

BIOLOGY



Important Questions

➤ Multiple Choice Questions:

- Non-biodegradable pollutants are created by:
 - nature
 - excessive use of resources
 - humans
 - natural disasters.
- According to the Central Pollution Control Board, particles that are responsible for causing great harm to human health are of diameter:
 - 2.50 micrometres
 - 5.00 micrometres
 - 10.00 micrometres
 - 7.5 micrometres.
- The material generally used for sound proofing of rooms like a recording studio and auditorium, etc. is:
 - cotton
 - coir
 - wood
 - styro foam.
- Compressed Natural Gas (CNG) is:
 - propane
 - methane
 - ethane
 - butane.
- World's most problematic aquatic weed is:
 - Azolla
 - Woiffia
 - Eichhomia
 - Trapa.
- Which of the following causes biomagnification?
 - SO₂
 - Mercury
 - DDT
 - Both B and C.
- The expanded form of DDT is:
 - dichloro diphenyl trichloroethane

- (b) dichloro diethyl trichloroethane
(c) dichloro dipyrydyl trichloroethane
(d) dichloro diphenyl tetrachloroacetate.
8. Which of the following material takes the longest time for biodegradations?
(a) Cotton
(b) Paper
(c) Bone
(d) Jute.
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.
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.
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).
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.
13. The major source of noise pollution world wide is due to:
(a) office equipment
(b) transport system
(c) sugar, textile and paper industries
(d) oil refineries and thermal power plants.
14. 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 monoxide
- (c) methane
- (d) carbon dioxide and methane.

15. 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.

➤ Very Short Question:

1. Why should the velocity of air between the plates of an electrostatic precipitator be low?
2. $PM_{2.5}$ is responsible for causing greatest harm to human health. What is it? How is it harmful?
3. What is the noise level that can cause permanent impairment of hearing ability of human beings?
4. Why was the Montreal Protocol signed?
5. Jhum cultivation has been in practice from earlier days, but its considered more problematic these days. Why?
6. Aradiation causes ageing of skin, skin cancer, and inflammation of cornea called snow blindness. It also damages DNA. Name the radiation.
7. Name any three gases contributing to green-house effect.
8. Name any two metals found in the catalytic converts?
9. What is meant by ozone hole?
10. Define polar Vortex?

➤ Short Questions:

1. Landfills are not much a solution for getting rid of solid wastes. Why?
2. Electrostatic precipitator can remove over 99% particulate matter present in exhaust from a thermal power plant. How?
3. Why is a scrubber used? Which spray is used on exhaust gases passing through a scrubber?
4. There is a sharp decline in dissolved oxygen downstream from the point of sewage discharge. Why? What are its adverse effects?
5. Catalytic converters use expensive metals as catalysts.
 - (a) Name the metals generally used.
 - (b) What precaution should be observed while using catalytic converter.

6. What are e-wastes? Why are they creating more problem in developing countries in comparison to developed countries?
7. Water logging and salinity are some of the problems that have come in the wake of Green revolution. How does water logging create problems of salinity?
8. What is the relationship between BOD, micro-organisms and amount of bio degradable matter?

➤ **Long Questions:**

1. What measures do you suggest to control pollution from automobile exhaust?
2. Blends of polyblend and bitumen, when used, help to increase road life by a factor of three. What is the reason?
3. Why is the ozone layer in the stratosphere called a protective layer?

➤ **Assertion & Reason Questions:**

1. For two statements are given-one labelled Assertion and the other labelled Reason. Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below.
 - a. Both assertion and reason are true, and reason is the correct explanation of assertion.
 - b. Both assertion and reason are true, but reason is not the correct explanation of assertion.
 - c. Assertion is true, but reason is false.
 - d. Both assertion and reason are false.

Assertion: Bharat stage IV emission norms have been in place since April 2010, for 4 wheelers in 13 mega cities of India.

Reason: Green muffler scheme refers to the plantation of trees and shrubs along road sides and is effective to control noise pollution only.

2. For two statements are given-one labelled Assertion and the other labelled Reason. Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below.
 - a. Both assertion and reason are true, and reason is the correct explanation of assertion.
 - b. Both assertion and reason are true, but reason is not the correct explanation of assertion.
 - c. Assertion is true, but reason is false.
 - d. Both assertion and reason are false.

Assertion: Methylmercury is a highly persistent kind of pollutant that accumulates in food chains.

