

## Our Environment

### 1. ONE MARK QUESTIONS

1. What is an ecosystem? [Delhi 2017, CBSE 2014]  
Ans :  
Ecosystem is an interaction of physical and biotic factors present in an area among each other.
2. Why is forest/lake considered a natural ecosystem?  
Ans : [Delhi 2017]  
Forests and lakes have both biotic and abiotic components which are present naturally and are interacting without man's interference.
3. If in the following food chain, 100 J of energy is available to the lion, how much energy was available to the producer? Plants Deer → Lion  
Ans : [All India 2017]  
10,000 J.
4. In a food chain of frog, grass, insect and snake, assign trophic level to frog.  
Ans : [All India 2016]  
Grass \$ Insect \$ Frog \$ Snake  
Frog is in 3rd trophic level i.e., secondary consumer.
5. In a food chain of rabbit, grass and fox, assign trophic level to rabbit. [Delhi 2016]  
Ans :  
Grass \$ rabbit \$ fox  
Rabbit is a primary consumer or a herbivore or 1st trophic level.
6. Give one protective function of forests. [CBSE 2016]  
Ans :  
Forests reduce atmospheric pollution.
7. The first trophic level in a food chain is always a green plant. Why? [CBSE 2016]  
Ans :  
Plants can only utilize the radiant energy of the sun and transform it to chemical form during photosynthesis.
8. Which of the following are always at the second trophic level of food chains? Carnivores, Autotrophs, Herbivores.  
Ans : [CBSE 2016]  
Ans :  
Herbivores.
9. What is the function of ozone in the upper atmosphere?  
Ans : [Delhi 2015]  
Ozone shields the surface of the earth from ultraviolet rays from the Sun.
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10. The following organisms form a food chain. Which of this will have the highest concentration of non-biodegradable chemicals? Name the phenomenon associated with it.  
Insects, Hawk, Grass, Snake, Frog  
Ans : [Foreign 2015]  
(i) Hawk (ii) Biomagnification
11. What will be the amount of energy available to the organisms of the 2nd trophic level of a food chain, if the energy available at the first trophic level is 10,000 joules?  
Ans : [All India 2015]  
1000 joules.
12. In an ecosystem, rats feed on grains. Name the trophic level to which the rats belong.  
Ans : [CBSE 2015]  
Ans :  
Second trophic level.
13. What is the physical environment of an ecosystem called? Give one example. [CBSE 2015]  
Ans :  
Physical environment of an ecosystem is called as the abiotic or non-living component of an ecosystem. This includes physical factors like temperature, rainfall, wind, soil and minerals. (any one)
14. How does concentration of a pesticide change once it enters a food chain? [CBSE 2015]  
Ans :

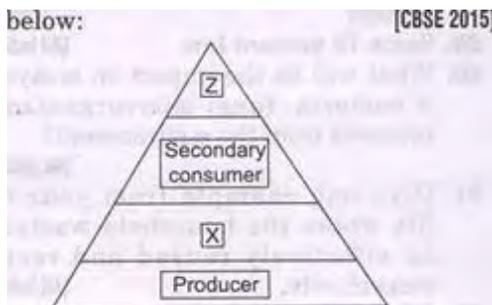
Concentration of pesticide gets accumulated progressively at each trophic level once it enters a food chain.

15. Draw the conclusion if all the herbivores are removed from the grassland. [CBSE 2015]

Ans :

If all the herbivores are removed from the grassland, carnivores will not be able to survive and the autotrophs will increase in number.

16. Write the appropriate names of the trophic levels Z and X in the figure given [CBSE 2015]



Ans : [CBSE 2015]

Tertiary consumers, X : Primary consumers.

17. What is meant by biological magnification?

Ans : [CBSE 2015]

Accumulation of non-biodegradable chemicals progressively at each trophic level in a food chain is called biological magnification.

18. Give one example each from your daily life where the domestic waste can be reused and recycled.

Ans : [All India 2014]

Waste paper, boxes, envelopes, plastic and glass bottles.

19. Select one item which is made up of biodegradable material - plastic bag, leather bag, nylon rope, kettle

Ans : [All India 2014-15]

Leather bag.

20. In the food chain given below identify the trophic level in which the number of organisms available would be minimum?

Grass \$ grasshopper \$ Frog \$ Snake \$ Peacock

Ans : [All India 2014-15]

Peacock.

21. Identify the biodegradable pollutant from the following:

Sewage, agricultural waste, fertilizers and pesticide.

