

### **CHEMISTRY**

# BOOKS - MODERN PUBLISHERS CHEMISTRY (HINGLISH)

## **ENVIRONMENTAL POLLUTION**

**Conceptual Questions** 

**1.** Explain giving reasons. 'The presence of CO

reduces the amount of haemoglobin available

in the blood for carrying oxygen to the body cells'.



water, why ?

2. Fish do not grow in warm water as in cold



**3.** Name four major Greenhouse gases.



**4.** Why is acid rain considered as a threat to 'Taj Mahal'?



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**5.** Why does the rain water normally have a pH of about 5.6? When does it become acid rain?



**6.** What is pneumoconiosis? How does it occur



**7.** The gas which was released in Bhopal gas tragedy was



**8.** Name four tropospheric pollutants.

**9.** What is the major cause of ozone layer destruction?



**10.** List main differences between classical smog and photochemical smog.



**11.** What is the importance of measuring BOD of a water body?



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12. Define eutrophication.



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**Ncert File Ncert Textbook Exercise** 

1. Define environmental chemistry.



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**2.** Explain tropospheric pollution in 100 words.



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3. Carbon monoxide gas is more dangerous than carbon dioxide gas. Why?



**4.** List gases which are responsible for greenhouse effect.



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**5.** Statues and monuments in India are affected by acid rain. How?



**6.** What is smog? How is classical smog different from photochemical smogs?



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**7.** Write down the reactions involved during the formation of photochemical smog.



**8.** What are the harmful effects of photochemical smog and how can they be controlled?



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**9.** What are the reactions involved for ozone layer depletion in the stratosphere?



**10.** What do you mean by ozone hole? What are its consequences?



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**11.** What are the major causes of water pollution? Explain.



**12.** Have you ever observed any water pollution in your area? What measures would you suggest to control it?



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**13.** What do you mean by Biochemical Oxygen Demand (BOD)?



**14.** Do you observe any soil pollution in your neighbourhood? What efforts will you make for controlling the soil pollution?



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**15.** What are pesticides and herbicides? Explain giving examples.



**16.** What do you mean by green chemistry? How will it help decrease environmental pollution?



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**17.** What would have happened if the greenhouse gases were totally missing in the earth's atmosphere? Discuss.



**18.** A large number of fish are suddenly found floating dead on a lake. There is no evidence of toxic dumping but you find an abundance of phytoplankton. Suggest a reason for the fish kill.



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**19.** How can domestic waste be used as manure?



20. For your agricultural field or garden you have developed a compost producing pit. Discuss the process in the light of bad odour, flies and recycling of wastes for a good produce.



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Ncert File Ncert Exemplar Problems Multiple Choice Questions I **1.** Which of the following gases is not green house gas?

A. *CO* 

B.  $O_3$ 

C.  $CH_4$ 

D.  $H_2O$  vapour

Answer: a



2. Photochemical smog occurs in warm, dry and sunny climate, One of the following is not amongst the components of photochemical smog, identify it.

A.  $NO_2$ 

B.  $O_3$ 

 $\mathsf{C}.\,SO_2$ 

D. Unsaturated hydrocarbon

#### Answer: c



**3.** Which of the following statement is not true about classical smog?

A. Its main components are produced by the action of sunlight on emissions of automobiles and factories.

- B. Produced in cold and humid climate.
- C. It contains compounds of reducing nature.

D. It contains smoke, fog and sulphur dioxide.

Answer: a



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**4.** BOD value less than 5 ppm indicates a water sample to be a)Very clean b) $O_2$  required to break down of organic matter is high c)Not useful for drinking d)Not suitable for aquatic life

- A. rich in dissolved oxygen
- B. poor in dissolved oxygen.
- C. highly polluted.
- D. not suitable for aquatic life

#### Answer: a



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**5.** Which of the following statements is wrong?

- A. Ozone is not responsible for green house effect.
- B. Ozone can oxidise sulphur dioxide present in the atmosphere to sulphur trioxide.
- C. Ozone hole is thinning of ozone layer present in stratosphere.
- D. Ozone is produced in upper stratosphere by the action of UV rays on oxygen

#### Answer: a



- **6.** Sewage containing organic waste should not be disposed in water bodies because it causes major water pollution. Fishes in such a polluted water die because of
  - A. Large number of mosquitoes.
  - B. Increase in the amount of dissolved oxygen.

C. Decrease in the amount of dissolved oxygen in water.

D. Clogging of gills by mud.

#### Answer: c



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**7.** Which of the following statements about photochemical smog is wrong?

- A. It has high concentration of oxidising agents.
- B. It has low concentration of oxidising agents.
- C. It can be controlled by controlling the release of  $NO_2$ , hydrocarbons, ozone etc.
- D. Plantation of some plants like pinus helps in controlling photochemical smog.

