

Pollution of Air and Water

Very Short Answer Type Questions

Q.1. Name the gas present in atmosphere which is mainly responsible for causing global warming.

Answer: Carbon dioxide is the gas which is mainly responsible for causing global warming. Carbon dioxide traps heat and does not allow it to escape into space causing an increase in the average temperature of the earth's atmosphere.

Q.2. Name two gases present in polluted air which can cause acid rain.

Answer: Sulphur dioxide and Nitrogen dioxide are the gases present in polluted air which causes acid rain.

Q.3. Name all the major pollutants of air.

Answer: The gases like carbon dioxide, carbon monoxide, Sulphur dioxide, nitrogen dioxide and chlorofluorocarbons are the major pollutants of air.

Q.4. Which air pollutant combines with the haemoglobin of our blood?

Answer: Carbon monoxide combines with the haemoglobin of our blood. It reduces the oxygen carrying capacity of blood.

Q.5. Name the various air pollutants discharged by motor vehicle exhausts.

Answer: The various air pollutants discharged by motor vehicle exhausts are carbon dioxide, carbon monoxide, nitrogen oxides and smoke.

Q.6. Which gas in the upper atmosphere prevents ultraviolet radiations of the sun from reaching the earth?

Answer: Ozone layer in the upper atmosphere prevents ultraviolet radiations of the sun from reaching the earth.

Q.7. Name any two diseases caused by drinking polluted water containing sewage.

Answer: Drinking of polluted water containing sewage causes diseases like cholera, typhoid and jaundice.

Q.8. Name any four toxic metals whose compounds are present in industrial wastes.

Answer: Arsenic, lead, mercury and fluorides are the toxic metals whose compounds are present in industrial wastes.

Q.9. Name any two types of chemicals used in agriculture which cause water pollution.

Answer: Pesticides and weedicides are the chemicals used in agriculture which cause water pollution.

Q.10. The use of excessive fertilizers in the fields lead to the deficiency of an important substance in the water of a nearby lake. Name the substance.

Answer: The use of excessive fertilizers in the fields lead to the deficiency of Oxygen in the water of a nearby lake. This may kill the aquatic organisms.

Short Answer Type Questions

Q.11. What is Ganga Action Plan? When and why was it launched?

Answer: The plan to save the river Ganga was launched in 1985 is called the Ganga Action Plan. It was aimed to reduce the pollution levels in the river. Recent study by WWF – World wide fund for nature have found that Ganga is one of the most endangered rivers in the world. Large quantities of garbage, untreated sewage, dead bodies and many other harmful things are thrown directly into the river. The river is almost dead at many places where the pollution level is very high and the aquatic life cannot survive.

Q.12. Name any four pollutants which cause water pollution. State any three ways of controlling water pollution.

Answer: The harmful substances like sewage, toxic materials, silt etc., when gets mixed with water, causes water pollution. The pollutants which cause water pollution are:

Chemical waste from industries, sewage, silt, agricultural chemicals and garbage thrown into water.

Water pollution can be controlled in the following ways:

- Water should go through the sewage treatment plants before discharging into the water bodies.
- Use of pesticides and weedicides should be limited in order to prevent pollution.
- Industrial waste should be treated for harmful chemicals before discharging into the water bodies. Water treatment plants should be installed in all the industrial areas.

- We should save water consciously and should prevent the wastage of water. We must reuse, recycle and reduce the usage of water. We must try to reuse water. For example, water used for washing vegetables can be used to water plants in the garden.

Q.13. How do industries cause water pollution?

Answer: Industries cause water pollution in the following ways:

- Industries such as oil refineries, paper factories, textile and sugar mills and chemical factories discharge harmful chemicals into rivers and streams. These chemicals include arsenic, lead and fluorides which are very toxic to plants and animals.
- The soil is also affected by impure water which causes changes in acidity of soil and affects the growth of worms and plants etc.
- Some industries and power plants release hot water into the rivers. Hot water can also be considered as a pollutant. It raises the temperature of the water body and adversely affects the plants and animals living in it.

Q.14. How can you help reduce air pollution at the individual level?