Ans : [All India 2014-15]

Sewage.

22. List two items that can be easily recycled but we throw them in the dustbin.

Ans : [All India 2014]

Glass and plastic items can be easily recycled.

23. State a way to prevent accumulation of harmful chemicals in our bodies. [CBSE 2014]

Ans :

To minimize use of pesticides in agriculture.

24. During heavy rain in a village the rainwater carried excessive fertilizers to a pond. How will it affect the fish population in the pond in the long run?

Ans : [CBSE 2014]

The growth of fish will decrease as water gets polluted due to excessive algae growth.

25. "Flow of energy is unidirectional." Name the first two components of the environment involved in this flow of energy from the sun. [CBSE 2014]

Ans :

Producers and primary consumers.

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26. Mention one negative effect of our affluent lifestyle on the environment. [CBSE 2014]

Ans :

Our activities to maintain an affluent lifestyle pollute the environment.

27. Name two gases which have replaced CFCs.

Ans : [CBSE 2014]

(i) Isobutane (ii) Perfluorocarbon (PFC)

28. Write any two consequences if decomposers are removed from the ecosystem. [CBSE 2014]

Ans :

(i) Dead organisms will pile up.  
(ii) There will be no replenishment of soil.

29. State 10 percent law. [All India 2013]

Ans :

The energy available at any trophic level is only 10% of energy from previous trophic level.

30. What will be the impact on ecosystems if bacteria, fungi/microorganism are removed from the environment?

Ans : [All India 2013]

Complex organic molecules will not breakdown into simple inorganic substances, preventing replenishment of soil.

31. Give one example from your daily life where the household wastes can be effectively reused and recycled respectively.  
**Ans :** [All India 2013]  
 To reuse paper envelope To recycle-plastic mug.
32. Why did United Nations act to reduce the levels of chlorofluorocarbons used in refrigerators?  
**Ans :** [All India 2012]  
 UN wanted to check the depletion of ozone layer.
33. How is ozone layer important for human kind?  
**Ans :** [All India 2012]  
 Ozone layer checks the entry of ultra violet rays of sun from reaching the earth. These rays otherwise can cause skin and blood cancer as well as defects in vision in human beings.
34. A primary consumer in the food chain has 10000 J energy available. How much energy will be provided for tertiary consumer in this food chain?  
**Ans :** [All India 2012]  
 100 J.
35. Name the two components of an ecosystem.  
**Ans :** [Delhi 2012]  
 Biotic and abiotic are two components of an ecosystem.
36. Name two decomposers operating in our ecosystem.  
**Ans :** [Delhi 2012]  
 Bacteria and fungi.
37. How do bacteria and fungi able to decompose some of the wastes in our ecosystem? [Delhi 2012]  
**Ans :**  
 Bacteria and fungi have enzymes to break down complex organic substances to simple and smaller ones.
38. Which chemical is used in fire extinguishers? How is it harmful?  
**Ans :** [CBSE 2012]  
 Fire extinguishers use Chlorofluorocarbons (CFCs). It depletes ozone layer.
39. What are the two main components of our environment?  
**Ans :** [CBSE 2012,13]  
 Two main components of our environment are:  
 a. Biotic (e.g., plants, animals etc.)  
 b. Abiotic (e.g., soil, air, water etc.)
40. Why are green plants called 'producers'?  
**Ans :** [CBSE 2012]  
 'Producers' are the organisms which prepare their own food in the presence of sunlight and chlorophyll. Therefore green plants are called producers as they prepare their own food.
41. Which compounds are responsible for the depletion of ozone layer? [CBSE 2012]  
**Ans :**  
 Compounds which depletes ozone layer are:  
 (i) Chlorofluorocarbons (CFCs) and fluorocarbons.  
 (ii) Free chlorine.  
 (iii) Aerosols.
42. Draw a food chain which operates in a forest ecosystem.  
**Ans :** [CBSE 2012,13]  
 Grass \$ Deer \$ Tiger.
43. Give the full form of CFC.  
**Ans :** [CBSE 2012,13]  
 CFC stands for Chlorofluorocarbon compounds.
44. In a certain study conducted on occurrence of DDT along food chains in an ecosystem, the concentration of DDT in grass was found to be 0.5 ppm (parts per million), in sheep it was 2 ppm and in man it was 10 ppm. Why was the concentration of DDT maximum in case of man?  
**Ans :** [CBSE 2012,13]  
 DDT is non-biodegradable substance which accumulates at each trophic level. Since man is at the highest trophic level, there is maximum accumulation of DDT in him (biological magnification).
45. Ozone is deadly poisonous, still it performs an essential function. How? [CBSE 2012]  
**Ans :**  
 Ozone layer shields the surface of the earth and blocks the entry of UV rays from the sun.
46. What is depicted in the below mentioned scheme?  
**Ans :** [CBSE 2012]  
 Food chain/10% law.
47. List two man-made ecosystems. [CBSE 2012]  
**Ans :**  
 Aquarium, crop land, park are man made ecosystem.
48. "Save the Tiger" campaign is being over-emphasised these days by our government. What may be the possible reason? [CBSE 2012]  
**Ans :**  
 Tiger stands at the top trophic level. To maintain ecological balance in nature and to preserve gene pool. Tiger is a threatened species. To help its survival, the 'Save the Tiger' campaign is emphasized.
49. Why are plastics non-biodegradable substances?  
**Ans :** [CBSE 2012]  
 Plastics cannot be broken down by the action of enzymes/bacteria/saprophyte.
50. Mention the role of microorganisms like bacteria and fungi in the ecosystem. [CBSE 2012]  
**Ans :**  
 To breakdown the dead remains and waste product of organisms.
51. In the following food chain, grass provides 4000 J of energy to the grasshopper. How much energy will be