#### **Answer:** b



- **8.** The gaseous envelope around the earth is known ias atmosphere. The lowest layer of this is extended upto 10 km from sea level , this layer is
  - A. Stratosphere
  - B. Troposphere
  - C. Mesosphere

## D. Hydrosphere

#### **Answer: b**



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**9.** Dinitrogen and dioxygen are main constituents of air but these do not react with each other to form oxides of nitrogen because a)The reaction is endothermic and requires very high temperature b).The reaction can be initiated only in presence of a catalyst

c)Oxides of nitrogen are unstable d) $N_2$  and  $O_2$ are unreactive

A. the reaction is endothermic and requires very high temperature.

B. the reaction can be initiated only in presence of a catalyst.

C. oxides of nitrogen are unstable.

D.  $N_2$  and  $O_2$  are unreactive.

### Answer: a



10. The pollutants which come directly in the air from sources are called primary pollutes. Primary polluants are sometimes converted into secondary pollutants. Which of the following belongs to secondary air pollutants?

A. CO

B. Hydrocarbon

C. NO

D. Peroxyacetyl nitrate

Answer: d



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**11.** Which of the following statements is correct?

A. Ozone hole is a hole formed in stratosphere from which ozone comes out.

- B. Ozone hole is a hole formed in the troposphere from which ozone comes out.
- C. Ozone hole is thinning of ozone layer of stratosphere at some places.
- D. Ozone hole means vanishing of ozone layer around the earth completely.

#### Answer: c



**12.** Which of the following practices will not come under green chemistry a)If possible, making use of soap made of vegetable oils instead of using synthetic detergents b)Using  $H_2O_2$  for bleaching purpose instead of using chlorine based bleachinf agents c)Using bicycle for travelling small distances instead of using petrol/diesel based vehicles d)Using plastic cans for neatly storing substances

A. If possible, making use of soap made of vegetable oils instead of using synthetic

detergents.

B. Using  $H_2O_2$  for bleaching purpose instead of using chlorine based bleaching agents.

C. Using bicycle for travelling small distances instead of using petrol/diesel based vehicles.

D. Using plastic cans for neatly storing substances.

## Answer: d

## Ncert File Ncert Exemplar Problems Multiple Choice Questions Ii

**1.** Which of the following conditions shows the polluted enviorment ?

A. pH of rain water is 5.6.

B. amount of carbon dioxide in the atmosphere is 0.03%.

C. iochemical oxygen demand 10 ppm.

D. eutrophication.

Answer: c,d



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Ncert File Ncert Exemplar Problems Multiple Choice Questions

**1.** Phosphate containing fertilisers cause water pollution. Addition of such compounds in

water	bodies	cause	

- A. enhanced growth of algae.
- B. decreases in amount of dissolved oxygen in water .
- C. deposition of calcium phosphate.
- D. increase in fish population .

## Answer: a,b



**2.** The acids present in acid rain are \_\_\_\_. a)PeroxyacetyInitrate b) $H_2CO_3$  c) $HNO_3$  d)  $H_2DO_4$ 

A. Peroxyacetyl nitrate

 $\operatorname{B.}H_2CO_3$ 

 $\mathsf{C}.\,HNO_3$ 

D.  $H_2SO_4$  .

## Answer: b,c,d



3. The consequences of global warming may be a)increase in average temperature of the earth b)melting of Himalayan Glaciers. c)increased biochemical oxygen demand. d)increased biochemical oxygen demand.

A. increases in average temperature of the

B. melting of Himalayan Glaciers .

C. increased biochemical oxygen demand.

D. eutrophication.

## Answer: a,b



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**4.** Green house effect leads to global warming. Which substances are responsible for green house effect?



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**5.** Acid rain is known to contain some acids.

Name these acids and where from they come

in rain?



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**6.** Ozone is a toxic gas and is a strong oxidising agent even then its present in the stratosphere is very important. Explain what would happen if ozone from this region is completely removed ?



**7.** Dissolved oxygen in wate is very important for aquatic life. What process are responsible for the reduction of dissolved oxygen in water ?



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**8.** On the basis of chemical reactions involved, explain how do chlorofluorocarbons cause thinning of ozone layer is stratosphere?



**9.** What could be the harmful effects of improper management of industrial and domestir solid wate in a city?



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10. During an educational trip, a student of botany saw a beautiful lake in a village. She collected many plants from that area. She notices that villagers were washings clothes around the lake and at some places waste

material from houses was destroying its beauty.

After few years, shw visited the same lake again. She was suprised to find that the lake was covered with algae, stinking smell was coming out and its water had become unusable. Can you explain the reason for this condition of the lake?