Reason: Mercury pollution is responsible for Minamata disease.

➤ Case Study Questions:

1. Read the following and answer any four questions from (i) to (v) given below:

Presence of large amounts of nutrients in waters also causes excessive growth of planktonic (free-floating) algae, called an algal bloom. Which imparts a distinct colour to the water bodies. Algal blooms cause deterioration of the water quality and fish mortality. Some bloom-forming algae are extremely toxic to human beings and animals. You may have seen the beautiful mauve-colored flowers found on very appealingly-shaped floating plants in water bodies. These plants which were introduced into India for their lovely flowers have caused havoc by their excessive growth by causing blocks in our waterways. They grow faster than our ability to remove them.

These are plants of water hyacinth (*Eichhornia crassipes*), the world's most problematic aquatic weed, also called 'Terror of Bengal'. They grow abundantly in eutrophic water bodies, and lead to an imbalance in the ecosystem dynamics of the water body.

- 1) An aquatic weed hyacinth is also called as

- (a) Terror of Bengal
- (b) Terror of Nepal
- (c) Terror of Gujrat
- (d) Terror of Assam

- 2) Planktonic algae is also known as algal.....

- (a) Hyacinth
- (b) Mauva
- (c) Bloom
- (d) Weed

- 3) Type of algae is toxic to the animals.

- (a) Root forming
- (b) Bloom forming
- (c) Flower forming
- (d) Fungi forming

- 4) Write causes of mauve-coloured flowers.

- 5) What does algal bloom causes?

2. Read the following and answer any four questions from (i) to (v) given below:

Integrated organic farming is a cyclical, zero-waste procedure, where waste products from one process are cycled in as nutrients for other processes. This allows the maximum utilisation of resource and increases the efficiency of production. Ramesh Chandra Dagar, a farmer in Sonipat, Haryana, is doing just this. He includes bee-keeping, dairy management,

water harvesting, composting and agriculture in a chain of processes, which support each other and allow an extremely economical and sustainable venture. There is no need to use chemical fertilisers for crops, as cattle excreta (dung) are used as manure. Crop waste is used to create compost, which can be used as a natural fertiliser or can be used to generate natural gas for satisfying the energy needs of the farm. Enthusiastic about spreading information and help on the practice of integrated organic farming, Dagar has created the Haryana Kisan Welfare Club, with a current membership of 5000 farmers.

- 1) In the organic farming, cattle excreta were used as
 - (a) Waste
 - (b) Gas
 - (c) Fuel
 - (d) Manure
- 2) In the farming, integrated organic farming is a Waste procedure.
 - (a) Zero
 - (b) One
 - (c) Two
 - (d) Three
- 3) In the natural farming, is used as a natural fertiliser and can generate natural gas.
 - (a) e-waste
 - (b) Crop waste
 - (c) Pond waste
 - (d) None of these
- 4) Who created Haryana Kisan Welfare Club?
- 5) Which processes are included in the integrated organic farming by Dagar?

✓ Answer Key-

➤ **Multiple Choice Answers:**

1. (c) humans
2. (a) 2.50 micrometres
3. (d) styro foam.
4. (b) methane
5. (c) Eichhomia
6. (d) Both B and C.
7. (a) dichloro diphenyl trichloroethane
8. (c) Bone

9. (c) Dobson units are used to measure oxygen content.
10. (a) Burning coal
11. (d) Both (a) and (c).
12. (d) 80 dB.
13. (b) transport system
14. (a) carbon dioxide and water
15. (a) To reduce the emission of sulphur dioxide in exhaust fumes

➤ Very Short Answers:

1. To allow the dust to fall.
2. PM_{2.5} stands for particulate matter of size 2.5 micrometers or less in diameter. Its responsible for causing greatest harm to human health as it can be inhaled deep into lungs and cause breathing problems.
3. Ans.150 dB or more
4. To control emission of ozone depleting substances.
5. Enough time gap is not being given for the natural process of recovery of land from the effect of cultivation.
6. Ultraviolet B rays (UV-B rays)
7. Carbon dioxide, methane & chlorofluorocarbons.
8. Platinum, rhodium.
9. The decline in this thickness of spring time ozone layer is called ozone hole.
10. Polar vortex refers to the natural circulation of wind that completely isolates the Antarctic air from rest of world.

➤ Short Answer:

1. Landfill sites are getting filled very fast due to large amount of garbage generation. Also underground water resources may get polluted due to seepage of chemicals.
2. Electrode wire at thousand volts, produce corona to release electrons, electrons attach to dust particules giving them net negative charge, charged dust particules attracted/collected by collecting plates which are grounded.
3. To remove gases like sulphur dioxide. Spray of water or lime is used.
4. Following discharge of sewage into river, micro organisms involved in biodegradation of organic matter present in sewage consume more oxygen. This cause mortality of fish and other aquatic creatures.
5. (a) Catalysts : platinum – palladium and Rhodium

(b) Motor vehicles equipped with catalytic converters should use unleaded petrol as lead inactivates the catalysts.

6. (a) Irreparable computers and other electronic wastes.

(b) Recycling in developing countries involves manual participation thus exposing workers to toxic substances. In developed countries its mechanised so less dangerous.

7. Water logging draws salt to surface of soil. Salt deposited on land surface as a thin crust or at the roots of the plants

8. Increase in amount of biodegradable matter leads to rapid multiplication of micro organisms to degrade it, thereby increasing BOD level of the water body.

➤ Long Answer:

1. Control of pollution from automobile exhaust:

- i. Efficient engines can reduce the number of unburnt hydrocarbons from vehicular emissions.
- ii. Use of catalytic converters to convert harmful gases to harmless.
- iii. Use of good quality fuel.
- iv. Unleaded petrol can reduce the amount of lead in the exhaust.
- v. The use of CNG (compressed natural gas) lowers the toxic contaminants in the exhaust.

2. Polyblend is a fine powder of recycled modified plastic. The binding property due to increased cohesion and enhanced water-repelling property of plastic makes the road last longer besides giving added strength to withstand more loads.

This is because:

- Plastic increases the melting point of the bitumen which would prevent it from melting in India's hot and extremely humid climate, where temperature frequently crosses 45°C.
- Rainwater will not seep through because of the plastic in the tar.

3. Ozone layer as a protective layer: The ozone layer in the stratosphere is very useful to human beings because it absorbs the major part of harmful ultraviolet radiation coming from the sun. Therefore, it is called a protective layer. However, it has been observed that the ozone layer is getting depleted. One of the reasons for the depletion of the ozone layer is the action of aerosols spray propellants.

Chemicals such as fluorocarbons and chlorofluorocarbons are used as aerosol propellants. These compounds react with ozone gas in the atmosphere thereby depleting it. Scientists all over the world are worried about the destruction of the ozone layer. If the ozone layer in the atmosphere is significantly decreased, these harmful radiations would reach the earth and would cause many damages such as skin cancer, genetic disorders in man and other

living forms. Efforts are being made to find substitutes for these chemicals that do not react with ozone.

➤ Assertion and Reason Answers:

1) c) Assertion is true, but reason is false.

Explanation:

Bharat stage emission standards are emission standards issued by the Government of India to regulate the emission of air pollutants from internal combustion of engine equipments of motor vehicles. Bharat Stage IV norms have been in place for 4-wheelers in 13 mega cities of India since April 2010. Green muffler or green belt vegetation is rows of trees and shrubs grown and maintained to serve as noise absorbers. It also reduces air pollution because the trees and shrubs absorb pollution gases and cause settling of suspended particulate matter.

2) b) Both assertion and reason are true, but reason is not the correct explanation of assertion.

Explanation:

Mercury pollution has been responsible for several deaths in Sweden and Japan and has caused the Minamata disease in Japan, chlor alkali plants seem to be chief sources of mercury containing effluents. Mercury is persistent in water it gets changed into water soluble dimethyl form $[(CH_3)_2Hg]$ and enters the food chain accompanied by biological or ecological amplification.

➤ Case Study:

1.

- 1) (a) Terror of Bengal
- 2) (c) Bloom.
- 3) (b) Bloom forming.
- 4) Mauva-coloured flower causes blocks in the waterways.
- 5) Algal bloom can cause fish mortality and water deterioration.

2.

- 1) (d) Manure.
- 2) (a) Zero.
- 3) (b) Crop waste.
- 4) The Haryana Kisan Welfare Club was created by Ramesh Chandra Dagar.
- 5) Processes like dairy management, composting, water harvesting and bee-keeping are included in the integrated organic farming by Dagar.