available to snake and frog?  
Grass, Grasshopper, Frog, Snake.

Ans : [CBSE 2012]

Grass \$ 4000 J    Grasshopper \$ (400 J)    Frog \$ (40 J)    Snake (4 J)  
So, for snake and frog, 4 J and 40 J energy will be available by 10 % law respectively.

52. What is meant 'non-biodegradable' waste? Identify biodegradable waste from the following:

Empty packet of chips, empty plastic bottle of mineral water, empty paper box of sweets, empty tin of a cold drink.

Ans : [CBSE 2012]

Substances that do not break down by biological process are called non-biodegradable waste. Empty paper box of sweets.

53. Consider a food chain consisting of: wheat, rat, snakes, peacock:  
What will happen if all the snakes are killed?

Ans : [CBSE 2012]

If all snakes of food chain are killed the peacocks belonging to the next level will also die. Also the population of rats in the preceding level will highly increase.

54. Choose one consumer each that belongs to the second and third trophic levels from the organisms given below:

Eagle, frog, tiger, rabbit, fox

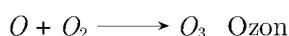
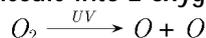
Ans : [CBSE 2012]

- (i) Second trophic level \$ Rabbit  
(ii) Third trophic level \$ Frog and fox.

55. What happens during the first step of ozone formation in the atmosphere? [CBSE 2012]

Ans :

Oxygen in the presence of UV rays splits oxygen molecule into 2 oxygen atoms.



56. Why are non-biodegradable substances not broken down by microbes? [CBSE 2012]

Ans :

Microbes are highly specific enzymes which can breakdown natural materials.

57. If the energy available in phytoplanktons is 10,000 KJ, how much energy would a whale get on consuming them?

Ans : [Delhi 2011]

1000 J.

58. When plants are eaten by primary consumers, a great deal of energy is lost as heat to the environment and some amount goes in carrying out various life processes. State the average percentage of energy lost in this manner.

Ans : [Sample Paper 2010]

90%.

59. Why should use of Chlorofluorocarbons be reduced?

Ans : [CBSE 2010]

Chlorofluorocarbons [CFCs] are responsible for depletion of ozone layer.

60. Mention two ways to make our environment clean of garbage?

Ans : [Delhi 2008]

- Reduce the use of plastics
- Recycle waste paper, plastic, glass and metal items.

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## TWO MARKS QUESTIONS

61. State two advantages of conserving

- forests
- wild life

Ans : [All India 2017]

- Advantages of conserving forest are termed as "biodiversity hotspots". They have large number of species of plants and animals.

(a) They purify air, help in recharging groundwater, bring rains and maintain the fertility of soil.

(b) They are also a source of income for tribal people.

- Wild life is important

(a) To preserve bio-diversity.

(b) As each species has a position in the food chain so wildlife helps in balancing the nature.

62. What are ozone holes? How do they form?

Ans : [Delhi 2016]

The coolants of Refrigerators and A/Cs use CFCs which release fluorine which react with ozone gas and break it into oxygen and a very reactive form of atomic oxygen which in turn can break another ozone molecule. Thus a chain reaction starts and layer of ozone becomes thinner at some places in upper atmosphere. These are called ozone holes.