**11.** What are biodegradable and non-biodegradable pollutants?



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**12.** What are the sources of dissolved oxygen in water ?



**13.** What is the importance of measuring BOD of a water body?



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**14.** Why does water covered with excessive algal growth become polluted?



**15.** A factory was started near a village. Suddenly villagers started feeling the presence of irriting vapour in the village and cases of headache, chest pain, cough, dryness of throat and breathing problems increased. Villagers blamed the emissions from the chimney of the factory for such problems. Explain what colud have happend. Give chemical reactions for the support of your explanation.



**16.** Oxidation of sulphur dioxide into sulphur trioxide in the absence of a catalyst is a slow process but this oxidation occurs easily in the atmosphere. Explain how does this happen? Give chemical reactions for the conversion of  $SO_2$  into  $SO_3$ .



**17.** From where does ozone come in the photochemical smog ?



18. How is ozone produced in stratosphere?



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**19.** Ozone is a gas hevier than air. Wy does ozone layer not settle down near the earth?



20. Some time ago formation of polar stratospheri clouds reported over Antarctica. Why were these formed? What happens when such clouds break up by warmth of sunlight?



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**21.** A person was using water supplied by Municipality. Due to shortage of water the started underground water. He felt laxative effect. What could be the cause?

**22.** Match the pollution(s) in column I with the effect(s) in column II.

	Column I		Column II
A.	Oxides of sulphur	1.	Global warming
B.	Nitrogen dioxide	2.	Damage to kidney
C.	Carbon dioxide	3.	'Blue baby' syndrome
D.	Nitrate in drinking water	4.	Respiratory diseases
E.	Lead	5.	Red haze in traffic and congested areas



**23.** Match the activity given in Column I with the type of pollution created by it given in Column II.

	Column I (Activity)		Column II (Effect)
(i)	Releasing gases to the atmosphere after burning waste material containing sulphur.	(a)	Water pollution
(ii)	Using carbamates as pesticides	(b)	Photochemical smog, damage to plant life, corrosion to building material, induce breathing problems, water pollution
(iii)	Using synthetic detergents for washing clothes	(c)	Damaging ozone layer

(iv) Releasing gases produced by automobiles and factories in the atmosphere.
 (v) Using chlorofluorocarbon compounds for cleaning computer parts
 (d) May cause nerve diseases in human.
 (e) Classical smog, acid rain, water pollution, induce breathing problems, damage to buildings, corrosion of metals.



**24.** Match the pollutants given in Column I with their effects given in Column II.



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**25.** Assertion (A): Green house effect was observed in houses used to grow plants and these are made of green glass.

Reason (R): Green house name has been given because glass houses are made of green glass

explanation of A. b). Both A and R are correct but R is not the correct explanation of A. c)Both A and R are not correct. d)A is not correct but R is correct. A. Both A and R are correct and R is the correct explanation of A.

a)Both A and R are correct and R is the correct

- B. Both A and R are correct but R is not the correct explanation of A.
  - C. Both A and R are not correct.
  - D. A is not correct but R is correct.

#### Answer: c



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**26.** Assertion (A): The pH of acid rain is less than 5.6.

Reason (R): Carbon dioxide present in the atmosphere dissolves in rain water and forms carbonic acid. a)Both A and R are correct and R is the correct explanation of A. b).Both A and R are correct but R is not the correct explanation of A.

c)Both A and R are not correct. d)A is not correct but R is correct.

A. Both A and R are correct and R is the correct explanation of A.

B. Both A and R are correct but R is not the correct explanation of A.

C. Both A and R are not correct.

D. A is not correct but R is correct.

Answer: b



**27.** Assertion: Photochemical smog is oxidising in nature.

Reason: Photochemical smog contains  $NO_2$  and  $O_3$  which are formed during the sequence of reactions.

A. Both A and R are correct and R is the correct explanation of A.

B. Both A and R are correct but R is not the

correct explanation of A.

C. Both A and R are not correct.

D. A is not correct but R is correct.

# Answer: a



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28. Assertion (A): Carbon dioxide is one of the important greenhouse gases.

Reson (R): It is largely produced by respiratory function of animals and plants. a)Both A and R are correct and R is the correct explanation of A. b).Both A and R are correct but R is not the correct explanation of A. c)Both A and R are not correct.d)A is not correct but R is correct.

A. Both A and R are correct and R is the correct explanation of A.

B. Both A and R are correct but R is not the correct explanation of A.

C. Both A and R are not correct.

D. A is not correct but R is correct.

Answer: b

**29.** Assertion (A): Ozone is destroyed by solar radiation in upper streatosphere.

Reason (R): Thinning of the ozone layer allows excessive UV radiations to reach the surface of earth. a)Both A and R are correct and R is the correct explanation of A. b).Both A and R are correct but R is not the correct explanation of A. c)Both A and R are not correct. d)A is not correct but R is correct.

A. Both A and R are correct and R is the correct explanation of A.

B. Both A and R are correct but R is not the correct explanation of A.

C. Both A and R are not correct.

D. A is not correct but R is correct.

#### Answer: d



**30.** Assertion (A): Excessive use of chlorinated synthetic pesticides causes soil and water pollution.

(R) : Such pesticides are non-Reason biodegradable. Both A and R are correct and R is the correct explanation of A. a)Both A and R are correct and R is the correct explanation of A. b).Both A and R are correct but R is not the

correct explanation of A. c)Both A and R are not correct. d)A is not correct but R is correct.

A. Both A and R are correct and R is the correct explanation of A.

B. Both A and R are correct but R is not the correct explanation of A.

C. Both A and R are not correct.

D. A is not correct but R is correct.

#### Answer: a



**31.** Assertion: If BOD level of water in a reservoir is less than 5 ppm it is highly pollution.

Reason: High biological oxygen demand means low activity of vacteria in water.

A. Both A and R are correct and R is the

correct explanation of A.

B. Both A and R are correct but R is not the

C. Both A and R are not correct.

correct explanation of A.

D. A is not correct but R is correct.

# Answer: c



- **32.** How can you apply green chemistry for the following? (a) To control photochemical smog.
- (b) To avoid use of halogenated solvents in dryclening and that of chlorine in bleaching.
- (c) to reduce use of synthestic detergents.
- (d) To reduce the consumption of petrol and diesel.



**33.** Green plants use carbon dioxide for photosynthesis and return oxygen to the atmosphere, even then carbon dioxide is considered to be responsible for green house effect. Explain why?



**34.** Greenhouse Effect and Global Warming

**35.** A farmer was using pesticides on his farm. He used the produce of his farm as food for rearing fishes. He was told that fishes were not fit for human consumption because large amount of pesticides had accumulated in the tissues of fishes. Explain how did this happen?



36. For dry cleaning, in the place of tetrachloroethane, liquefied carbon dioxide with suitable detergent is an alternative solvent. What type of harm to the environment will be prevented by stopping use of

tetrachloroethane? Will use of liquefied carbon

dioxide with detergent be completely safe from

the point of view of pollution? Explain



# Ncert File Ncert Exemplar Problems Matching Type Questions

**1.** Match the terms given in Column I with the compounds given in Column II.

Column I		Co.	Column II		
(i) Acid	rain	(a)	$\begin{array}{c} {\rm CHCl}_2 - {\rm CHF}_2 \\ {\rm CO} \end{array}$		
(ii) Photo	chemical	(b)	CO		
smog					
(iii) Comb		(c)	CO <sub>2</sub>		
with	haemoglobin				
(iv) Deple	etion of	(d)	SO <sub>2</sub>		
ozone	layer	(e)	$\begin{array}{c} \mathrm{SO}_2 \\ \mathrm{Unsaturated\ hydrocarbons} \end{array}$		



Revision Exercises Objective Very Short Answer Questions Passage Based Questions

**1.** Carbon dioxide is an essential component of atmosphere. However, when the concentration of  $CO_2$  increases in the atmosphere, it can lead to global warming through green house effect. Similarly, rain water is an essential source of water. It has pH of 5.6 due to the formation of  $H^{\,+}$  ions from the reaction of rain water with  $CO_2$  present in the atmosphere. When pH of the rain water falls below 5.6 due to the presence of acids in the atmosphere, it has very damaging effects.

Why does the rain water normally have a pH of about 5.6?



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**2.** Carbon dioxide is an essential component of

effects.

Name three gases which are responsible for greenhouse effect.

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 $CO_2$  present in the atmosphere. When pH of the

rain water falls below 5.6 due to the presence of

acids in the atmosphere, it has very damaging

**3.** Carbon dioxide is an essential component of atmosphere. However, when the concentration of  $CO_2$  increases in the atmosphere, it can lead to

Similarly, rain water is an essential source of water. It has pH of 5.6 due to the formation of

global warming through green house effect.

 $H^{\,+}$  ions from the reaction of rain water with  $CO_2$  present in the atmosphere. When pH of the rain water falls below 5.6 due to the presence of

acids in the atmosphere, it has very damaging

effects.

Name two main acids present in acid rain. From

where do these acids come in acid rain?



**4.** Carbon dioxide is an essential component of atmosphere. However, when the concentration of  $CO_2$  increases in the atmosphere, it can lead to global warming through green house effect. Similarly, rain water is an essential source of water. It has pH of 5.6 due to the formation of  $H^{\,+}$  ions from the reaction of rain water with  $CO_2$  present in the atmosphere. When pH of the rain water falls below 5.6 due to the presence of acids in the atmosphere, it has very damaging effects. Why is acid rain considered as a threat to Taj Mahal in Agra?

**5.** Carbon dioxide is an essential component of atmosphere. However, when the concentration of  $CO_2$  increases in the atmosphere, it can lead to global warming through green house effect. Similarly, rain water is an essential source of water. It has pH of 5.6 due to the formation of  $H^{\,+}$  ions from the reaction of rain water with  $CO_2$  present in the atmosphere. When pH of the rain water falls below 5.6 due to the presence of acids in the atmosphere, it has very damaging

What is PAN?

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Revision Exercises Objective Very Short Answer

Questions True Or False Questions

effects.



1. Acid rain is due to the presence of oxides of

**2.** Classical smog is reducing in nature.



**3.** Ozone is present in stratosphere of the atmosphere.



**4.**  $N_2$  and  $O_2$  are the two main greenhouse gases.



**5.** Excess sulphate in water causes blue baby syndrome.



**6.** The clean water would have a BOD value of more than 17.



7. Fish do not grow in warm water as in cold water, why?

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**8.** The major cause of ozone layer destruction is the release of freons in the atmosphere.



**9.** Mercury is a biodegradable pollutant.

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**10.** Mesosphere is higher than stratosphere.



Revision Exercises Objective Very Short Answer Questions Fill In The Blanks Questions

**1.** Carbon monoxide combines with haemoglobin of form:



2. The abbreviation PAN stands for ......



3. London smog is ..... in nature.



**4.** The gas which was released in Bhopal gas tragedy was



5. Acid rain contains ...... and ..... and has pH of



6. The loss of green colour in plants due to the presence of even a low concentration of  $SO_2$  is called ......



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**7.** The amount of oxygen required by the microbes in the decomposition of organic matter is called :



**8.** The process of nutrients enrichment of water and subsequent loss of species diversity is reffered to as:



**9.** The heating of earth due to trapped radiation is called ..........



is called.....

**10.** Anything which is affected by the pollutants



Revision Exercises Objective Very Short Answer Questions Assertion Reason Questions

**1.** Assertion : Photochemical smog is produced by oxides of nitrogen.

Reason: Vehicular pollution is a major source of oxides of nitrogen.

A. Assertion and reason both are correct

reason

is

correct

explanation for assertion.

statements and

B. Assertion and reason both are correct statements but reason is not correct

explanation for assertion.

is wrong statement

C. Assertion is correct statement but reason

D. Assertion is wrong statement but reason is correct statement.

## Answer: B



**2.** Assertion : For greenhouse effect, presence of green plants is not essential.

Reason: Chlorophyll of the green plants causes green house effect. A. Assertion and reason both are correct statements and reason is correct explanation for assertion. B. Assertion and reason both are correct statements but reason is not correct

explanation for assertion.

is wrong statement

C. Assertion is correct statement but reason

D. Assertion is wrong statement but reason is correct statement.

## Answer: C



**3.** Assertion: Normal rain water has a pH of about 5.6.

Reason : The pH is due to dissolution of  $CO_2$  to form carbonic acid.

statements and reason is correct explanation for assertion.

B. Assertion and reason both are correct statements but reason is not correct

A. Assertion and reason both are correct

C. Assertion is correct statement but reason is wrong statement

explanation for assertion.

D. Assertion is wrong statement but reason is correct statement.

## **Answer: A**



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4. Assertion: In India, an oil spill occurred in Bombay in 1993.

Reason: Spreading of oil into sea is called oil spill.

A. Assertion and reason both are correct statements and reason is correct

explanation for assertion.

B. Assertion and reason both are correct statements but reason is not correct

explanation for assertion.

is wrong statement

D. Assertion is wrong statement but reason is correct statement.

C. Assertion is correct statement but reason

#### **Answer: B**



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5. Assertion: Higher concentration of  $CO_2$  in atmosphere is causing global warming. Reason: This is due to greenhouse effect.

A. Assertion and reason both are correct statements and reason is correct explanation for assertion.

B. Assertion and reason both are correct statements but reason is not correct explanation for assertion.

D. Assertion is wrong statement but reason is correct statement.

Answer: A

is wrong statement

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C. Assertion is correct statement but reason

**6.** Assertion: The presence of CO reduces the amount of haemoglobin available in the blood for carrying oxygen to the body cells.

Reason: CO combines with haemoglobin about 200 times less easily than oxygen to form complex. A. Assertion and reason both are correct statements and reason is correct explanation for assertion. B. Assertion and reason both are correct

statements but reason is not correct

explanation for assertion.

Answer: C

C. Assertion is correct statement but reason

D. Assertion is wrong statement but reason is

is wrong statement

correct statement.

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nature. Reason: Photochemical smog contains  $NO_2$  and

7. Assertion: Photochemical smog is oxidising in

 ${\cal O}_3$  which are formed during the sequence of reactions.

A. Assertion and reason both are correct

statements and reason is correct

explanation for assertion.

B. Assertion and reason both are correct statements but reason is not correct

explanation for assertion.

C. Assertion is correct statement but reason

is wrong statement

D. Assertion is wrong statement but reason is correct statement.

### Answer: A



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radiation in upper streatosphere.

Reason (R): Thinning of the ozone layer allows

**8.** Assertion (A): Ozone is destroyed by solar

excessive UV radiations to reach the surface of earth. a)Both A and R are correct and R is the

correct but R is not the correct explanation of A.

c)Both A and R are not correct. d)A is not correct
but R is correct.

A. Assertion and reason both are correct
statements and reason is correct

B. Assertion and reason both are correct

statements but reason is not correct

explanation for assertion.

explanation for assertion.

correct explanation of A. b).Both A and R are

is wrong statement

D. Assertion is wrong statement but reason is correct statement.

C. Assertion is correct statement but reason

**Answer: D** 



Revision Exercises Objective Very Short Answer Questions Very Short Answer Questions

**1.** A pollutant can be best defined as it :



it is a colourless and odourless gas?

2. Why is carbon monoxide a pollutant although



**3.** Name three gases which are major air pollutants.



4. Among the following the region of atmosphere containing ozone



5. Define environmental chemistry.



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**6.** Name any two greenhouse gases.



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7. Regions of Atmosphere



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8. Name major air pollutant.



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9. Why ozone layer called ozone umbrella/shield
?

10. What is an ionosphere? What does it contain



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**11.** What is Greenhouse effect.



**12.** Name the oxides of nitrogen causing pollution .



**13.** Photochemical smog:



**14.** What is PAN?



**15.** Why is CO a potentially dangerous air pollutant?



**16.** Name two highly toxic compounds of mercury.



17. Why CO is harmful for human beings?

**18.** List two health problems caused by  $SO_2$ .





a) $SO_2$  b) $CO_2$  c)CO d)NO & freons

19. Which of the following deplete ozone layer?





**21.** How does  $CO_2$  cause environmental pollution ?

**20.** How is ozone formed in the atmosphere?



# **Revision Exercises Short Answer Questions**

**1.** What is environmental chemistry? Discuss its social relevance.



**2.** What is the difference between pollutant and contaminant?



3. Discuss the sources, sinks of CO as air pollutant. How is this pollution controlled?



4. Primary vs Secondary Pollutant



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**5.** How can internal combustion engines be modified to make auto exhaust free from pollutants?



**6.** Which is the major air pollutant? Give its source.



7. Carbon monoxide gas is more dangerous than carbon dioxide gas. Why?



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**8.** Explain giving reasons. 'The presence of CO reduces the amount of haemoglobin available in the blood for carrying oxygen to the body cells'.



**9.** Discuss the effect of particulate pollution on human life.



**10.** What is photochemical smog? Discuss the possible mechanism of its formation.



11. What is Acid rain? What are its harmful effects?



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12. How does oxygen reach water? How is the oxygen content of a sample of water measured?



13. What do you understand by the term eutrophication? How does it threaten the development of fish?



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**14.** What is pneumoconiosis? How does it occur?



15. What is smog? How is classical smog different from photochemical smogs?



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**16.** How does  $SO_2$  cause pollution ? Explain as to how this can be checked.



**17.** Define the terms: Pollutant, contaminate, source and sink. Give one example of each.



**18.** What is acid rain ? Describe its role in environmental pollution.



**19.** Write brief account of air pollution caused by oxides of nitrogen.



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20. "Carbon dioxide is non-toxic but it is an important environmental problem facing us at present." Comment on the statement.



**21.** Giving equations explain how does nitrous oxide present in atmosphere cause depletion of ozone.



**22.** Why is the use of chlorofluoro carbons being discouraged ? Explain.



effect ? What are the major Greenhouse gases?

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23. What do you understand by Greenhouse



**24.** Primary vs Secondary Pollutant



25. Green chemistry involves



**26.** Depletion of ozone layer causes



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27. The depletion of ozone layer occurs over Antarctica during spring time and it gets replenished after spring time. Explain.



**28.** Why is acid rain considered a threat to Taj Mahal?



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29. Why does the rain water normally have a pH

of about 5.6? When does it become acid rain?



**30.** Give a brief account of chemical reactions occurring in atmosphere.



**Watch Video Solution** 

31. Write down the reactions involved during the formation of photochemical smog.



**32.** What are the harmful effects of photochemical smog and how can they be controlled?



**Watch Video Solution** 

33. What are the reactions involved for ozone layer depletion in the stratosphere?



34. What are pesticides and herbicides? Explain giving examples.

**35.** What do you mean by green chemistry? How



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will it help decrease environmental pollution?



**36.** What are the major causes of water pollution? Explain.



environmental pollution ?

37. How do chemical industries cause



**38.** What pollutants are released by motor vehicles? How can we minimize damage caused by them?

**39.** What do you understand by BOD and COD?



How are these determined ?



- **40.** What do you understand by
- (i) Polar stratospheric clouds (ii) Polar vortex



**41.** Difine the environmental pollulant. What do you understand by an environmental pollution model?



**42.** Briefly discuss acid rain and its harmful effects.



**43.** Why does green house effect cause global warming? What could be the consequences of global warming?



**44.** Write a short note on Bhopal Gas tragedy?

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**45.** Fish do not grow in warm water as in cold water, why?



**46.** Oxygen plays a key role in troposphere while ozone in the stratosphere. Elaborate.



**47.** What do you understand by ozone hole? What are its consequences? Why does it occur mainly over Antarctica?



Revision Exercises Long Answer Questions

**1.** Discuss the various regions of the atmosphere.

Explain the different chemical reactions occurring in the atmosphere.



**2.** What is air pollution ? Explain briefly the majoratmospheric pollutants.



3. How is ozone formed in the atmosphere?

What are the causes of depletion of ozone layer

? Explain harmful effects of depletion of ozone



layer.

**4.** What is greenhouse effect? What are its effects?



- 5. Write short notes on:
- (a) Acid rain (b) Green chemistry as an alternative tool for reducing pollution.



**6.** Discuss the sources, sinks of carbon monoxide as an air pollutant. How is this pollution controlled?



7. Discuss briefly the pollution caused by oxides of sulphur and nitrogen.



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- 8. Write short notes on:
- (i) Smog
- (ii) Depletion of ozone layer

(iii) Greenhouse effect.



**9.** Name the major atomospheric pollutants and their sources.



- (i) Smoke (ii) Fumes (iii) Dust (iv) Mist
  - Watch Video Solution

**10.** Explain the following:

11. Green house effect is caused by

- **12.** How can you apply green chemistry for the following?
- (a) To control photochemical smog.
- (b) To avoid use of halogenated solvents in dryclening and that of chlorine in bleaching.
- (c) to reduce use of synthestic detergents.
- (d) To reduce the consumption of petrol and diesel.



# Multiple Choice Questions

Competition File Objective Type Questions A

- 1. Major air pollutant is
  - A. CO
  - B. Oxides of nitrogen

  - C. Soot
  - D. Oxides of sulphur.
  - Answer: A



2. The region closest to earth's surface is:

A. stratosphere

B. mesosphere

C. troposphere

D. thermosphere.

### **Answer: C**



3. The major source of CO pollution is:

A. industrial processes

B. vehicular exhaust

C. forest fires

D. volcanic activity.

# **Answer: B**



**4.** An increase in  $CO_2$  concentration in atmosphere will result in:

A. greenhouse effect

B. acid rain

D. death of aquatic life.

C. lack of photosynthesis

Answer: A



**5.** Which of the following oxides of nitrogen is not common air pollutant ?

A.  $NO_2$ 

B.  $N_2O$ 

**C**. *NO* 

D.  $N_2O_5$ 

#### **Answer: D**



**6.** White lung cancer' is caused by

A. asbestos

B. silica

C. textiles

D. paper

#### **Answer: C**



7. Which one of the following particulates is most toxic?

A. fly ash

B. soot

C. inorganic compound

D. smog.

# **Answer: B**



B.  $N_2$ 

 $\mathsf{C}.\,Ar$ 

D.  $O_2$ 



**Answer: A** 

A. 
$$CH_2=O$$

 $B. CH_2 = CHCH = O$ 

C.  $CH_3COONO_2$ 

 $\mathsf{D.}\, CH_3CH_2O-N=O$ 

# **Answer: C**



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**10.** Depletion of ozone layer causes

A. blood cancer

- B. breast cancer
- C. lung cancer
  - D. skin cancer

#### **Answer: D**



- 11. Acid rains are produced by
- A. excess release of carbon monoxide by
  - incomplete combustion.

B. excess formation of carbon dioxide by

C. excess production of  $NH_3$  by industries.

combustion and respiration.

D. excess  $NO_2$  and  $SO_2$  from burning fossil fuels.

#### **Answer: D**



12. Oxides of sulphur and nitrogen are important pollutants of:

A. Water

B. Air

C. Soil

D. All of these.

#### **Answer: B**



**13.** In upper stratosphere, ozone protects us from:

A. infra-red radiations

B. ultra-violet radiations

C. carbon dioxide

D. peroxyacetyl nitrate.

#### **Answer: B**



14. Burning of fossil fuels is the main source of which of the following pollutants?

A. Nitrogen dioxide

B. Nitric oxide

C. Nitrous oxide

D. Sulphur dioxide.

#### **Answer: D**



15. Which of the following gases is not green house gas?

A. CO

 $B.O_3$ 

 $\mathsf{C}.\,CH_4$ 

D.  $H_2O$  vapour

#### **Answer: A**



#### 16. Taj mahal is threatened by pollution from

- A. Oxygen
- B. Carbon dioxide
- C. Sulphur dioxide
- D. Chlorine.

#### **Answer: C**



17. Which of the following is the primary precursor of photochemical smog?

A. Ozone

B. Peroxyacetyl nitrate

 $\mathsf{C}.\,NO_2$ 

D.  $CO_2$ 

#### **Answer: C**



18. The main contributor of acid rain is: A.  $H_2SO_4$ B.  $CaCO_3$ C.  $CH_3COOH$ D.PAN.



**Answer: A** 

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**19.** The depletion of ozone layer is due to:

- A. Oxygen
- B. CFCs
- C. Oxides of S
- D. Particulate matter.

#### **Answer: B**



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20. Death while sleeping in closed room with burning coal furace is due to

A. CO

 $C. CO_2$ 

to leakage of

**Watch Video Solution** 

B. Carbon particulates

21. In 1984, Bhopal gas tragedy was caused due

D.  $SO_2$  present as impurity in coke fire.

### **Answer: A**

C. Phosgene

D. Chloroform.

Answer: B

A. Methyl amine

B. Methyl isocyanate

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22. Which one of the following is resposible of depletion of ozone layer in the upper strate of the atmosphere?

B. Freons

C. Polyhalogens

D. Ferrocene

Answer: B

A. Fullerenes

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**23.** Most hazardous metal pollutant of automobile exhausts is :

A. Lead
B. Copper
C. Mercury
D. Cadmium
Answer: A
Watch Video Solution
<b>24.</b> The most abundant hydrocarbon pollutant is :

C. Acetylene

D. Ethane.

A. Methane

B. Propane

**Answer: A** 

# **25.** Which of the following species containing mercury is most toxic ?

A.  $CH_3Hg^+$ 

B.  $HgCl_2$ 

C.  $Hg_2Cl_2$ 

D. Hg metal.

#### \_\_\_

**Answer: A** 

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**26.** Which of the following metal has maximum recommended level in drinking water?

B. Zinc
C. Aluminium
D. Iron.
Answer: B
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27 Dura water would have a POD value of

A. Cadmium

A. less than 5 ppm

- B. 10 ppm
- C. 20 ppm
- D. 100 ppm

#### **Answer: A**



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28. Which of the following has least permissible

A. Chlorides

limit in drinking water?

B. Dissolved oxygen C. 7inc D. Lead. **Answer: D Watch Video Solution** 

- - A. Chemical Oxygen Demand.

29. What dos BOD and COD stands for?

B. Controlled Oxygen Demand.

C. Clouds causing Ozone Depletion

D. Chlorinated Oxygen Demand.

**Answer: A** 



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**30.** Marble acts as a sink for

A. metallic pollutants

B.  $NH_3$  pollutants

C. acidic pollutants

D. none of these.

**Answer: C** 



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31. Herbicides are used to kill weeds. The common herbicide is

A. D.D.T.

B. Triazine

C. Methyl mercury

D. PCB's

**Answer: B** 



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**32.** Soil salinity is measured by

A. Potentiometer

B. Calorimeter

C. Conductivity meter

D. All of these.

#### **Answer: C**



**Watch Video Solution** 

#### **33.** D.D.T. is

A. an antibiotic

B. biodegradable pollutant

C. non-degradable pollutant

D. not a pollutant.

#### Answer: C



## Competition File Objective Type Questions B Multiple Choice Questions

1. Ozone in the stratosphere is deleted by

A.  $CF_2Cl_2$ 

B.  $C_7F_{16}$ 

C.  $C_6H_6Cl_6$ 

D.  $C_6F_6$ 

#### **Answer: A**



- 2. Which one of the following is resposible of depletion of ozone layer in the upper strate of the atmosphere?
  - A. polyhalogens
  - B. ferrocene
  - C. fullerenes
  - D. freons

#### **Answer: D**



- **3.** The environmental friendly method of killing harmful insects is through the use of
  - A. Insecticides
  - B. Sex attractants
  - C. Sex hormones
  - D. Pesticides

#### **Answer: B**



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**4.** Cause of eutrophication is

A. Increase in concentration of insecticide in

water

B. Increase in concentration of fluoride ion in

water

dissolved oxygen in water due to phosphate pollution in water

D. