

BIOLOGY

BOOKS - MTG IIT JEE FOUNDATION

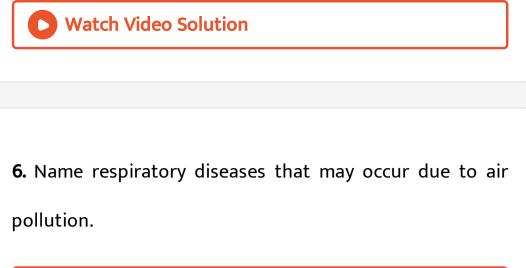
NATURAL RESOURCES

Illustrations

1. How is our atmosphere different from the atmospheres on Venus and Mars ?



2. How does the atmosphere act as a blanket?
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3. What causes winds?
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4. How are clouds formed?
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5. List any three human activies that you think lead to air
pollution.





7. Why do organisms need water?



8. What is the major source of fresh water in the city/town/village where you live?



9. Do you know of any activity which may be polluting this
water source?
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Water video solution
10. How is soil formed?
Watch Video Salution
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11. What is soil erosion?
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12. What are the methods or preventing or reducing soil erosion?



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13. What are the different states in which water is found during the water cycle?



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14. Name two biological important compounds that contain both oxygen and nitrogen.



15. Name the bacteria found in root nodules of leguminous plants.



16. List any three human activities which would lead to an increase in the carbon dioxide content of air.



17. What is the greenhouse effect?



18. How much carbon is fixed by photosynthesis in a year by producers ?

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19. How the amount of atmospheric ozone is measured?



20. What are the effects of ozone layer depletion?



21. What is the cause of the depletion of the ozone layer?



Solved Examples

1. Name thre physical agents which cause weathering of rocks.



2. What is bad ozone and good ozone?



3. Name two elemental forms of carbon.

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4. Differentiate between biodegradak	ble and non-
biodegradable pollutants.	
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5. What causes acid rain ?	





6. What is humus? What are its function?



7. Name two leguminous plants and two non-leguminous plants which can fix nitrogen.



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8. What kind of soil is most suitable for plant growth? Why?



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Ncert Section

1. Why is the atmosphere essential for life?



2. Why is water essential for life?



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3. How are living organisms dependent on the soil ? Are organisms that live in water totally independent of soil as a resource?



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4. You have seen weather reports on television and in newspapers. How do you think are able to predict the weather?

5. We know that many human activities lead to increasing levels of pollution of the air, water-bodies and soil. Do you think that isolating these activities to specific and limited areas would help in reducing pollution?



6. Write a note on how forests influence the quality of our air, soil and water resources.



Exercise Multiple Choice Questions Level 1

1. Nitrogen fixation can be don	e by
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- A. industries
- B. Rhizobium
- C. lightning
- D. all of these.

Answer: D



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2. Major source of air pollution is

A. burning of fossil fuels B. burning of LPG C. biogas D. cow dung cakes. **Answer: A Watch Video Solution** 3. The outermost layer of our earth is called A. mantle B. core C. earth crust

D. benthos.

Answer: C

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- **4.** Major source of formation of soil is
 - A. rocks
 - B. snow covered mountains
 - C. river beds
 - D. volcanoes.

Answer: A



- 5. Solar radiation heat up
 - A. land faster than the water bodies
 - B. land slower than the water bodies
 - C. equally both land and water bodies
 - D. neither land nor water bodies.

Answer: A



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6. Select the non-point source of water pollution from the following:

- A. Run off water
- **B.** Industries
- C. Thermal plant
- D. Power plant

Answer: A



- 7. Soil erosion is caused due to
 - A. strong winds
 - B. heavy rains
 - C. keeping the fields fallow for a long time

D. all of these.

Answer: D



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- **8.** Soil erosion can be prevented by
 - A. terrace farming
 - B. intensive cropping
 - C. deforestation
 - D. both (a) and (b).

Answer: D



9. Man-made source of air pollution	n Is	5
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A. volcanic eruptions

B. burning of fossil fuels

C. pollens

D. both (a) and (b).

Answer: B



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10. Which of the following promotes soil erosion?

