
CBSE Class 12 Biology
NCERT Exemplar Solutions
CHAPTER 16
ENVIRONMENTAL ISSUES

Multiple Choice Questions (MCQs)

1. Non-biodegradable pollutants are created by:

- (a) nature**
- (b) excessive use of resources**
- (c) humans**
- (d) natural disasters**

Ans. (c) humans

Explanation: Human beings have created and use various non-biodegradable substances and end up creating lot pollution in the process.

2. According to the Central Pollution Control Board, particles that are responsible for causing great harm to human health are of diameter:

- (a) 2.50 micrometers**
- (b) 5.00 micrometers**
- (c) 10.00 micrometers**
- (d) 7.5 micrometers**

Ans. (a) 2.50 micrometers

Explanation: (a) 2.50 micrometers

3. The material generally used for sound proofing of rooms like a recording studio and

auditorium, etc. is:

(a) cotton

(b) coir

(c) wood

(d) Styrofoam

Ans. (d) Styrofoam

Explanation: (d) Styrofoam prevents reflection of sound waves instead it absorbs them after their collision.

4. Compressed Natural Gas (CNG) is:

(a) propane

(b) methane

(c) ethane

(d) butane

Ans. (b) methane

Explanation: (b) methane

5. World's most problematic aquatic weed is:

(a) Azolla

(b) Wolffia

(c) Eichhornia

(d) Trapa

Ans. (c) Eichhornia

Explanation: Eichhornia is commonly known as water hyacinth and has been the most notorious aquatic weed found all over the world.

6. Which of the following causes biomagnification?

- (a) SO₂
- (b) Mercury
- (c) DDT
- (d) Both (b) & (c)

Ans. (d) Both (b) & (c)

Explanation: Biomagnification is well known reason and result of chemicals like mercury and DDT.

7. The expanded form of DDT is:

- (a) dichloro diphenyl trichloroethane
- (b) dichloro diethyl trichloroethane
- (c) dichloro dipyrydyl trichloroethane
- (d) dichloro diphenyl tetrachloroacetate

Ans. (a) dichloro diphenyl trichloroethane

Explanation: (a) dichloro diphenyl trichloroethane according to its structural formula.

8. Which of the following material takes the longest time for biodegradation?

- (a) Cotton
 - (b) Paper
 - (c) Bone
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(d) Jute

Ans. (c) Bone

Explanation: This is the reason, bones of humans and animals have been found from pre-historic period.

9. Choose the incorrect statement.

(a) The Montreal protocol is associated with the control of emission of ozone depleting substances

(b) Methane and carbon dioxide are greenhouse gases

(c) Dobson units are used to measure oxygen content

(d) Use of incinerators is crucial to disposal of hospital wastes

Ans. (c) Dobson units are used to measure oxygen content

Explanation: Dobson is the unit used to measure the thickness of ozone in air column.

10. Among the following which one causes more indoor chemical pollution?

(a) burning coal

(b) burning cooking gas

(c) burning mosquito coil

(d) room spray

Ans. (a) burning coal

Explanation: Burning of coal produces lot of carbon dioxide because solid fuel does not burn as efficiently as liquid or gaseous fuels.

11. The green scum seen in the fresh water bodies is:

(a) blue green algae

(b) red algae

(c) green algae

(d) both (a) and (c)

Ans. (d) both (a) and (c)

Explanation: (d) both (a) and (c)

12. The loudness of a sound that a person can withstand without discomfort is about

(a) 150 dB.

(b) 215 dB.

(c) 30 dB.

(d) 80 dB.

Ans. (d) 80 dB.

Explanation: (d) 80 dB.

13. The major source of noise pollution, worldwide is due to:

(a) office equipment

(b) transport system

(c) sugar, textile and paper industries

(d) oil refineries and thermal power plants.

Ans. (b) transport system

Explanation: With the advent of progressing trade, commerce and industry the means and the usage of transport has also increased. Be any trade or industry, transport is the final step

for its execution.

