing in soil rich in pesticides, these pesticides are absorbed by growing plants along with water and minerals, when animals eat these cereal plants, these poisonous chemical pesticides go into their bodies through food. This increase in concentration of harmful pesticides in the body of living organisms at each trophic level of a food chain is called biological magnification. Pesticides are lethal to non-target species also. The extensive use of pesticides in agriculture can change the community

of microorganisms living in soil.

(c)



Question 29.
(a) Create a food chain of the following organisms.
Insect, Hawk, Grass, Snake, Frog
(b) Name the organism at the third trophic level of the created food chain.
(c) Which organism of this food chain will have the highest concentration of non-biodegradable chemicals?
(d) Name the phenomenon associated with it.
(e) If 10,000 Joules of energy is available to frogs, how much energy will be available to snakes in this food chain? (2020)
Answer:
(a) Grass → Insect → Frog → Snake → Hawk
(b) Frog is present in the above created food chain.
(c) Hawk is the top consumer of the food chain, so, it will have high concentration of non- biodegradable chemicals.
(d) Biological magnification
(e) As per 10% law of flow of energy in an ecosystem, only 10% of energy is received by the next trophic level. Hence, in the given food chain, if 10,000 Joules of energy is available to frog, then the energy available to snakes will be 1000 Joule.

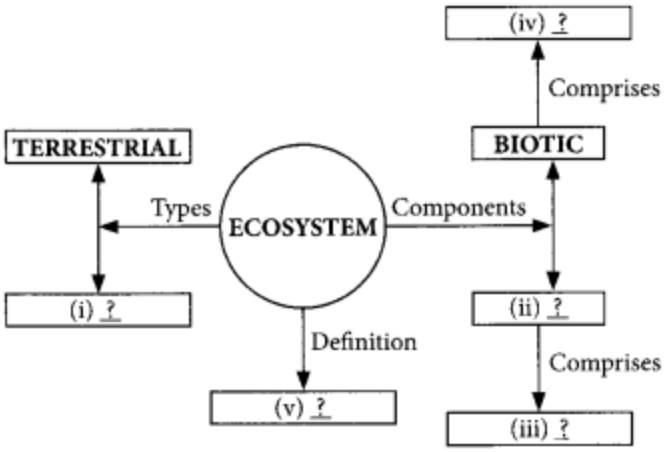
Grass	→	Insect	→	Frog	→	Snake	→	Hawk
10,00000 J		10,0000 J		10,000 J		1000 J		100 J

Question 30.
(a) What is an ecosystem?
(b) List any two natural ecosystems.
(c) We do not clean ponds or lakes but an aquarium needs to be cleaned regularly. Why? (2020)
Answer:
(a) An ecosystem is defined as a structural and functional unit of the biosphere comprising of living organisms and their non-living environment.

(b) Two examples of natural ecosystem are: pond ecosystem and grassland ecosystem.
(c) Ponds or lakes being natural ecosystems are self sufficient and do not need to be maintained regularly. On the other hand, aquarium being an artificial ecosystem needs to be cleaned and maintained regularly as it contains mainly fishes as living organisms, as compared to natural ecosystems where presence of other organisms maintains a balance. Also, because the producers and decomposers are absent in aquarium the fish waste or excretory products, i.e., ammonia may turn into toxic compounds and accumulate to dangerous levels causing the fishes to die. Hence, the artificial ecosystems like aquarium needs to be cleaned regularly.

Question 31.
What is meant by trophic level in a food chain? Construct a terrestrial food chain with trophic levels. The energy flow in a food chain is always unidirectional. Why? (2020)
Answer:
The various steps representing organisms in a food chain at which the transfer of food and energy takes place are called trophic levels.
Four trophic levels in a terrestrial food chain:
Grass → Rabbit → Wild cat → Tiger
There is a unidirectional llow of energy from sun to producers and subsequenllv to series of different types of consumers, i.e.,
Solar radiations → Producers → Herbivores → Carnivores
It cannot pass in reverse direction, lhcre is always a decrease in the flow of energy and content with rise in trophic level. Large quantity of energy is lost at each step in the form of heat and is also used up in various metabolic activities.

Question 32.
Complete the following flow chart based on ecosystem and its components.