A. Over-grazing
B. Terrace farming
C. Sea breeze
D. Conservation tillage
Answer: A
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11. Which of the following is present in highest
concentration in exhausts emissions?
A. Lead
B. Ammonia

- C. Carbon monoxide
- D. Particulate matter

Answer: B



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12. Health problems related to air pollution include

- A. lung cancer
- B. asthma
- C. bronchitis
- D. all of these.

Answer: D

13. Ozone layer of atmosphere protects the living organisms from

A. high temperature

B. harmful radiations of sun

C. hail and snow

D. water pollution.

Answer: B



14. Climate change may impact

A. agriculture, natural terrestrial ecosystems and water resources

B. air quality, oceans and coastal zones

C. energy and human health

D. all of these.

Answer: D



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15. What is the origin of energy that drives the water cycle?

A. Trees
B. Water
C. Mountains
D. Sun
Answer: D
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16. Which among the following process is not involved in
water cycle?
A. Evaporation, hibernation and dehydration
B. Evaporation, condensation and precipitation

- C. Paddling, swimming and drinking
- D. Bathing, sunning and drinking

Answer: B



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17. The process in which liquid water changes into gas is called

- A. precipitation
- B. condensation
- C. evaporation
- D. transpiration.

Answer: C



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18. The process in which water vapour changes to a liquid is called

- A. condensation
- B. evaporation
- C. transpiration
- D. precipitation.

Answer: A



19. Which compound contribute(s) to acid rain?

A. Carbon dioxide

B. Sulphur and nitrogen oxides

C. Mercury oxides

D. Phosphates

Answer: B



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20. Enrichment of soil with ammonia and nitrates by applying fertilisers is called

A. industrial fixation

C. ammonification D. nitrogen assimilation. **Answer: A Watch Video Solution** 21. The two forms of oxygen found in the atmosphere are A. water and ozone B. water and oxygen C. ozone and oxygen D. water and carbondioxide.

B. denitrification

Answer: C



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- **22.** Among the given options, which one is not correct for the use of large amount of fertilisers and persticides ?
 - A. They are eco-friendly.
 - B. They turn the fields barren after some time.
 - C. They adversely affect the useful component from the soil.
 - D. They destroy the soil fertility.

Answer: A

- 23. Which step is not involved in the carbon-cycle?
 - A. Photosynthesis
 - B. Transpiration
 - C. Respiration
 - D. Burning of fossil fuels

Answer: B



- A. a large sized hole in the ozone layer
- B. thinning of the ozone layer
- C. small holes scattered in the ozone layer
- D. thickening of the ozone layer.

Answer: B



- 25. Biotic component of biosphere is not constituted by
 - A. producers
 - B. consumers
 - C. decomposer

D. air.

Answer: D



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26. Low visibility during cold weather is due to

A. formation of fossil fuel

B. unburnt carbon particles or hydrocarbons suspended in air

C. lack of adequate power supply

D. none of these.

Answer: B

27. Which of the following is a renewable resource

- A. Water
- B. Coal
- C. Fuel
- D. Mineral

Answer: A



A. forest
B. coal
C. water
D. wildlife.
Answer: B
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29. Minerals and metals are
A. biodegradable resources
B. renewable resources
C. non-renewable

D. inexhaustible resources.

Answer: C



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30. Terracing helps in soil conservation in

A. plains

B. deserts

C. hilly areas

D. wet areas.

Answer: C



Exercise Multiple Choice Questions Level 2

1. Identify the	correct statement	for phenomenon	of la	and
breeze.				

- A. It occurs during day.
- B. Air moves from sea to land.
- C. Air above water is warmer than air above land.
- D. Both (b) and (c)

Answer: C



2. Organisms like lichens are very sensitive to the levels of
A. carbon dioxide
B. sulphur dioxide
C. carbon monoxide
D. methane.
Answer: B
Allswel: D
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3. Rhizobium bacterium is a common example of which of
the following groups of bacteria?
A. Nitrifying

C. Nitrogen fixing D. Denitrifying **Answer: C Watch Video Solution** 4. Which sector is the single largest consumer of freshwater in India? A. Agriculture **B.** Industry C. Domestic

B. Ammonifying

D. Power	
Answer: A	

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5. The process of photosynthesis and respiration cause the cycling of...... through the environment.

A. carbon

B. water

C. nitrogen

D. hydrogen

Answer: A

- 6. The process of converting ammonia into nitrite is called
 - A. nitrogen fixation
 - B. nitrogenation
 - C. nitrification
 - D. denitrification.

Answer: C



7. Some bacteria have the ability to 'fix' nitrogen. This means they

A. convert ammonia into nitrites and nitrates

B. break down useful nitrogen-rich compounds and release ammonium ions

C. convert nitrates into nitrogen gas

D. convert atmospheric nitrogen gas into biologically useful forms of nitrogen.

Answer: D



8. The conversion of nitrates to nitrogen gas by bacteria is called

A. denitrification

B. nitrification

C. nitrogen fixation

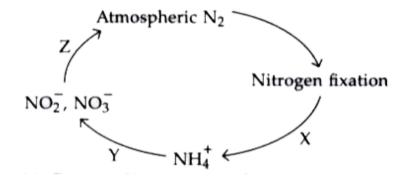
D. excretion.

Answer: A



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9. Study the given representation of nitrogen cycle and select the correct option.



A. Process X is ammonification in which Nitrocystis converts nitrogen into ammonia.

B. Process Y is nitrification in which ammonia oxidised to nitrite and then nitrates.

C. Process Z is denitrification and is carried out by bacteria Nitrosomonas and Nitrobacter.

D. All of these

Answer: B



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10. Why is it difficult to integrate nitrogen gas from the atmosphere into the nitrogen cycle of the biosphere?

A. Nitrogen is not very abundant in the atmosphere.

B. Nitrogen gas (N_2) , can be used by living organisms in soluble form.

C. Oceans quickly absorb nitrogen gas.

D. Living organisms quickly absorb nitrogen gas.

Answer: B



11. Bacteria Azotobacter and Clostridium drive the cycle.

A. carbon

B. nitrogen

C. oxygen

D. energy

Answer: B



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12. Pollutant which reduces oxygen carrying capacity of haemoglobin, leading to suffocation or death is

A. carbon monoxide
B. sulphur dioxide
C. ozone
D. nitric oxide.
Answer: A
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13. Small ice crystals that form around dust of salt
particles is
A. rain
A. I dili
B. snow

C. sleet
D. hail.
Answer: C
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14. The atmosphere of the earth is heated by radiations which are mainly
A. radiated by the sun

B. re-radiated by land

C. re-radiated by water

D. re-radiated by land and water.

Answer: D



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- 15. Rainfall patterns depend on
 - A. underground water table
 - B. number of water bodies in an area
 - C. density pattern of human population in an area
 - D. prevailing season in an area.

Answer: B



16. One of the following processes is not a step involved in
the water cycle operating in nature
A. Evaporation
B. Transpiration

C. Precipitation

D. Photosynthesis

Answer: D



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17. Which of the following is not a greenhouse gas?

A. Methane

- B. Carbon dioxide
- C. Carbon monoxide
- D. Ammonia

Answer: D



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- **18.** Ozone layer is getting depleted because of
 - A. excessive use of automobiles
 - B. excessive formation of industrial units
 - C. excessive use of man-made compounds containing

both fluorine and chlorine

D. excessive deforestation.

Answer: C



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- 19. Oxygen is returned to the atmosphere mainly by
 - A. burning of fossil fuel
 - B. respiration
 - C. photosynthesis
 - D. fungi.

Answer: C



20. Which of the following maintains the organic matter of the soil?

- A. Fungi and semiparasites
- B. Cyanobacteria and parasitic animals
- C. Bacteria and fungi
- D. All of these

Answer: C



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Exercise Assertion Reason Type

1. Assertion: Fossil fuels are important source of energy.

Reason : Fossil fuels provide energy to different industries.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

- B. If both assertion and reason are true but reason is not the correct explanation of assertion.
- C. If assertion is true but reason is false.
- D. If both assertion and reason are false.