14. Match correctly the following and choose the correct option

Column I	Column II
(i) Environment Protection Act	A. 1974
(ii) Air Prevention & Control of Pollution Act	B. 1987
(iii) Water Act	C. 1986
(iv) Amendment of Air Act to include noise	D. 1981

The correct match is:

(a) (i)-(C), (ii)-(D), (iii)-(A), (iv)-(B)

(b) (i)-(A), (ii)-(C), (iii)-(B), (iv)-(D)

(c) (i)-(D), (ii)-(A), (iii)-(B), (iv)-(C)

(d) (i)-(C), (ii)-(D), (iii)-(B), (iv)-(A)

Ans. (a) (i)-(C), (ii)-(D), (iii)-(A), (iv)-(B)

Explanation: (a) (i)-(C), (ii)-(D), (iii)-(A), (iv)-(B)

15. Catalytic converters are fitted into automobiles to reduce emission of harmful gases. Catalytic converters change unburnt hydrocarbons into:

(a) carbon dioxide and water

(b) carbon mono oxide

(c) methane

(d) carbon dioxide and methane

Ans. (a) carbon dioxide and water

Explanation: Carbon monoxide is a lethal gas even in low concentration and hence option 'b' is ruled out. Methane is hydrocarbon and hence options 'c' and 'd' are ruled out.

16. Why is it necessary to remove sulphur from petroleum products?

(a) To reduce the emission of sulphur dioxide in exhaust fumes

(b) To increase efficiency of automobiles engines

(c) To use sulphur removed from petroleum for commercial purposes

(d) To increase the life span of engine silencers

Ans. (a) To reduce the emission of sulphur dioxide in exhaust fumes

Explanation: (a) To reduce the emission of sulphur dioxide in exhaust fumes

17. Which one of the following impurities is easiest to remove from wastewater?

(a) Bacteria

(b) Colloids

(c) Dissolved solids

(d) Suspended solids

Ans. (d) Suspended solids

Explanation: Suspended solids can be removed by sedimentation and decantation. Dissolved solids can be removed by evaporation of water which is an energy intensive process. Removal of colloids needs centrifugation. Removal of bacteria involves use of bactericidal agents.

18. Which one of the following diseases is not due to contamination of water?

- (a) Hepatitis-B**
- (b) Jaundice**
- (c) Cholera**
- (d) Typhoid**

Ans. (a) Hepatitis-B

Explanation: Hepatitis B is spread through body fluids; like blood, sperm, sputum, mucus, etc.

19. Nuisance growth of aquatic plants and bloom-forming algae in natural waters is generally due to high concentrations of:

- (a) carbon**
- (b) sulphur**
- (c) calcium**
- (d) phosphorus**

Ans. (d) phosphorus

Explanation: (d) phosphorus

20. Algal blooms impart a distinct colour to water due to:

- (a) their pigments**
 - (b) excretion of coloured substances**
 - (c) formation of coloured chemicals in water facilitated by physiological degradation of algae.**
 - (d) absorption of light by algal cell wall.**
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Ans. (a) their pigments

Explanation: If green algae are prevalent, they impart green colour to water. Red algae impart red colour and brown algae impart brown colour.

21. Match the items in column I and column II and choose the correct option:

Column I	Column II
A. UV	(i) Biomagnifications
B. Biodegradable Organic matter	(ii) Eutrophication
C. DDT	(iii) Snow blindness
D. Phosphates	(iv) BOD

The correct match is:

(a) A (ii), B (i), C (iv), D (iii)

(b) A (iii), B (ii), C (iv), D (i)

(c) A (iii), B (iv), C (i), D (ii)

(d) A (iii), B (i), C (iv), D (ii)

Ans. (c) A (iii), B (iv), C (i), D (ii)

Explanation: (c) A (iii), B (iv), C (i), D (ii)

22. In the textbook, you came across Three Mile Island and Chernobyl disasters associated with accidental leakage of radioactive wastes. In India, we had Bhopal gas tragedy. It is associated with which of the following?