63. In cities garbage disposal is a major problem. How can we deal with this problem? List any two ways.

Ans : [All India 2016]

Two methods of garbage disposal are:

- Converting organic wastes into biogas or compost. Organic wastes like cow dung, leaves etc can be decomposed and converted into useful substance like biogas and manure.
- Recycling plastics, glass and metals.

64. Compare the advantages of cloth bags over polythene bags. [CBSE 2016]

Ans :

Cloth bags being biodegradable are broken down by the action of bacteria or other saprophytes, whereas polythene bags being non-biodegradable persist in the environment for a long time, causing harm to the ecosystem.

65. Pesticides like DDT which are sprayed to kill pests on crops are found to be present in the soil, groundwater, water bodies etc. Explain how do they reach these places?

Ans : [CBSE 2016]

- Soil: Pesticides are sprayed to protect plants from insects and they, consequently, get settled into soil particles, when used on plants.
- Groundwater: Through irrigation in the fields, these pesticides present in soil pass into lower layers of soil and reaches groundwater.
- Water bodies: When the waste water or other agricultural waste is thrown in water bodies like river, canals, ponds, etc., the pesticides affect water bodies.

66. Aquariums need to be cleaned once in a while, whereas ponds or lakes do not require any cleaning. Explain.

Ans : [CBSE 2016]

A aquarium is not a 'self-sustained' ecosystem. Waste in aquarium cannot be decomposed as microorganisms in it are not active.

Whereas ponds and lakes are natural, and self-sustained ecosystem in which microorganisms help in decomposing the waste matters.

67. What is ozone? How does it form?

Ans : [All India 2015]

Ozone layer forms due to combination of molecular and elemental form of oxygen in the presence of UV rays. O<sub>3</sub> or ozone is a deadly poison formed from oxygen O<sub>2</sub>, due to the effect of UV rays of sun.

68. Accumulation of harmful chemicals in our body can be avoided. Explain how this can be achieved.

Ans : [CBSE 2015]

Accumulation of chemicals in our body can be avoided by:

- Washing vegetables and fruits properly with water.
- Soak vegetables and fruits in salt water for few minutes before cooking.
- Most vegetables should be boiled.
- 'Organic substances' should be used for cultivation.

69. What will happen if all the deers are removed in the

given food chain?

Plants \$ Deers \$ Tigers

Ans : [CBSE 2015]

If all deers are removed from the given food chain, then

- Tigers will not survive.
- Plants will increase in number.

70. Food web increases the stability of an ecosystem. Justify.

Ans : [CBSE 2015]

Food web depicts feeding connection in an ecological community. It consists of many food chains. Thus, if any of the organism becomes endangered or extinct, the one who is dependent on it has an alternative option available to him for its survival. In this way, food web increases stability in an ecosystem.

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71. State with reason any two possible consequences of elimination of decomposers from the earth.

Ans : [CBSE 2015]

Two possible consequences of elimination of decomposers from the earth are:

- Increase of complex organic substances causes land, water and air pollution.
- It may disturb ecosystem as without decomposition, soil will not be replenished, which is essential for 'plants', which forms the basis of an ecosystem.

72. Differentiate between the food habits I of organisms belonging to the first and second trophic level.

Ans : [All India 2014-15]

First trophic level : Producer/autotroph  
Second trophic level: Primary consumer/ herbivore.

73. State two methods to get rid of non-biodegradable wastes.

Ans : [CBSE 2014]

- Paper bags or cloth bags should be used to carry things instead of plastic bags.
- Non-biodegradable wastes should be sent in factories for recycling.

74. Define food web. State its significance for ecosystem.

Ans : [CBSE 2014]

A system of interconnected food chains between various organisms is called a food web.

A food web maintains ecological balance by maintaining the interdependence of different organisms.

75. Why Amrita Devi Bishnoi national award for wildlife conservation has been instituted? [Foreign 2013]

Ans :

Amrita Devi Bishnoi gave her life while saving wild life and forest trees in her locality. This award is given for those who show major contribution in conservation and protection of wild life.

76. Government of India is imposing ban on the use of polythene bags for shopping. List four advantages of using cloth or jute bag over polythene bags.

Ans : [Foreign 2013]

Four advantages of using jute/cloth bag over polythene bags:

- It is biodegradable.
- Does not add to the garbage and land pollution.
- Made from renewable resources.
- Does not block the flow of water in the drains.
- Can be washed and reused many times.

77. State the meaning of 'biodiversity'. List two advantages of conserving forest and wildlife. [Foreign 2013]

Ans :

Biodiversity consists of various species of plants and animals. Wild life means our flora and fauna.

Two advantages of conserving forest and wildlife are:

- To preserve bio-diversity.
- As each species has a position in the food chain so wildlife helps in balancing the nature.

78. We often observe domestic waste decomposing in the by lanes of residential colonies. Suggest ways to make people realise that the improper disposal of waste is harmful to the environment. [Delhi 2013]

Ans :

- Provide separate dustbins - green for wet waste and blue for recyclable dry waste at public places.
- Resident welfare associations should insist on segregation of household waste before their disposal to outside.
- Awareness campaigns like Swachh Bharat to disseminate the knowledge about consequences of improper disposal of wastes.

79. What would happen if number of carnivores decreases in an ecosystem? [CBSE 2013]

Ans :

- Population of herbivores will increase beyond control.
- Autotrophs will disappear from earth due to overgrazing done by herbivores.
- Both these factors may disturb food chains thus affecting the ecosystem.

80. State the direction of flow of energy in food chain. Can food and energy from a trophic level move back to the previous level? Give reason for your answer.

Ans : [CBSE 2013]

- Energy flows from producer to top carnivores.

- No, because flow of energy is unidirectional. It is from lower to higher level.

81. How will food chain be affected if we hunt all the tigers in a forest? [All India 2012]

Ans :

Tiger is the top Consumer or Top Carnivore. Eliminating it from food chain through hunting would lead to leaving the organism at trophic level below it to multiply without control. Since there are large herbivores like deer, they will eat up the producers (grass, plants) and make the soil without vegetation.

No vegetation in soil would cause desertification, soil erosion, floods, drought etc. Less vegetation means less rainfall and disruption of water cycle. It will be a vicious cycle.

Thus this act can lead to ecological balance as well as climatic problems.

82. Mention the differences between food habits of organisms belonging to the first and third trophic level. Give one example of each of them.

Ans : [CBSE 2012,13]

	First Trophic Level	Third Trophic Level
1.	The organisms of this trophic level are plants and are also called producers.	The organisms of this trophic level are animals and are also called secondary.
2.	They transform solar energy into chemical energy by photosynthesis. e.g., grass (all green plants)	They obtain chemical energy by eating other animals. e.g., all carnivores (like lion).

83. List two causes of depletion of ozone layer. Mention any two harmful effects of depletion of this layer.

Ans : [CBSE 2012]

Two causes of depletion of ozone layer are:

- Use of CFs (Chlorofluorocarbons) in refrigerator.
- Use of CFCs in fire extinguishers and aerosol sprayers.

The harmful effects of depletion of ozone layer are:

- Due to depletion of ozone layer, UV radiations reach the earth. These UV radiations cause skin cancer, damage to eyes and immune system.
- This depletion of ozone layer may also lead to variations.

84. What will happen if we kill all the organism in a trophic level?

Ans : [All India 2011]

The food chain will get disrupted if we kill all the organism in a trophic level. The organism at the lower level will increase in number as there is no one to eat them and those at higher level will die of starvation. This will cause ecological imbalance.

### THREE MARKS QUESTIONS

85. Students in a school listened to the news read in the morning assembly that the mountain of garbage in Delhi, suddenly exploded and various vehicles got buried under it. Several people were also injured and there was traffic jam all around. In the brain storming session, the teacher also discussed this issue and asked the students to find out a solution to the problem of garbage. Finally they arrived at two main points - one is self management of the garbage we produce and the second is to generate less garbage at individual level.
- Suggest two measures to manage the garbage we produce.
  - As an individual, what can we do to generate the least garbage? Give two points.
  - List two values the teacher instilled in his students in this episode.

**Ans :** [All India 2018]

- Segregation and safe disposal. Encouraging use of recycled paper, plastic and glass items.
  - Following the strategy of 3Rs:
    - Reducing the use of packing, buying only whatever is required, taking small serving at a time.
    - Reusing envelopes, boxes, bottles and cans. Old clothes can be converted into dusters, bags etc
  - (i) Scientific attitude (ii) concern for environment.
86. You have been selected to talk on “ozone layer and its protection” in the school assembly on ‘Environment Day’.
- Why should ozone layer be protected to save the environment?
  - List any two ways you will stress in your talk to bring the awareness amongst your fellow students that would protect the ozone layer as well as the environment. [Delhi 2017]

or

How is depletion of ozone layer a matter of concern? What steps should be taken to check their formation?