Answer: Pollution is not a distant phenomenon anymore. It is affecting the quality of our day to day lives. We must realize our responsibility and should start using the following environment- friendly processes:

- We should switch to cleaner fuels like CNG- Compressed natural gas and LPG- Liquefied petroleum gas for both industries and automobiles.
- Automobiles should also use unleaded petrol.
- We should plant more trees which will help to control deforestation.
- Industrial waste should be treated for harmful chemicals before discharging into air the water bodies.
- We must switch to alternative fuels instead of fossil fuels. Alternative sources of energy can be solar energy, hydropower and wind energy.
- We must encourage the use of a public transport, a bicycle or walking for short distances. This will help to reduce the use of fossil fuels.
- Burning of plant waste also causes pollution by the emission of smoke. Plant waste must be put in a compost rather than burning.

Q.15. Explain the difference between pure air and polluted air.

Answer: Pure air is a mixture of several gases that are invisible and odorless. It consists about 78% nitrogen, 21% is oxygen and less than 1% of Carbon dioxide and other gases like argon, methane and ozone and varying amount of water vapors. Polluted air on the other hand, is contaminated with the substances like smoke, dust

and other harmful substances called pollutants. These pollutants can come from natural sources like smoke and dust arising from forest fires or volcanic eruptions. Pollutants can also be added from the human activities. The sources of air pollution are automobile exhausts, power plants, factories and burning of firewood and dung cakes.

Q.16. What is 'greenhouse effect'? State its importance for us.

Answer: The sun's rays warm the surface of earth. A part of the radiation which falls on the earth is reflected back into the space and only a part of it is absorbed. This trapped radiation further warms the earth. The trapping of radiation by the earth's atmosphere is known as Greenhouse effect. Life would not have been possible without this process. Carbon dioxide is one of the gases responsible for this effect. Some other gases like methane, nitrous oxide and water vapors also contribute towards this process.

Q.17. Name two greenhouse gases? Which one of them produces the maximum greenhouse effect?

Answer: The trapping of radiation by the earth's atmosphere is known as Greenhouse effect. Life would not have been possible without this process. Carbon dioxide and methane are greenhouse gases. Carbon dioxide produces the maximum greenhouse effect.

Q.18. What depletes the ozone layer in the atmosphere? What are the harmful effects of the depletion of ozone layer on us?

Answer: Chlorofluorocarbons used in refrigerators, air conditioners and aerosol sprays are responsible to deplete the ozone layer in the atmosphere. Ozone layer protects us from harmful ultraviolet rays of the sun. There has been a depletion of ozone layer in the layers of atmosphere which has been caused by the chlorofluorocarbons and other atmospheric pollutants. This results in increase of ultraviolet radiations at ground level which gives rise to an increased risk of skin cancer.

Q.19. Name one source and one harmful effect of each of the following air pollutants:

(a) Sulphur dioxide

(b) Nitrogen oxides

(c) Carbon monoxide

(d) Chlorofluorocarbons (CFCs)

Answer: (a) The source of Sulphur dioxide in the air is the fossil fuels combustion in the power plants and other industries. It can also be produced by the motor vehicles emissions.

Sulphur dioxide is a very harmful pollutant when present in the atmosphere. It can cause the respiratory problems, including permanent lung damage.

(b) The source of nitrogen dioxide in the air is produced by the motor vehicles.

Nitrogen dioxide is a very harmful pollutant because it combines with other air pollutants and fog to form smog. The smog is responsible for causing breathing difficulties such as asthma, cough and wheezing in children.

(c) The source of carbon monoxide in the air is by the incomplete burning of fuels such as petrol and diesel.

Carbon monoxide is a very poisonous gas which reduces the oxygen carrying capacity of blood.

(d) The Chlorofluorocarbons are used in the refrigerators, air conditioners and aerosol sprays.

The Chlorofluorocarbons are responsible to deplete the ozone layer in the atmosphere. Ozone layer protects us from harmful ultraviolet rays of the sun. This results in increase of ultraviolet radiations at ground level which gives rise to an increased risk of skin cancer.

Q.20. Explain why, even clear, transparent and odourless water may not always be safe for drinking.

Answer: Even the clear, transparent and odourless water may not always be safe for drinking because it may contain pollutants. These pollutants include the chemicals which may be discharged from the Industries such as oil refineries, paper factories, textile and sugar mills and chemical factories. These chemicals include arsenic, lead and flourides which are very toxic to human beings, plants and animals. These pollutants can also be chemicals used in farming such as pesticides and weedicides. All these chemicals dissolve in water and are washed into water bodies from the fields. They also seep into the ground and pollute ground water.

Q.21. Explain why, hot water released by power plants and industries is considered a pollutant.

Answer: Some industries and power plants releases hot water into the rivers. Hot water can also be considered as a pollutant. It raises the temperature of the water body and adversely affects the plants and animals living in it.

Q.22. Why does the increased level of nutrients (or fertilizers) in the lake water affect the survival of aquatic organisms (like fish)?

Answer: Some ponds or lakes have a lot of green algae growing in them. This is caused due to the excessive quantity of chemicals which are washed from the fields. These chemicals act as nutrients for these algae to grow. When these algae die, they act as a nutrient for decomposers like bacteria. As a result of this process, a lot of

oxygen in the water gets used up causing the decrease of oxygen level. This affects the survival of aquatic plants which can also kill them.

Q.23. Explain how, the use of pesticides in agriculture causes water pollution.

Answer: The use of pesticides in agriculture is responsible in causing the water pollution. It is also caused due to the excessive use fertilizers in the fields. These fertilizers act as nutrients for the algae to grow. When these algae die, they act as a nutrient for decomposers like bacteria. As a result of this process, a lot of oxygen in the water gets used up and leads to the deficiency of Oxygen in the water. This may kill the aquatic organisms.

Q.24.A. Describe the threat to Taj Mahal monument due to air pollution.

Answer: Taj Mahal is India's famous historical monument which is located in Agra. It has become a matter of concern to protect Taj Mahal due to the discoloration of its white marble. This is caused due to air pollution in Agra. The industries which are located in and around Agra such as Mathura Oil refinery, rubber processing, automobile and chemical industries have been responsible for the emission of air pollutants. These pollutants include Sulphur dioxide and nitrogen dioxide which reacts with water vapors in the atmosphere to form sulphuric acid and nitric acid. These acids combine with rain and makes the rain water acidic. Acid rain corrodes the marble of Taj Mahal. The suspended particles emitted by these industries have also contributed towards the yellowing of the marble.

Q.24.B. State any two ways of controlling air pollution;

Answer: Several steps have been taken by Supreme Court to protect Taj Mahal. The industries around Taj Mahal have been ordered to switch into clean fuels such as compressed natural gas-CNG and Liquified petroleum gas- LPG. It has been advised that the automobiles should be switched over to unleaded petrol.

Q.25.A. What-is potable water? Name any two methods to make water safe for drinking.

Answer: The water which is safe for drinking without any risk of health problems is called potable water. Water can be made safe for drinking in the following ways:

- Household filters such as candle type filters can be used at homes to make the water safe for drinking.
- Boiling of water can be done before drinking at home. Boiling kills, the germs present in water and makes water safe for drinking.
- Chlorination can also be done for purifying water at home. It can be done by adding chlorine tablets or bleaching powder into water. Only specific number of chlorine tablets should be used.

Q.25.B. State two ways in which you conserve water at home by, preventing its wastage.

Answer: We should save water consciously and should prevent the wastage of water. We must reuse, recycle and reduce the usage of water.

We must try to reuse water. For example, water used for washing vegetables can be used to water plants in the garden.

We must try to save water by regularly checking the pipelines for any leakage or damage. We should always check for any open taps after using water supply.

Long Answer Type Questions

Q.26.A. What is meant by water pollution? What are the different ways in which water gets polluted?

Answer: The harmful substances like sewage, toxic materials, silt etc., when gets mixed with water, causes water pollution. The pollutants which cause water pollution are the chemical waste from industries, sewage, silt, agricultural chemicals and garbage thrown into water.

Water gets polluted in the following ways:

- Water can be contaminated by human waste or sewage.
- Industries such as oil refineries, paper factories, textile and sugar mills and chemical factories discharge harmful chemicals into rivers and streams. These chemicals include arsenic, lead and flourides.
- Some industries and power plants releases hot water into the rivers. Hot water can also be considered as a pollutant.
- The excessive use of pesticides and fertilizers in agriculture also causes water pollution.

Q.26.B. State the harmful effects of water pollution.

Answer: Pollution is not a distant phenomenon anymore. It is affecting the quality of our day to day lives. Following are harmful effects of water pollution:

- The chemicals such as arsenic, lead and flourides discharged by the industries are very toxic to plants and animals.
- The hot water released by certain industries raises the temperature of the water body. It adversely affects the plants and animals living in it.
- The fertilizers act as nutrients for the algae to grow. When these algae die, they act as a nutrient for decomposers like bacteria. As a result of this process, a lot of oxygen in

the water gets used up and leads to the deficiency of Oxygen in the water. This may kill the aquatic organisms.

- Water contaminated with sewage may contain bacteria, viruses, fungi and parasites which can cause diseases like cholera, typhoid and jaundice.

Q.27.A. What is air? Write the names of various constituents of air.

Answer: Pure air is a mixture of several gases that are invisible and odorless. It consists about 78% nitrogen, 21% is oxygen and less than 1% of Carbon dioxide and other gases like argon, methane and ozone and varying amount of water vapors.

Q.27.B. What is air pollution? What are the main sources of air pollution?

Answer: Polluted air is contaminated with the substances like smoke, dust and other harmful substances called pollutants. These pollutants can come from natural sources or from human activities. Following are the main sources of air pollution:

- The natural sources of air pollution are smoke and dust arising from forest fires or volcanic eruptions.
- The pollutants can also be added from the human activities. These are from automobile exhausts, power plants, factories and burning of firewood and dung cakes.
- The pollutants like Sulphur dioxide and Nitrogen dioxide when present in polluted air causes acid rain.
- The gas called carbon monoxide enters the air by the incomplete burning of fuels such as petrol and diesel. It is a very poisonous gas which reduces the oxygen carrying capacity of blood.
- The Chlorofluorocarbons which are used in the refrigerators, air conditioners and aerosol sprays also act as air pollutants. They are responsible to deplete the ozone layer in the atmosphere.

Q.28. What is smog? How is smog formed? What are its harmful effects?

Answer: A thick fog- like layer in the atmosphere which is made up of smoke and is called smog. The smoke released is released into the atmosphere due to various activities like automobile exhausts, power plants, factories and burning of firewood and dung cakes etc., The smoke may contain the oxides of nitrogen which combines with other air pollutants and fog to form smog. The smog is very harmful in the following ways.

- The smog is very harmful and causes breathing difficulties such as asthma, cough and wheezing in children.
- Smog reduces visibility which may result in road accidents.

Q.29. What is acid rain? How is acid rain caused? What are the harmful effects of acid rain?

Answer: The industries such as oil refineries, rubber processing, automobiles and chemical industries have been responsible for the emission of air pollutants. These pollutants include Sulphur dioxide and nitrogen dioxide which reacts with water vapors in the atmosphere to form sulphuric acid and nitric acid. These acids combine with rain and makes the rain water acidic. This is called Acid rain. Following are the harmful effects of acid rain:

- Acid rain is very harmful for fish and other animals. It makes the water acidic and causes them to absorb the aluminum that makes its way from soil into lakes and streams.
- Increased acidity of water due to acid rain adversely affects the growth and reproduction ability of fishes.
- It damages buildings, monuments and statues.

Q.30. What is global warming? What are the likely harmful effects of global warming?

Answer: The trapping of radiation by the earth's atmosphere is known as Greenhouse effect. Life would not have been possible without this process. Carbon dioxide and methane are greenhouse gases. Carbon dioxide produces the maximum greenhouse effect. Due to increase in the amount of carbon dioxide in the atmosphere, the average temperature of the earth's atmosphere is gradually increasing. This is called global warming.

Global warming has become a major concern for governments worldwide. Many countries have reached an agreement to control the situation by reducing the emission of greenhouse gases. Following are the harmful effects of global warming:

- Global warming can cause sea levels to rise dramatically. It has resulted in flooding of coastal areas in many places.
- It could result in wide ranging effects on rainfall patterns, agriculture, forests, plants and animals.
- It has caused an increase in the melting of polar icecaps which has resulted in the rise of sea level more quickly over the last century.
- There has to be check on the emission of greenhouse gases at the present level. This may cause the temperature to rise by more than 2 degrees by the end of the century which is very dangerous.

Multiple Choice Questions (MCQs)

Q.31. Which of the following is not a greenhouse gas?

Answer: Carbon dioxide is the gas which is responsible for greenhouse effect. Some other gases like methane, nitrous oxide and water vapors also contribute towards this process.

Q.32. Which of the following air pollutant reduces the oxygen-carrying capacity of blood to a large extent?

Answer: The source of carbon monoxide in the air is by the incomplete burning of fuels such as petrol and diesel. Carbon monoxide is a very poisonous gas which reduces the oxygen carrying capacity of blood.

Q.33. The constituent of polluted air which contributes in producing acid rain is:

Answer: The source of Sulphur dioxide in the air is the fossil fuels combustion in the power plants, industries and motor vehicles emissions. It is a very harmful pollutant when present in the atmosphere. It can cause the respiratory problems, including permanent lung damage.

Q.34. The Kyoto Protocol is associated with one of the following. This one is:

Answer: Global warming has become a major concern for governments worldwide. Many countries have reached an agreement to control the situation by reducing the emission of greenhouse gases.

Q.35. Which of the following will be reduced in air in a city forest when a lot of dust and fly ash is emitted by a coal-based factory in the vicinity?

Answer: The various air pollutants discharged by motor vehicle and by the burning of fossil fuel in a factory are carbon dioxide, carbon monoxide, nitrogen oxides and smoke. It results in the decrease in the amount of oxygen in the air.

Q.36. Which of the following disease cannot be caused by drinking of river water contaminated with untreated sewage?

Answer: The water contaminated with sewage may contain bacteria, viruses, fungi and parasites which cause diseases like cholera, typhoid and diarrhea.

Q.37. Which of the following statement about ozone is correct?

Answer: Ozone layer in the upper atmosphere prevents ultraviolet radiations of the sun from reaching the earth.

Q.38. Drinking water can be made absolutely safe by adding some:

Answer: Chlorination can be done by adding chlorine tablets or bleaching powder into water. Only specific number of chlorine tablets should be used.

Q.39. The excessive use of one of the following in agriculture can cause the death of fish in a pond by oxygen starvation. This one is:

Answer: The fertilizers act as nutrients for the algae to grow. When these algae die, they act as a nutrient for decomposers like bacteria. As a result of this process, a lot of oxygen in the water gets used up and leads to the deficiency of Oxygen in the water. This may kill the aquatic organisms.

Q.40. Which of the following is usually not a water pollutant?

Answer: Fly ash is the air pollutant which is produced by the insufficient burning of fuels which enters into the atmosphere causing air pollution.

Q.41. Which of the following are used in electric water filters to kill all the harmful micro-organisms present in tap water and make it absolutely safe for drinking?

Answer: Ultraviolet radiations kill bacteria and viruses and are used in electric water filters to make water safe for drinking.

Q.42. Which of the following is not an air pollutant?

Answer: The harmful substances like sewage, toxic materials, silt etc., when gets mixed with water, causes water pollution. The gases like carbon dioxide, carbon monoxide, Sulphur dioxide, nitrogen dioxide and chlorofluorocarbons are the major pollutants of air.

Q.43. Which of the following air pollutant is capable of preventing photosynthesis in plants?

Answer: Dust reduces the photosynthesis in plants due which causes a decrease in energy production in plants causing the plants to suffer.

Q.44. One of the following does not contribute in producing acid rain. This one is:

Answer: The air pollutants such as Sulphur dioxide and nitrogen dioxide which reacts with water vapors in the atmosphere to form sulphuric acid and nitric acid. These acids combine with rain and makes the rain water acidic. This is called Acid rain.

Q.45. Which of the following will reach the earth in greater amounts if the number of chlorofluorocarbons released into the air increases?

Answer: Chlorofluorocarbons used in refrigerators, air conditioners and aerosol sprays are responsible to deplete the ozone layer in the atmosphere. Ozone layer protects us from harmful ultraviolet rays of the sun.

Questions Based on High Order Thinking Skills (HOTS)

Q.46. The farmers use large amounts of a substance P in the fields to increase the crop yield. The excess of P dissolves in water and runs into a lake. The substance P causes rapid growth of tiny green water plants Q in the lake which cover the

whole lake like a green sheet. When the plants Q die, the organisms called R decompose them by utilizing S dissolved in lake water. The amount of dissolved Sin water decreases too much due to which the fish living in lake suffocate and die. What are P, Q, R and S?

Answer: The substance P is Fertilizer. The fertilizers act as nutrients for the algae to grow. When these algae die, they act as a nutrient for decomposers like bacteria. As a result of this process, a lot of oxygen in the water gets used up and leads to the deficiency of Oxygen in the water. This may kill the aquatic organisms.

The substance Q is Algae, R is Bacteria and S is oxygen.

Q.47. At many places the wastewater containing human excreta from homes and carried in big underground pipes is dumped into a river as such which pollutes the river water.

(a) What is the common name of such wastewater?

(b) Name five types of harmful organisms contained in it.

(c) Name any five human diseases caused by drinking river water contaminated with such wastewater.

Answer: (a) The common name of such wastewater is Sewage. The harmful substances like sewage, toxic materials, silt etc., when gets mixed with water, causes water pollution.

(b) Sewage water contains bacteria, viruses, protozoa, fungi and parasites (worms) which may cause diseases like cholera, typhoid and jaundice. The bacteria present in the fecal matter of mammals are indicates the quality of water. If water has these bacteria, it means that it has been contaminated by fecal matter. If such water is used by us, it can cause various infections.

(c) Drinking river water contaminated with such wastewater can result into diseases such as Cholera, Typhoid, Diarrhea, Dysentery and Jaundice.

Q.48. Match the items given in column I with one or more items given in column II:

Column I	Column. II
(i) Prevents photosynthesis	(a) Sewage dumped in river
(ii) Damage ozone layer	(b) Excess fertilizer in fields
(iii) Produce acid rain	(c) Carbon dioxide in air
(iv) Kill fish by deoxygenating water	(d) Dust in air

(v) Causes water borne diseases	(e) CFCs
(vi) Leads to global warming in air	(j) Sulphur dioxide

Answer: (i) Prevents photosynthesis - (d) Dust in air

Dust reduces the photosynthesis in plants due which causes a decrease in energy production in plants causing the plants to suffer.

(ii) Damage ozone layer - (e) CFCs

Chlorofluorocarbons used in refrigerators, air conditioners and aerosol sprays are responsible to deplete the ozone layer in the atmosphere. Ozone layer protects us from harmful ultraviolet rays of the sun.

(iii) Produce acid rain - (j) Sulphur dioxide

Sulphur dioxide and nitrogen dioxide which reacts with water vapors in the atmosphere to form sulphuric acid and nitric acid. These acids combine with rain and makes the rain water acidic. This is called Acid rain.

(iv) Kill fish by deoxygenating water - (b) Excess fertilizer in fields

The fertilizers act as nutrients for the algae to grow. When these algae die, they act as a nutrient for decomposers like bacteria. As a result of this process, a lot of oxygen in the water gets used up and leads to the deficiency of Oxygen in the water. This may kill the aquatic organisms including fish.

(v) Causes water borne diseases - (a) Sewage dumped in river

Sewage water contains bacteria, viruses, protozoa, fungi and parasites (worms) which may cause diseases like cholera, typhoid and jaundice.

(vi) Leads to global warming in air - (c) Carbon dioxide in air

Carbon dioxide is the gas which is mainly responsible for causing global warming. Carbon dioxide traps heat and does not allow it to escape into space causing an increase in the average temperature of the earth's atmosphere.

Q.49. State one way in which the air pollution caused by the burning of fossil fuels in transport and industry can kill the fish living in a lake and one way in which the water pollution caused by an agricultural activity can kill fish living in the same lake.

Answer: Fossil fuels burn in the air to produce gases such as Sulphur dioxide and nitrogen dioxide. Sulphur dioxide and nitrogen dioxide which reacts with water vapors in the atmosphere to form sulphuric acid and nitric acid. These acids combine with rain and makes the rain water acidic. This is called Acid rain. Acid rain caused by the burning of fossil fuels makes the lake water too much acidic which kills the fish.

The fertilizers act as nutrients for the algae to grow. When these algae die, they act as a nutrient for decomposers like bacteria. As a result of this process, a lot of oxygen in the water gets used up and leads to the deficiency of Oxygen in the water. This may kill the aquatic organisms including fish.

Q.50. The incomplete combustion of firewood in homes produces a very poisonous gas X. When inhaled, gas X combines with the substance Y present in blood and reduces the capacity of blood to carry gas Z causing respiratory problems and suffocation. What are X, Y and Z?

Answer: The incomplete combustion of firewood in homes produces a very poisonous gas X which is known as Carbon monoxide. When inhaled, Carbon monoxide combines with the substance Y known as Haemoglobin which is present in blood. Carbon monoxide combines with the haemoglobin of our blood. It reduces the oxygen carrying capacity of blood causing respiratory problems and suffocation. Hence, the substance Z is Oxygen.