(a) CO₂

(b) Methyl Iso-Cyanate

(c) CFC's

(d) Methyl Cyanate

Ans. (b) Methyl Iso-Cyanate

Explanation: (b) Methyl Iso-Cyanate

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Very Short Answer Type Questions

1. Use of lead-free petrol or diesel is recommended to reduce the pollutants emitted by automobiles. What role does lead play?

Ans. Tetraethyllead is added to petrol or diesel to reduce knocking in engine. Knocking severely damages the engine. But lead in this compound poses several environmental and health hazards.

2. In which year was the Air (Prevention and Control of Pollution) Act amended to include noise as air pollution.

Ans. 1987

3. Name the city in our country where the entire public road transport runs on CNG.

Ans. New Delhi

4. It is a common practice to undertake desilting of the overhead water tanks. What is the possible source of silt that gets deposited in the water tanks?

Ans. Presence of suspended impurities; like sand and clay causes siltation in water tanks.

5. What is cultural eutrophication?

Ans. Cultural eutrophication is a form of water pollution. When eutrophication is accelerated due to human activities; it is called cultural eutrophication. For example; addition of excessive fertilisers into lakes results in cultural eutrophication.

6. List any two adverse effects of particulate matter on human health.

Ans. Following are the two adverse effects of particulate matter on human health:

(a) Asthma

(b) Respiratory tract infection

7. What is the raw material for polyblend?

Ans. Recycled plastic

8. Blends of polyblend and bitumen, when used, help to increase road life by a factor of three. What is the reason?

Ans. Addition of polyblend to bitumen enhances water repellent property of bitumen. Thus, it increases road life by a factor of three.

9. Mention any two examples of plants used as wind breakers in the agricultural fields.

Ans. Hedge and Eucalyptus

10. Name an industry which can cause both air and thermal pollution and as well as eutrophication.

Ans. Fertiliser industry

11. What is an algal bloom?

Ans. Excessive growth of free-floating algae on water bodies is called algae bloom.

12. What do you understand by biomagnification?

Ans. When a particular substance is passed on through various trophic levels; its concentration in the biomass increases at every step. This phenomenon is called biomagnification.

13. What are the three major kinds of impurities in domestic wastewater?

Ans. Following are the three major kinds of impurities in domestic wastewater.

(a) Suspended impurities

(b) Colloidal materials

(c) Dissolved materials

14. What is reforestation?

Ans. Restoring a previously existing forest is called reforestation. It can happen naturally or can be enhanced by human intervention.

15. What is the best solution for the treatment of electronic wastes?

Ans. Recycling in an environment friendly manner is the best solution for the treatment of electronic wastes.

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Short Answer Type Questions

1. Is it true that carpets and curtains/drapes placed on the floor or wall surfaces can reduce noise level. Explain briefly?

Ans. Yes, It is true that carpets and curtains/drapes placed on the floor or wall surfaces can reduce noise level. These objects are made of fibres and fibres can absorb sound waves thus reduce noise level.

2. What is hybrid vehicle technology? Explain its advantages with a suitable example?

Ans. Hybrid vehicle technology involves use of gasoline-run engine and battery powered engine in the same vehicle. Gasoline-operated motor charged the battery and battery drives the vehicle. Hybrid vehicle helps in significantly reducing the consumption of gasoline and thus helps in reducing air pollution.

3. Is it true that if the dissolved oxygen level drops to zero, the water will become septic. Give an example which could lower the dissolved oxygen content of an aquatic body.

Ans. It is true that if dissolved oxygen level drops to zero, the water will become septic. Absence of oxygen in water means the water will no longer be able to sustain living beings because aquatic plants and animals use dissolved oxygen for respiration.

When sewage is discharged into water body, microorganisms feed on organic impurities. In this process, they consume most of the oxygen present in water. This reduced the level of dissolved oxygen to negligible level.

4. Name any one greenhouse gas and its possible source of production on a large scale.

What are the harmful effects of it?

Ans. Carbon dioxide is a potent greenhouse gas. It is produced by burning of fossil fuels and other organic materials. Excess level of carbon dioxide in the atmosphere results in global warming.

5. It is a common practice to plant trees and shrubs near the boundary walls of buildings. What purpose do they serve?

Ans. Trees and shrubs are effective in reducing noise level. Planting trees and shrubs near the boundary walls of buildings helps in reducing noise level and act as dust catchers. Such a line of trees along the boundary or along the roadside is also called sound barrier.

6. Why has the National Forest Commission of India recommended a relatively larger forest cover for hills than for plains?

Ans. It is an established fact that conservation efforts in biodiversity rich area always give better results. Hills have better biodiversity than plains because of less degree of human intervention in plains. This is the reason the National Forest Commission of India has recommended a relatively larger forest cover for hills than for plains.

7. How can slash and burn agriculture become environment friendly?

Ans. Slash and burn agriculture has been in use since ancient times; by tribal people all over the world. Earlier, a proper recovery time was allowed for forests to recover when a particular patch of land was left fallow. But due to increased population; this recovery period is often ignored. We need to once again allow enough time for forest to recover before reusing a particular patch of land. This will help in making slash and burn agriculture environment friendly once again.

8. What is the main idea behind “Joint Forest Management Concept” introduced by the Government of India?

Ans. Joint Forest Management Concept was introduced by the Government of India with the objective of involving local community in forest management. In the past, it was observed

that when the local people were excluded from forest management; they felt alienated. This was because they were robbed off their traditional rights on forests. This resulted in clash of interests between the government and the local people and the conservation efforts did not bear results. Involvement of local community produced better results in terms of conservation in a sustainable manner.

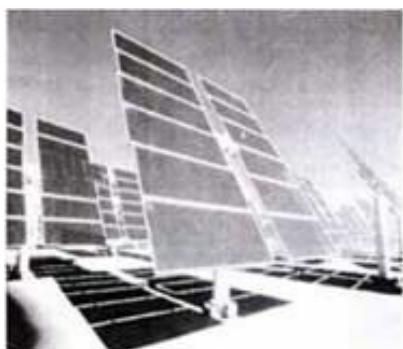
9. What do you understand by Snow-blindness?

Ans. Snow-blindness is also known as photokeratitis. It happens because of exposure of eyes to UV-B radiation. Burning sensation, pain and increased tears are common symptoms of snow-blindness. The person suffering from snow-blindness feels that his eyes are full of sand.

10. How has DDT caused decline in bird population?

Ans. DDT is an organic compound and is a potent pesticide. But DDT tends to undergo biomagnification as it moves up through the food chain. The predator birds are at higher risk of having very high level of DDT in their body. DDT is resistant to metabolism by living beings and hence tends to accumulated. The presence of DDT in a bird's body leads to thinning of egg shells. This explains the declining population of birds because of DDT.

11. Observe the figure A and B given below and answer the following questions:



A



B

(i) The power generation by the above two methods is non-polluting (True/False)

(ii) List any two applications of solar energy

(iii) What is a photovoltaic cell?

Ans. (i) Yes, it is True

(ii) Two applications of solar energy are; using solar cells to produce electricity, using solar cooker to cook food, using solar heater for hot water.

(iii) A cell which converts solar energy into electric energy is known as photovoltaic cell.

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Long Answer Type Questions

1. Write a short note on electronic waste. List the various sources of e-wastes and the problems associated with its disposal.

Ans. Discarded computers and other electronic items comprise electronic waste. E-waste contains various metals; like copper, iron, nickel, gold, silver, etc. and plastic.

Sources of E-waste: Computers, printers, scanners, webcam, mobile phones, music players, e-reader, etc.

Problems associated with disposal of e-waste:

- Dumping of e-waste will result in accumulation of plastic on land.
- Extraction of metals; like iron or gold involves incineration of plastic components which creates many polluting substances.
- Manual handling of e-waste can be harmful for workers.

2. What is organic farming? Discuss the benefits of organic farming as a viable practice in the context of developing nations like India.

Ans. Organic farming is a method of farming that relies on various methods and inputs so that no synthetic input is used in the process. Green manure is use instead of synthetic fertilizers. Pesticides and weedicides from natural sources are used and those from synthetic sources are not used.

Viability of Organic Farming in India:

- Organic farming can be highly beneficial in a labour surplus country; like India because organic farming is highly labour intensive.
 - Majority of Indian farmers still use cattle for farm operations. This means good
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availability of raw materials for making green manure is there.

- Indian farmers have traditional knowledge of many plants which have pesticidal and weedicial properties. This knowledge can be harnessed to get maximum output from organic farming.
 - Organic farming will also help in reducing soil pollution and groundwater pollution; especially in rural areas.
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3. Water logging and soil salinity are some of the problems that have come in the wake of the Green Revolution. Discuss their causes and adverse effects to the environment.

Ans. Causes of water logging and soil salinity: Many canals were built to implement Green Revolution. This made for easy availability of water for irrigation. Excess use of water during irrigation results in water logging. This draws salt to the soil surface and increases soil salinity. Also, excess use of fertilizers has led to accumulation of many unused salts resulting in soil salinity.

Effects of Water Logging:

- (a) Increases soil salinity.
- (b) Many crops cannot survive in water logged conditions.
- (c) Prolonged period of water logging will reduce the number of microorganism and creatures in soil. This will reduce biodiversity in soil.
- (d) Decomposition of organic matter in stagnant water will release methane which is a potent greenhouse gas.

Effects of Soil Salinity:

- (a) Most of the plants cannot survive in saline soil.
 - (b) Soil will become barren.
 - (c) Desertification may take place.
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4. What are multipurpose trees? Give the botanical and local names of any two

multipurpose trees known to you and list their uses.

Ans. A tree which has many uses is called multipurpose tree. Two multipurpose trees are as follow:

(a) Banana: *Musa acuminata*

(b) Coconut: *Cocos nucifera*

Uses of Banana:

- Fruits are used as food all over the world.
- Banana flowers are also used as food in many countries.
- Raw banana is use for making banana chips.
- Banana leaves are used are used as platter during ceremonial feast in India.
- Banana leaves are also used as packing material.
- Fiber from banana stem is used for making textiles.
- Banana stem is also used for making makeshift raft.

Uses of Coconut:

- Fruits are used as food and as additive in many culinary items.
- Coconut shell is used for making many useful items; like ladle, toys, etc.
- Coconut leaf is used for making hand-fan, basket, mat, etc.
- Veins of coconut leaf are used for making broom.
- Coconut fibre (coir) is use for making mattresses, carpets, ropes, etc.
- Coconut wood is used in construction and furniture.

5. What are the basic characteristics of a modern landfill site. List any three and also mention the reasons for their use.

Ans. Characteristic of a modern landfill site are as follows:

(a) **Methods to contain leachate such as lining clay or plastic liners:** This helps in preventing the leachate from seeping into the underground aquifers. This prevents soil population and groundwater pollution.

(b) Compaction and covering of the waste to prevent it from being blown by wind:

Compaction helps in better space utilization because more waste can be accommodated in smaller area. Covering prevents spread of dust and harmful germs and is thus safer from health perspective.

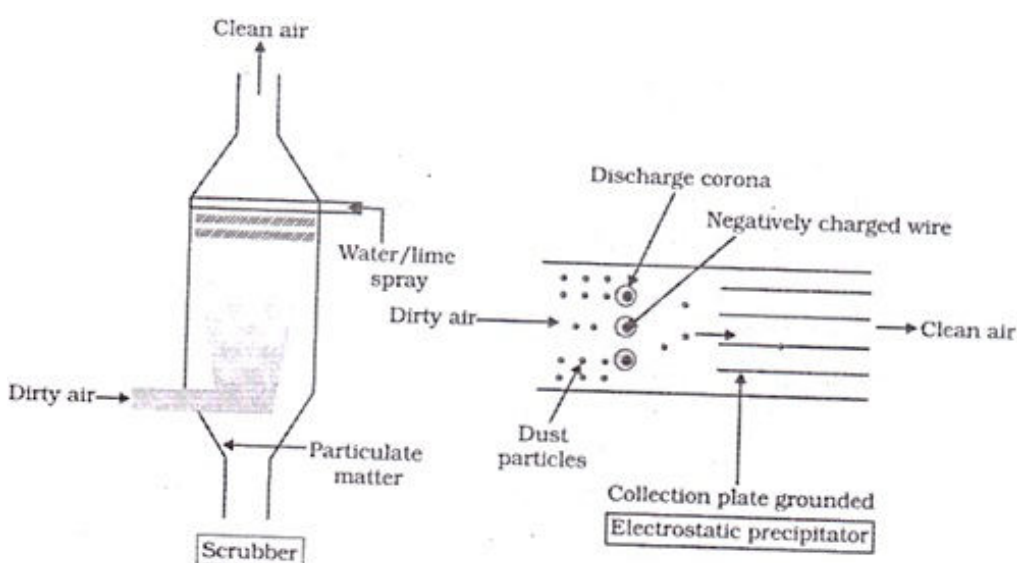
(c) Installation of a landfill gas extraction system to extract the gas for use in

generation of power: This enables faster generation of methane which can be used for power generation. In some countries, landfill sites have become important contributors to power generation.

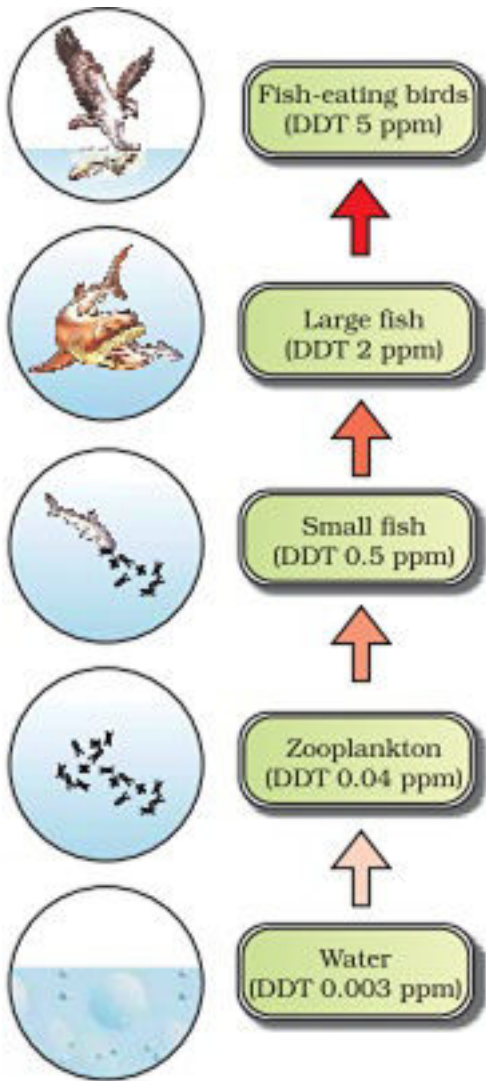
6. How does an electrostatic precipitator work?

Ans. Working of electrostatic precipitator is as follows:

- Electrode wires produce a corona that releases electrons.
- These electrons attach to dust particles and give them a net negative charge.
- Grounded collecting plates attract negatively charged dust particles. Thus dust particles are removed from air.
- A spray of water or lime is generated in the scrubber and exhaust is passed through this spray. Scrubber removes gases; like Sulphur dioxide from air. Thus polluting gases; like Sulphur dioxide are removed from air.



7. Observe figure and answer the following questions:



(i) What ecological term is used to describe the DDT accumulation at different trophic levels?

(ii) List any one effect of DDT accumulation on birds

(iii) Will DDT accumulation lead to eutrophication?

(iv) Does it affect the BOD?

(v) Name disease caused by accumulation of any heavy metal.

Ans. (i) Biomagnification

(ii) Thinning of egg shells

(iii) DDT does not lead to eutrophication.

(iv) It has no effect no BOD.

(v) Minamata disease happens due to accumulation of mercury.