**Ans :** [2008 Panchkula]

Depletion of Ozone Layer due to release of CFCs. It will result in UV radiation reaching the earth, causing skin cancer, damage to eyes and immune system.

- Two steps which can be taken are alternate technology and chemicals should be used to make these appliances where CFCs and CFs are being used.
  - In 1987, the United Nations Environment Programme (UNEP) succeeded in forging an agreement to freeze CFC production at 1986 levels. Many countries have banned the use of CFCs.
87. The activities of man has adverse effect on all forms of living organisms in the biosphere. Unlimited exploitation of nature by man disturbed the delicate ecological balance between the living and non-living components of the biosphere. The unfavourable conditions created by man himself threatened the survival of not only of himself but also of the entire living organisms on the mother earth. One of your classmate is an active member of ‘Eco Club’ of your

school which is creating environmental awareness amongst the school students, spreading the same in society and working hard for preventing environmental degradation of the surroundings.

- Why is it necessary to conserve our environment?
- State the importance of green and blue ) dustbins in the safe disposal of the household waste.
- List two values exhibited by your classmate who is an active member of the Eco-club of your school.

**Ans :** [All India 2016]

- Conservation of our environment is necessary to leave it in good condition for our future generations.
- Green and blue dustbins should be used to segregate wet and dry waste so that according to their nature they can be sent for the safe disposal to compost pits/ biogas plant and recycling in factories.
- Two values: He is concerned about environment, problem solving attitude.

88. Monika was observing a lizard on the wall which chased an insect and ate it. She felt that lizard is cruel and ugly. Suddenly the lizard fell and was eaten by a cat. She started thinking, how organisms are connected to each other for their food?
- What is a food chain? Will the world be a better place without lizards?
  - Make a food chain of five organisms.
  - Do you think lizard is cruel and ugly?
  - To which trophic level does the lizard belong?

**Ans :** [All India 2017]

- Food chain is a sequence of ‘who eats whom’ in an ecosystem. No, lizards are a part of many food chains. Without them food chain will be disrupted.
- Grass \$ grass hopper \$ frog \$ snake \$ peacock.
- No, it is only obtaining food for its survival like all other organisms.
- Third trophic level/ secondary consumer/ small carnivore.

89. a. What is the height of ozone from the equator?  
 b. Name the rays against which ozone layer provides protection.  
 c. Name one effect of depletion of ozone.

**Ans :** [CBSE 2016]

- 10 to 16 km.
- UV rays.
- Global wanning.

90. Differentiate between autotrophs, heterotrophs and decomposers and give one example of each.

**Ans :** [CBSE 2016]

- Autotrophs are the organisms that can make their own food from carbon dioxide and water under the action of sunlight and in the presence of chlorophyll. Example: All green plants.
- Heterotrophs are the organisms which cannot make their own food by the process of photosynthesis and are dependent on others for food. Example: All animals.

- c. Decomposers are the organisms that decompose the complex molecules present in the dead remains of plants and animals. Example: Bacteria, Fungi.
91. 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.
- Ans :** [CBSE 2016, Delhi 2013, CBSE 2008]
- a. A self-sustaining functional unit consisting of living (biotic) and nonliving (abiotic) components, is called an ecosystem.  
1. Biotic components: Plants and animals.  
2. Abiotic components: Light, soil, temperature, humidity, wind, air, etc.
- b. An aquarium is an artificial and incomplete ecosystem in contrast to a pond or lake which is natural, self-sustaining and complete ecosystem. In natural ecosystem, decomposers help in recycling waste. So, an aquarium needs to be cleaned regularly.
92. What is ozone? How and where is it formed in the atmosphere? Explain how it affects an ecosystem?

**Ans :** [Foreign 2015]

Ozone is a molecule containing three atoms of oxygen ( $O_3$ ), a highly poisonous gas present in the upper layers of the atmosphere.

Formation of ozone - The UV radiations split some molecular oxygen ( $O_2$ ) apart into free oxygen atoms ( $O + O$ ). These atoms then combine with molecular oxygen to form ozone.

Affects of an ecosystems are:

- Due to depletion of ozone layer, UV radiations reach the earth. These UV radiations cause skin cancer, damage to eyes and immune system.
  - This depletion of ozone layer may also lead to variations.
93. 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.

**Ans :** [All India 2015]

- a. Biodegradable substances can be broken down into simpler substances by nature or decomposers or bacteria or saprophytes. Example: Human excreta, Vegetable peels, etc.
- b. Non-biodegradable substances cannot be broken down into simpler substances by nature or decomposers. Example: Plastic/glass.
- Habits which people must inculcate are:
- Use of separate dustbins for biodegradable and non-biodegradable waste..
  - Reuse of things such as poly-bags, etc.
  - Recycle of waste.
  - Use of cotton/jute bags for carrying vegetables etc.
94. After the examination Rakesh with his friends went on a picnic to a nearby park. All friends carried cooled 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.

- In your opinion, is burning plastic an eco-friendly method of waste disposal? Why? State the advantage of method suggested by Rakesh.
- How can we contribute in maintain the parks and roads neat and clean?

**Ans :** [Delhi 2015]

- No, it pollutes air.  
Advantage: Segregation of wastes into biodegradable and non biodegradable wastes at the initial stage of disposal saves time and energy.
- By putting wastes in proper dustbins.

95. "Energy flow in a food chain is unidirectional." Justify this statement. Explain how the pesticides enter a food chain and subsequently get into our body.

**Ans :** [CBSE 2015, All India 2014]

- Energy moves progressively through the various trophic levels and is no longer available to the previous trophic level. The energy captured by autotrophs does not revert back to the solar input. Therefore flow of energy is unidirectional.
- Pesticides, used for crop rotation when washed down into the soil/water body, are absorbed by the plant/producer along with water and minerals. Being non-biodegradable these chemicals get accumulated progressively in the food chain and enter our body.

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96. Larger animals kill the smaller animals in the forest, eat whatever they can, leave the rest in the forest but the forest is never found full of dead animals. What happens to the bodies of these dead animals?

**Ans :** [All India 2015, Delhi 2012]

Bacteria and fungi have enzymes to break down complex organic substances to simple and smaller ones. They decompose them returning the nutrients back to soil/ humus.

97. Within the school premises while playing some students observed that some people are burning dry leaves. They knew that it would cause harm to the environment. They immediately went and to these

people requested them to stop it.

- (i) How can the above activity be changed to make it environment friendly?
- (ii) "Students took initiative to stop the practice". What values are displayed by them in this situation?
- (iii) How can we spread awareness among people about being environment friendly?

**Ans :** [All India 2014-15]

- (i) Dry leaves can be put in the compost pit to make manure.
- (ii) Concern for environment, scientific temperament.
- (iii) Counselling, posters, print and audio visual media.

98. What is wild life? How is it important? How is it being protected by government of India?

**Ans :** [All India 2013, 2016]

Wild life means our flora and fauna. It is important:

- a. to preserve bio-diversity.
- b. as each species has a position in the food chain so wildlife helps in balancing the nature.

Various species of plants and animals are preserved in botanical gardens, national parks, zoological parks and wildlife sanctuaries.

99. List three environmental friendly practices which you would like to form a part of your daily habits giving justification for each.

**Ans :** [Foreign 2013]

Three environmental friendly activities are:

- a. Should walk short distance to reduce use of vehicle running on fossil fuels.
- b. Use both sides of papers to reduce its use. Less trees will be cut to make more paper.
- c. Packing the gifts should not be practiced. It will reduce the use of shiny but non- biodegradable packing paper. Instead use the boxes and envelopes in which the gifts was received.

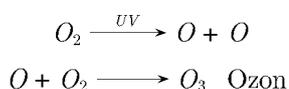
100. State one important function of ozone layer in the atmosphere. How is it formed there? Which compounds are responsible for the depletion of ozone layer? How do these compounds enter into the atmosphere?

**Ans :** [CBSE 2012,13,15]

Ozone present in the upper regions of the atmosphere protects us from dangerous UV radiations.

Formation of ozone layer :

Ozone at the higher levels of the atmosphere is a product of UV radiations acting on oxygen (O<sub>2</sub>) molecule. The higher energy UV radiations split apart some molecular oxygen (O<sub>2</sub>) into free oxygen (O) atoms. These atoms then combine with the molecular oxygen to form ozone as shown:



Chlorofluorocarbons (CFCs) are responsible for the depletion of ozone layer. These compounds enter the atmosphere.

101. Distinguish between biodegradable , and non-biodegradable substances. List two effects of each of them on our environment.

**Ans :** [CBSE2012,13,15]

	Biodegradable	Non-biodegradable
1.	Substances that are broken down by biological processes are said to be biodegradable.	Substances that are not broken down by biological processes are said to be non-biodegradable.
2.	These substances get recycled and, therefore, do not require any dumping sites.	These substances require a lot of space for dumping which causes wastage of land.

Effects of biodegradable substances:

- a. They release harmful gases like methane, ammonia, carbon dioxide, hydrogen sulphide, etc., during decomposition process.
- b. They release foul smell only during decomposition process but they do not cause any type of soil pollution.

Effects of non-biodegradable substances:

- a. They persist in the environment for a long time and, thus, harm the various members of the ecosystem.
- b. They release very harmful gases when they are acted upon by physical processes like heat and pressure.
- c. They cause pollution of air, soil and water.

102. Make an aquatic food chain up to tertiary consumer level. State the trophic level at which concentration of pesticide is maximum and why? [Sample Paper 2010]

**Ans :**

Phytoplankton → Zooplankton → Small fish → Bird.

Tertiary consumer, E.g., Bird.

Pesticides are not degradable and get progressively accumulated at each trophic level.

103. Write the aquatic organisms in order of who eats whom starting from producer and form a chain of at least three steps. What name is given to such a chain in an ecosystem and what name is given to each stage. [Sample Paper 2010]

**Ans :**

- a. Phytoplankton, Zooplankton, Fish,
- b. Aquatic food chain.
- c. Producer, herbivore, carnivore/Producer, Primary consumer, Secondary consumer.

104. How is depletion of ozone layer a matter of concern? What steps should be taken to check their formation? [Panchkula 2008]

or

How is ozone formed in the upper atmosphere? Why is damage to ozone layer a cause of concern to us? What causes this damage?

**Ans :** [All India 2008 2008C]

Depletion of Ozone layer occurs due to release of CFCs. This will result in UV radiation reaching the earth, thereby causing skin cancer, damage to eyes and immune system.

Two steps which can be taken are alternate technology and chemicals should be used to make these appliances where CFCs and CFCs are being used.

In 1987, the United Nations Environment Programme (UNEP) succeeded in forging an agreement to freeze CFC production at 1986 levels. Many countries have banned the use of CFCs.

environment and maintained ecological balance.

- (ii) Forest wealth could be utilized for food, fodder, fuel, fertilizers and fibers keeping in mind its conservation.

We should conserve forests as:

- (i) Forests purify the air and also prevent pollution of air and regulate the climate by maintaining the level of rainfall necessary for their own existence.  
(ii) Forests are a storehouse of biodiversity (hotspots of biodiversity).

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## FIVE MARKS QUESTIONS

105. Some wastes in nature persist for a long time while others get decomposed in a shorter period. Explain their difference. State in brief two ways each in which they affect the environment.

**Ans :** [All India 2013]

All wastes generated are not of the same nature.

Biodegradable wastes such as plant and animal can be acted upon by decomposers in nature and broken down easily in simpler substances as they possess enzymes to do so. Example: animal excreta, fruit peels, leftover food, crop refuse and so on.

Some other wastes or materials especially the ones produced by man can not be broken down by decomposers as they do not possess enzymes to do so. They are non biodegradable wastes such as some pesticide-DDT, detergents, plastics, radioactive wastes, metals etc. These substance may be broken down by chemical and physical processes in nature such as rusting of iron but not by biological processes.

Two ways each in which biodegradable wastes affect the environment:

- The beauty of a place and it stinks.
- It attracts flies, cockroaches and germs which spread diseases.

Biodegradable pollutants are agricultural waste and sewage.

Non biodegradable wastes affect our environment by entering the food chain and accumulating in the body of organisms (biomagnification).

Nitrates and phosphates entering the water bodies can result in eutrophication. Some pesticide-DDT, detergents, plastics, radioactive wastes, metals etc.

106. Give one instance where people's participation helped to save this natural resource? Why should forests be conserved?

**Ans :** [All India 2009] [Delhi 2017]

Chipko movement i.e., "hug the trees movement" is one of the movements in India to conserve biodiversity and to the end the alienation of people from their forests which started in March 1973 by Sunder Lal Bahuguna in Hilly areas like Himachal Pradesh.

Two benefits are:

- (i) Existing forest cover was protected reducing landslides, land erosion. It actually protected

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