Answer:

- Aquatic
- Abiotic
- Inorganic substances
- Producers
- Structural and functional unit of biosphere

Question 33.
(a) Construct a terrestrial food chain comprising four trophic levels.
(b) What will happen if we kill all organisms in one trophic level?
(c) Calculate the amount of energy available to the organisms at the fourth trophic level. If the energy available to the organisms at the second trophic level is 2000 J. (2020)
Answer:
(a) A terrestrial food chain with four trophic levels is :
Grass → Insect → Frog → Eagle
(b) Removal of the organisms of any trophic level will always adversely affect the ecosystem, e.g., the removal of lions and tigers (top carnivores) will cause rapid increase in deer population, which leads to rapid consumption of vegetation resulting in scarcity of vegetation and population crash of deer.

(c) According to ten percent law, only 10% of the energy is received by the next trophic level.

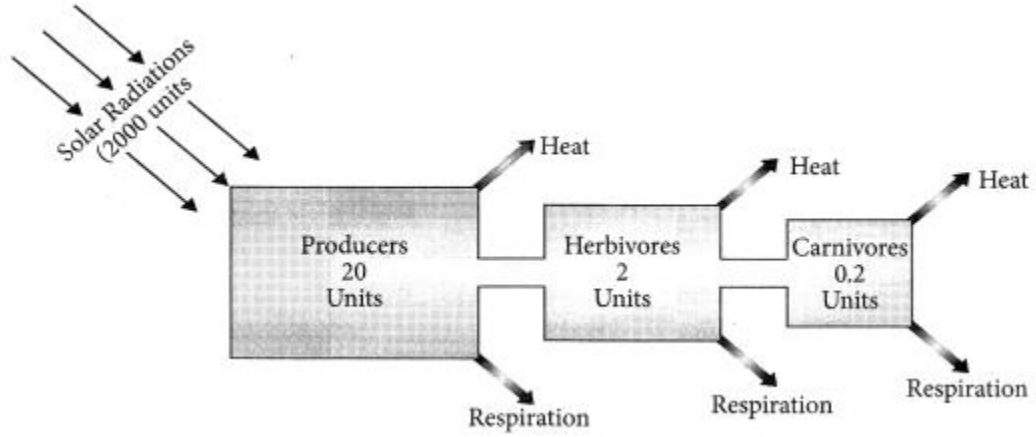
Producers →	Primary consumer →	Secondary consumer →	Tertiary consumer
T_1	T_2	T_3	T_4
20,000 J	2000 J	200 J	20 J

If the energy available at second trophic level (T_2) is 2000 J, so the 20 J of energy will be at fourth trophic level (T_4).

Question 34.
Define an ecosystem. Draw a block diagram to show the flow of energy in an ecosystem. (Delhi 2019)
Answer:
An ecosyslcm is defined as a structural and functional unil of ihe biosphere. It comprises of living organisms and their non-living environment that interact by means of food chains and biogeo-chemical cycles resulting in energy-flow, biotic diversity and material cycling to form stable self-supporting system.

Green plants capture about 1% of the solar energy incident on the earth to carry out the process of photosynthesis. A part of this trapped energy is used by plants in performing their metabolic activities and some energy is released as heat into the atmosphere. The remaining energy is chemical energy stored in the plants as photosynthetic products. When these green plants are eaten up by herbivores, the chemical energy stored in the plants is transferred to these animals. These animals (herbivores) utilise some of this energy for metabolic activities and some energy is released as heat while the remaining energy is stored in their body. This process of energy transfer is repeated till top carnivores. In an ecosystem, transfer of energy follows 10 percent law, i.e,, only 10 percent of the energy is transferred to each trophic level from the lower trophic level. Nearly 90 percent of energy is lost when it moves from one trophic level to the next.

The given block diagram shows unidirectional flow of energy at different trophic levels in a freshwater ecosystem:



Question 35.
What is a food chain? Why is the flow of energy in an ecosystem unidirectional? Explain briefly. (AI 2019)
Answer:

The sequential interlinking of organisms involving transfer of food energy from the producers, through a series of organisms with repeated eating and being eaten is called the food chain. A food chain involves a nutritive interaction between the living organisms of an ecosystem. There is a unidirectional flow of energy from sun to producers and subsequently to series of different types of consumers, i.e.,
Solar radiations → Producers → Herbivores → Carnivores

It cannot pass in reverse direction. There is always a decrease in the flow of energy and content with rise in trophic level. Large quantity of energy is lost at each step in the form of heat and is also used up in various metabolic activities.