Answer: B



2. Assertion: All resources are not exhaustible.

Reason: Renewable resources can become non-renewable.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true but reason is not the correct explanation of assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: B



3. Assertion: Humus makes the soil fertile.

Reason: Humus is rich in organic matter

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true but reason is not the correct explanation of assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: A



4. Assertion: Overcropping reduces soil fertility.

Reason: Soil fertility depends upon the soil composition.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true but reason is not the correct explanation of assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: B



5. Assertion: Loamy soil is porous and allows aeration of roots. Hence, it is good for plant growth.

Reason: Clayey soil is poorly aerated. Therefore, is not suitable for plant growth.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true but reason is not the correct explanation of assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: B



6. Assertion: Forests are renewable resource.

Reason: Conservation of forests has multifold benefits.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true but reason is not the correct explanation of assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: B



7. Assertion: Wildlife is a renewable resource.

Reason: Human activities do not effect wild life.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true but reason is not the correct explanation of assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: D



8. Assertion: Excess use of fertilisers causes salt loading of soil.

Reason: Fertilisers may develop alkalinity in soil.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true but reason is not the correct explanation of assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: B



9. Assertion: Increasing carbon dioxide causes global warming

Reason: Carbon dioxide does not allow solar radiations re-radiated by earth to escape into space.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true but reason is not the correct explanation of assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: A



10. Assertion : Extensive use of CFCs increases the chances of skin cancer.

Reason: CFCs deplete the ozone layer in stratosphere.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true but reason is not the correct explanation of assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: A



Exercise Subjective Questions Very Short Answer Type

1. Which layer of atmosphere has maximum concentration of ozone?



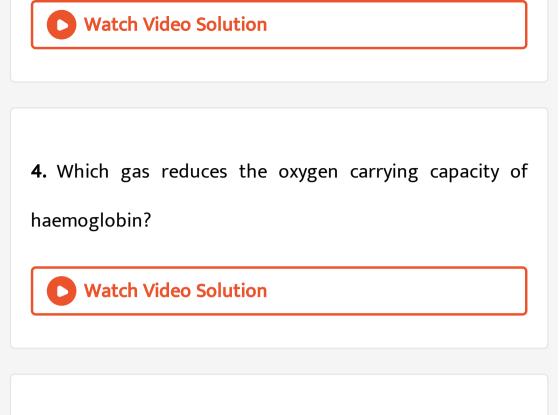
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2. Which gas is mainly responsible for greenhouse effect?



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3. What percentage of atmospheric air constitutes oxygen?

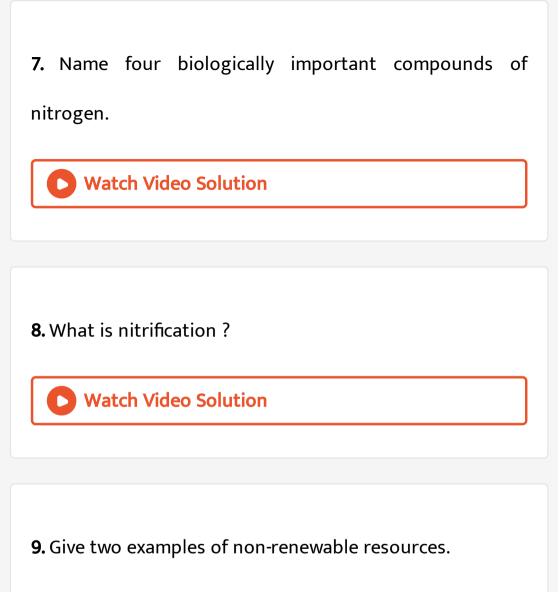


5. Name two respiratory disorders caused by air pollution.

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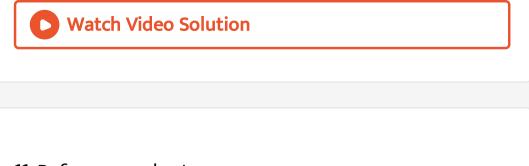
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6. What is denitrification?





10. What is the literal meaning of resource?



11. Define groundwater.



12. List two bacteria which bring about nitrification.



13. Name the chemicals responsible for minimata disease and itai-itai disease, respectively.



14. Why solar energy is considered to be inexhaustible resource?



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15. List any two bacteria which play a role in biological nitrogen fixation.



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Exercise Subjective Questions Short Answer Type

1. How can we prevent the loss of top soil?



2. During summer,if you go near the lake you feel relief from heat. Why?



3. Why does Mathura refinery pose problems to the Taj Mahal?



4. Why are root nodules useful for the leguminous plants?



5. Why does water need conservation even though large oceans surround the land masses?



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6. Soil is formed by water'. If you agree to this statements then give reasons.



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7. What will happen, if decomposers are eliminated completely from the earth?