Question 36.
"Energy flow in food chains is always unidirectional." Justify this statement.
Explain how the pesticides enter a food chain and subsequently get into our body.
(Foreign 2015, AI 2014)
Answer:
Refer to answer 35.

Some harmful non-biodegradable chemicals (pesticides, e.g., D.D.T.) enter the bodies of organisms through the food chains and get concentrated at each trophic level. This phenomenon is called biomagnification or biological magnification. For example, in a food chain operating in a pond, river or lake, the water contains a small amount — 0.02 ppb (parts per billion) of harmful pesticides, i.e., D.D.T. When this water is consumed by phytoplanktons and zooplanktons, the concentration of these chemicals increases to 5 ppm. Fishes feeding on these, accumulate 240 ppm. Birds and humans feeding on these fishes were found to contain 1600 ppm of these chemicals. Thus, there is an increase in the concentration of the chemicals at each trophic level.

Question 37.
"Our food grains such as wheat and rice, the vegetables and fruits and even meat are found to contain varying amounts of pesticide residues." State the reason to explain how and why it happens. (Delhi 2014)
Answer:
Pesticides are poisonous chemical substances which are sprayed over crop plants to protect them from pests and diseases. These chemical pesticides mix up with soil and water. From soil and water, these pesticides are absorbed by the growing plants along with water and other minerals. When herbivorous animals feed on these plants the poisonous pesticides enter their bodies through the food chain. Similarly, when the

carnivorous animals eat these herbivores, the pesticides get transferred to their bodies. Therefore, the plant products such as food grains, vegetables and fruits as well as meat of animals contain varying amounts of pesticide residues in them depending upon the trophic level they occupy in a food chain.

Question 38.
What is meant by food chain? "The number of trophic levels in a food chain is limited." Give reason to justify this statement. (Foreign 2014)
Answer:
The sequence of living organisms in a community in which one organism consumes or feeds upon another organism to transfer food energy, is called a food chain. The various steps in a food chain at which the transfer of food (or energy) takes place are called trophic levels. In fact, in a food chain, each step representing an organism forms a trophic level.

The number of trophic levels in a food chain are limited because at each trophic level only 10% of energy is utilised for the maintenance of organism which occur at that trophic level and the remaining large portion is lost as heat. As a result organisms at each trophic level pass on lesser energy to the next trophic level, than they receive. The longer the food chain, the lesser is the energy available to the final member of food chain. Food chains generally consist of three or four trophic levels because beyond that the energy available to the next organism will be too small and insufficient to sustain the life of that organism.

Question 39.
(a) What is an ecosystem? List its two main components.
(b) We do not clean ponds or lakes, but an aquarium needs to be cleaned regularly. Explain. (Delhi 2013)
Answer:
(a) Refer to answer 34.
The two main components of ecosystem are :

- Abiotic components – Non-living components of ecosystem, e.g., soil, water, air, light, etc.
- Biotic components – Living components of ecosystem, e.g., plants, animals and microbes.

(b) Refer to answer 30 (c).

Question 40.
Choose the incorrect statement from the following:
(a) Ozone is a molecule formed by three atoms of oxygen.
(b) Ozone shields the surface of the earth from ultraviolet radiations.
(c) Ozone is deadly poisonous.
(d) Ozone gets decomposed by UV radiations. (2020)
Answer:
(d) Ozone gets decomposed by UV radiations. (2020)

Answer questions numbers 41 to 44 on the basis of your understanding of the following paragraph and the related studied concepts:
India today is facing the problem of overuse of resources, contamination of water and soil and lack of methods of processing the waste. The time has come for the world to say goodbye to “single use plastics”. Steps must be undertaken to develop environment-friendly substitutes, effective plastics waste collection and methods of its disposal. Indore treated 15 lakhs metric tonnes of waste in just 3 years, through biomining and bioremediation techniques. Bioremediation involves introducing microbes into a landfill to naturally ‘break’ it down and biomining involves using trommel machines to sift through the waste to separate to ‘soil’ and the waste component. The city managed to chip away 15 lakh metric tonnes of waste at a cost of around t 10 crore. A similar experiment was successfully carried out in Ahmedabad also.

Question 41.
State two methods of effective plastic waste collection in your school.
Answer:
Two methods of effective plastic waste collection : (i) Use of separate dustbins for plastic collection (ii) Use of reusable for the canteen and school events (iii) Encourage less plastic in packed lunches.

Question 42.
Name any two uses of ‘single use plastic’ in daily life.
Answer:
Single use plastic, often also referred to as disposable plastics are commonly used for plastic packaging and include items intended to be use only once before they are thrown away or recycled. These include grocery bags, food packaging, bottles, straws, containers, cups and cutlery.

Question 43.
If we discontinue the use of plastic, how can an environment-friendly substitute be provided?
Answer:
Best alternatives'can be use of stainless steel, glass and platinum. Silicone storage containers. Cloth bags can be used in place of plastic bags. Use of wooden cleaning brushes, kitchen utensils and cutting board, pottery and other ceramics products, etc.

Question 44.
Do you think microbes will work similarly in landfill sites as they work in the laboratory? Justify your answer. (2020)
Answer:
Microbes may not work exactly the same way in landfill sites as they work in laboratories because it is difficult to replicate the exact ambient conditions required for the microbes to thrive in these two conditions. But due to same downstream processing and other mechanism, they will work similarly in landfill sites.

Question 45.
The depletion of ozone layer is a cause of concern. Why? (AI 2016)
Answer:
Ozone layer is the ozone rich area in the stratospheric layer of atmosphere which acts as a protective shield by preventing harmful UV radiations from entering the Earth surface. Hence, the depletion of ozone layer is a cause of concern.

Question 46.
Write one negative effect on the environment, of affluent life style of few persons of a society. (Al 2016, 2014)
Answer:
Affluent lifestyle of few persons leads to exploitation and over consumption of resources leading to their scarcity and generation of greater amount of waste materials which causes imbalance in environment.

Question 47.
Why is excessive use of CFCs a cause of concern? (Foreign 2016)
Answer:
CFCs or Chlorofluorocarbons are potent compounds that release active chlorine in the atmosphere which reacts with ozone molecules present there to convert them to

oxygen. This results in thinning of ozone layer. Hence, excessive use of CFCs is a cause of concern.

Question 48.
What is the function of ozone in the upper atmosphere? (Delhi 2015, Foreign 2012)
Answer:
Ozone (O_3) gas forms a protective shield in the upper atmosphere that absorbs most of the harmful ultraviolet radiations coming from Sun that can harm human beings, animals and plants. It protects us from various health hazards.

Question 49.
Why should biodegradable and non- biodegradable wastes be discarded in two separate dustbins? (Delhi 2015, 2013)
Answer:
Biodegradable wastes are decomposed naturally by the action of microbes which degrade them to their simple constituents enabling their nutrients to recycle among the biotic and abiotic components of ecosystem. However, non-biodegradable wastes cannot be disposed off naturally since they cannot be decomposed by microbes. Such wastes are either recycled, incinerated or put in landfills, etc. As the disposal methods of the two types of waste is different, it is advisable to discard the two types of waste in two separate dustbins.

Question 50.
Write the full name of the group of compounds mainly responsible for the depletion of ozone layer. (Foreign 2015, Delhi 2013C)
Answer:
Chlorofluorocarbons (CFCs) are the group of compounds mainly responsible for ozone depletion.

Question 51.
Which class of chemical is linked to the decrease in the amount of ozone in the upper atmosphere of the Earth? (Delhi 2012)
Answer:
The decrease in the amount of ozone in the atmosphere has been linked to synthetic chemicals like chlorofluorocarbons (CFCs) which are used as coolant and in fire extinguishers, etc.

Question 52.
What happens when higher energy ultraviolet radiations act on the oxygen at the higher level of the atmosphere? (Al 2012)
Answer:
When high energy ultraviolet radiations react with oxygen present in stratosphere (the higher level of atmosphere) it splits into its constituent atoms. Since these atoms produced are very reactive they react with molecular oxygen (O_2) to form ozone (O_3).

Question 53.
Why did United Nations act to control the production of chlorofluorocarbons (CFCs) used in refrigerators? (Delhi 2011)
Answer:
United Nations act to control the production of CFCs as they are the main chemicals responsible for ozone depletion.

Question 54.
Why is decrease of ozone in our ozone layer a cause for our worry? (Foreign 2011)
Answer:
Refer to answer 45.

Question 55.
"Industrialisation has adversely deteriorated the environment." Give four reasons in support of this statement. (Foreign 2016)
Answer:
Industrialisation has deteriorated our environment in the following ways :

- Rapid industrialisation has increased the demand of more land area for setting up of new factories. This demand is being fulfilled by clearing up of forest area. Deforestation is one of the major causes of ecological imbalance, biodiversity loss and ecosystem unstability.
- Industries release various harmful gases in the environment which pollute the air. These gases when inhaled by people around, cause various respiratory diseases in them.
- A lot ol effluent and liquid waste is discharged from various industries which is mostly dumped into nearby water bodies. This causes water pollution. Polluted water causes death of various aquatic organisms and consumption of this polluted water causes various diseases in humans.

- The solid waste released from factories is dumped on open land and not treated properly to ensure their proper decomposition. Ibis leads to land pollution that degrades quality of soil and also causes various kinds of diseases in humans and animals.

Question 56.
Why is Government of India imposing a ban on the use of polythene bags? Suggest two alternatives to these bags and explain how this ban is likely to improve the environment. (Delhi 2014)
Answer:
Government of India is imposing a ban on the use of polythene hags because these are non-bindegradahle substances which are not acted upon by the microbes. So, they cannot be decomposed and therefore persist in the environment for a long time thereby causing harm to the ecosystem. I'oh bags choke drains which results in water logging, that allows breeding of mosquitoes and hence leads to various diseases like malaria, dengue, etc. Jute bags and cloth bags are the alternatives to the polythene bags.

Question 57.
In some states of our country there is a ban on the use of polythene bags for shopping. Why? List three advantages of using jute or cloth bags over polythene bags. (Delhi 2014)
Answer:
Refer to answer 56.
The three advantages of using jute or cloth bags over polythene bags are :

- They are made of biodegradable material.
- They can be reused.
- They do not pollute our environment.

Question 58.
"Affluent life style has a negative effect on the environment." Justify this statement with the help of an example. (Delhi 2014)
Answer:
With the advancement in technology over time, there has been improvement in lifestyle of people. Such changes in peoples lives have also changed their attitudes. When people have more resources at their end they tend to overuse and misuse it thereby generating huge amounts of wa>le material. for example, the atllueiit life style has forced people to start using more of disposable articles, e.g., plastic cups, bags, etc., which keep on accumulating in the environment and lie undecomposed, therein negatively a Heeling the environment.

Similarly, excessive use of refrigerators and air conditioners, plastic foams, etc., also releases high quantities of CFCs which are responsible for ozone depletion.

Question 59.
Give one example each from your daily life where the domestic waste can be effectively reused and recycled. (AI 2014)
Answer:
We can reuse plastic and glass jars of jams and pickles, etc, for the purpose of storage of things like salt, sugar, tea, etc., whereas we can recycle newspapers, plastic of some types, broken glass and metal wares for making fresh paper, plastic, glass and metal objects.

Question 60.
"To discard the household waste we should have two separate dust-bins, one for the biodegradable waste and the other for the non-biodegradable waste." Justify this statement suggesting the proper way of disposal of these wastes. (Foreign 2014)
Answer:
"To discard the household waste we should have two separate dust-bins, one for the biodegradable waste and the other for the non-biodegradable waste." Segregation of biodegradable and non- biodegradable waste is utmost important for their proper disposal, as different methods are adopted for their disposal, biodegradable wastes can be composted whereas non-biodegradable wastes can be recycled, incinerated or landfilled.

Question 61.
We often observe domestic waste decomposing in the bylanes of residential colonies. Suggest ways to make the residents realise that the improper disposal of their waste is harmful to the environment. (Foreign 2014, Delhi 2013)
Answer:
Some of the ways to make people realise that the improper disposal of waste is harmful to the environment includes making people aware of negative impacts of waste disposal. They can be made aware by:
(i) Conducting seminars about the negative effects of the wastes on environment.
(ii) Usage of pamphlets and posters for providing information.
(iii) Forming an eco-club in the society for spreading awareness about the ill effects of waste on the surroundings such as :

- Improper disposal of waste will release harmful gases in the environment that make it unclean and unhygienic for the living organisms.
- The waste will flow to water bodies along with rain water and become a threat to aquatic life and pollute the water bodies.
- It provides space for breeding of the mosquitoes and which results in spread of malaria, filariasis, dengue, etc.
- Hazardous chemicals from wastes get into the soil and can harm the plants when they take up the contamination through their roots. This will affect the health of other animals and humans and will have negative impact on environment.

Question 62.
Suppose you find a heap of domestic waste, in a nearby park, which is decomposing. What would you do to make the people of the surrounding area realise that such type of disposal of domestic waste is harmful to the environment? (Foreign 2014)
Answer:
Refer to answer 61.

Question 63.
(a) Write two harmful effects of using plastic bags on the environment. Suggest alternatives to the usage of plastic bags.
(b) List any two practices that can be followed to dispose off the waste produced in our homes. (2020)
Answer:
(a) Two harmful effects of using plastic bags on the environment:
(i) Plastic bags are non-biodegradable substances which are not acted upon by microbes. So, they cannot be decomposed and therefore persist in the environment for a long time causing harm to the soil fertility and quality.
(ii) Plastic bags choke drains which result in waterlogging, that allows breeding of mosquitoes and hence leads to various diseases.
Jute bags and cloth bags are the alternatives to the polyethene bags.

(b) Practices that can be followed to dispose off the waste produced in our homes:

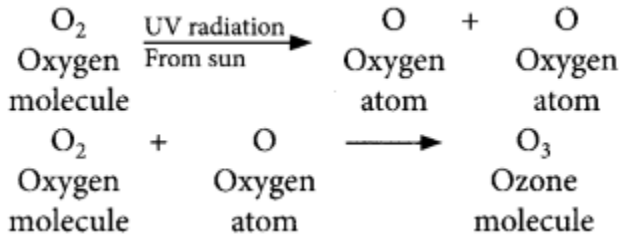
- Separation of biodegradable and non- biodegradable wastes.
- The biodegradable waste can be converted to manure.
- Non-biodegradable waste should be disposed off at suitable places from where municipal authorities can pick them up and dispose properly and scientifically.
- Use discarded bottles and jars to store food, items.

Question 64.
(a) Complete the following table :

	Oxygen	Ozone
Formula	(i) …….	(ii) …….
Benefits to biotic component	(iii) …….	(iv) …….

(b) How is ozone formed at the higher level of atmosphere? (2020)
Answer:
(a) (i) O_2
(ii) O_3
(iii) Respiration
(iv) Absorbs harmful ultraviolet radiations coming from the sun.

(b) When high energy ultraviolet radiations react with oxygen present in stratosphere (the higher level of atmosphere) it splits into its constituent atoms. Since these atoms produced are very reactive they read with molecular oxygen (O_2) to form ozone (O_3).



Question 65.
You have been selected to talk on “Ozone layer and its protection” in the school assembly on ‘Environment Day’.
(a) Why should ozone layer be protected to save the environment?
(b) List any two ways that you would stress in your talk to bring in awareness amongst your fellow friends that would also help in protection of ozone layer as well as the environment. (Delhi 2017)
Answer:
(a) The ozone layer is very important for the existence of life on earth because it forms a protective shield around earth by absorbing most of the harmful ultraviolet (UV) radiations coming from the Sun and prevents them from reaching the Earth.

The UV radiations have extremely harmful effects on human beings, animals and plants as well, i.e., cause mutations, skin cancer, cataract, damage immune system, etc. So, ozone layer must be protected to save the environment.

(b) The two ways which can help in protection of ozone layer and environment are :
(i) The use of chemicals like chlorofluorocarbons (CFCs) which are widely used in refrigerators and air conditioners (as a coolant), in fire extinguishers and in aerosol sprayers destroy the ozone layer gradually. We can protect our ozone layer by avoiding the use of such objects which are releasing UFCs.

(ii) Nitrous oxide is the largest ozone depleting substance as well as greenhouse gas released by human activities, such as from motor vehicles, fertilisers. People should be encouraged to use more public transport, car pooling, using hybrid or electric cars and use of fertiliser formulations to reduce emission of nitrous oxide.

Question 66.
After the examinations Rakesh with his friends went on a picnic to a nearby park. All friends carried cooked food packed in plastic bags or plastic cans. After eating the food some friends collected the leftover food and plastic bags etc., and planned to dispose them off by burning. Rakesh immediately checked them and suggested to segregate the leftover food and peels of fruits from the plastic materials and respectively dispose them off separately in the green and red dustbins placed in the corner of the park.
(a) In your opinion, is burning plastic an eco-friendly method of waste disposal? Why? State the advantage of method suggested by Rakesh.
(b) How can we contribute in maintaining the parks and roads neat and clean? (Delhi 2015)
Answer:
(a) No, burning plastic is not an eco-friendly method of waste disposal, burning plastics can produce toxic fumes and cause air pollution. Plastic, being non-biodegradable cannot be dumped (land filled), so the best way to dispose plastic items is to recycle them. Recycling is a less polluting and more sustainable option.

Rakesh segregated left over food items, fruit peels, i.e., biodegradable waste and plastic material, i.e., non-biodegradable waste. The biodegradable waste can be converted to manure whereas non-biodegradable waste can be recycled. This contributes in decreasing the level of pollution and easy disposal and treatment of waste.

(b) We can contribute to keep our roads and parks clean by adopting following habits:

- We should recycle non-biodegradable waste products instead of dumping it in garbage.
- We should use carry bags made of natural fibre as jute, cloth, instead of plastic bags.
- We should make compost of biomass collected from park such as food waste, leaf litters, etc,.
- We should stop littering, throwing garbage and spitting on road sides, parks, etc.

Question 67.
Differentiate between biodegradable and non-biodegradable substances with the help of one example each. List two changes in habit that people must adopt to dispose non-biodegradable waste, for saving the environment. (A I2015, Delhi 2013C)
Answer:
Differences between biodegradable and non- biodegradable wastes are as follows:

Biodegradable Wastes	Non-biodegradable Wastes
(i) These are biological in origin.	These are mostly man-made.
(ii) These are degraded by microorganisms such as bacteria and fungi.	These are not degraded by micro-organisms.
(iii) These do not get biologically magnified in food chains.	These enter into the food chains and get biologically magnified.
(iv) These can be converted into resource. Examples-sewage, cattle dung, household garbage, etc.	Some of these can be recycled. Examples-plastic objects, synthetic fibres, glass objects, etc.

People should adopt the following changes in their habit to dispose off non-biodegradable waste, so as to save the environment.

- Non-biodegradable household waste should be disposed in separate dustbins and should not be mixed with biodegradable waste.
- Recyclable „ non-biodegradable wastes like glass, paper, metal, various types of plastics etc., can be sent to local recycling units.
- People should try to reuse items as much as possible instead of disposing them as this reduces need of new materials and keeps ecological impact down.
- Use of cloth bags/gunny bags/paper bags instead of polythene /plastic bags.
- Use of compost, vermicompost instead of fertilisers.

Question 68.
What is ozone ? How and where is it formed in the atmosphere ? Explain how does it affect an ecosystem. (Foreign 2015)
Answer:
Ozone is a form of oxygen. It is a made up of three atoms of oxygen. It is highly poisonous. However, good amount of ozone is present in upper part of the atmosphere called stratosphere. In the stratosphere ozone is being photo- dissociated and generated simultaneously by absorption of harmful ultraviolet (UV) radiations coming from sun.

$$O_3 \underset{}{\overset{UV}{\rightleftharpoons}} O_2 + [O]$$

The two reactions are in equilibrium thereby maintaining a steady concentration of ozone in the stratosphere. Ozone layer is commonly called ozone blanket. It acts as a protective shield to protect all types of life from the harmful effect of UV radiation. Therefore, any thinning or depletion of ozone layer allows entry of high energy UV radiations into the earth's surface, thereby causing harmful effects on plants, animals and human beings.

The harmful effects of ozone depletion on man, animals and plants includes :

- Incidences of skin cancer and herps.
- Damage to eye sight, photoburning as well as increased incidences of cataract in eyes.
- Damage to immune system and hence lowering the body's resistance to disease.
- Increased embryonic mortality.
- 10-25% decline of photosynthesis in plants.
- Global warming.