8. What do you know about hole in ozone layer? Explain the probable damages caused by it.



9. Population explosion is the main cause of pollution. Explain.



10. What is rainwater harvesting?



11. Why is majority of fres water not available to us for use?



12. What are the three different ways of nitrogen fixation?



13. What do you mean by biological weathering? Give two examples.



14. What is the role of plants in controlling air pollution and soil erosion?



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15. What is carbon cycle?



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Exercise Subjective Questions Long Answer Type

1. What is the significance of dissolved oxygen to the aquatic organisms? How it gets depleted?



2. Describe an activity to show the effect of low pressure and particulate nuclei over water vapours.

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3. How do fossil fuels cause air pollution?

4. Some forms of life do not depend upon oxygen. Explain.

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5. Explain the various forms in which carbon is found on the earth.



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6. How is life of organisms living in water affected when water gets polluted?



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7. What is ozone hole? Where it is found? What is its effect?



- 8. Why does moon have temperature variations e.g., from
- $-190^{\circ}C$ to $110^{\circ}C$ even though it is at the same distance from the sun as the earth is?



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9. Give reasons for the following statements.

Cloudy, dusty and humid nights are warmer than the clear, dust free, dry nights.



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10. Give reasons for the following statements.

Radiation kills the cancer cells.



11. Give reasons for the following statements.

Thermal pollution of water is harmful for aquatic animals.



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12. Give reasons for the following statements.

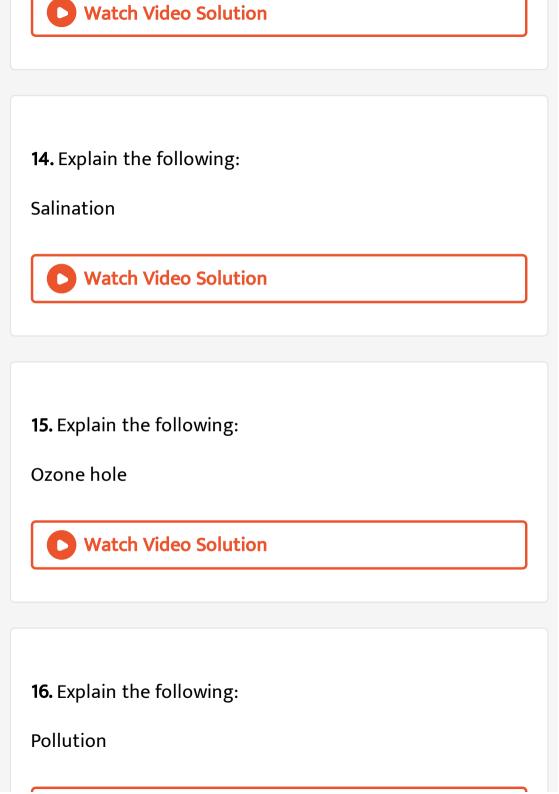
Nitrite poisoning may be fatal in children.



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13. Give reasons for the following statements.

Noise is also a pollutant.





17. Explain the following:

Secondary pollutants



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18. Explain the following:

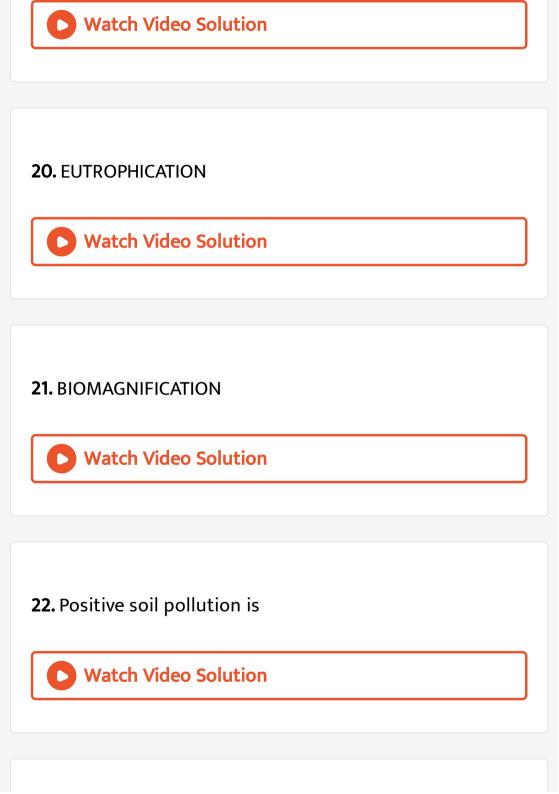
Smog



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19. Explain the following:

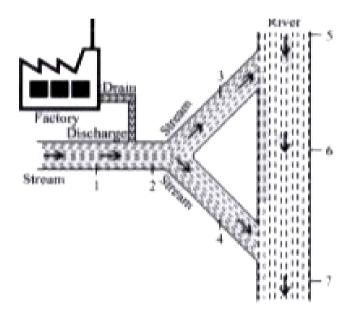
Aerosol



23. Justify 'Dust is a Pollutant'. **Watch Video Solution 24.** Explain the role of the sun in the formation of soil. **Watch Video Solution** 25. Carbon dioxide is necessary for plants. Why do we consider it as a pollutant? **Watch Video Solution**



1. A group of students would like to know how the effluent from a factory might influence water quality of a river. The given diagram shows seven potential sampling locations (1 to 7) along the factory and the river. In order to draw a valid conclusion about the river water pollution caused by the factory discharge, which locations (1 to 7) shall be included for the sampling?



A. Locations 2, 3, 4, 6

- B. Locations 1, 2, 4,7
- C. Locations 2, 5, 6, 7
- D. Locations 1, 2,5,7

Answer: D



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- **2.** Our atmosphere is made of many layers. The layer nearest to the surface of the earth is known as
 - A. geosphere
 - B. stratosphere
 - C. troposphere

D. none of these.

Answer: C



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- **3.** The human made synthetic chemical used in refrigerator is
 - A. LPG
 - B. CFC
 - $\mathsf{C}.\,CH_4$
 - D. PVC

Answer: B

- **4.** Pick out the pollutant.
 - A. Carbon monoxide
 - B. Oxygen
 - C. Nitrogen
 - D. Hydrogen

Answer: A



- **5.** Conversion of fertile land into desert is called desertification. Which of the following is not a consequence of desertification?
 - A. Decrease in the water holding capacity of soil.
 - B. Increased chances of floods.
 - C. Increase in the temperature of earth.
 - D. Decrease in the concentration of carbon dioxide in atmosphere.

Answer: D

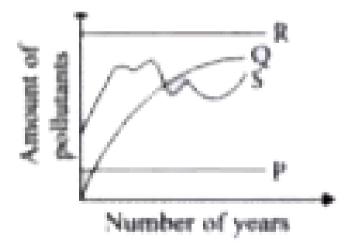


- **6.** Which of the following statements is not true?
 - A. Ozone layer occurs naturally in the stratosphere.
 - B. Chlorofluorocarbons are the major ozone depleting substances which produce active chlorine radicals in the presence of UV radiations.
 - C. Thinning of ozone layer allows more UV radiations to pass through it and cause harmful effects on humans, plants and animals.
 - D. The region of the stratosphere that contains relatively high concentration of ozone is called troposphere.

Answer: D



7. The given graph shows the amount of pollutants in four rivers P, Q, R and S. The river that can continue to support the most number of aquatic plants and animals is



- B. Q
- C.R
- D. S

Answer: A



- **8.** Which of the following activities will lead to both air and water pollution?
 - A. Use of manures and biofertilisers in a crop field
 - B. Use of cooling devices like air conditioners and refrigerators

C. Burning of fossil fuels and use of fuel operated transport vehicles.

D. All of these

Answer: C



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9. Accumulation of non-biodegradable pesticides in the food chain in increasing amount at each higher trophic level is known as

A. Eutrophication

B. Pollution

C. Biomagnification

D. Accumulation.

Answer: C



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10. Which of the following plays an important role in nitrogen cycle?

A. Yeast

B. Nitrobacter

C. Mucor

D. Spirogyra

Answer: B

11. Match column I with column II and select the correct

option from the codes given below.

Column II Column II

(A)Particulate matter (i)Chemical water pollutants (B)Detergents (ii)Non-degradable soil pollutants

(iv)Air pollutants

(B) Detergents (ii) Non-degradable soil polluta (C) Plastics (iii) Degradable soil pollutants

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

(D) Vegetable peels

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

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

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

Answer: B



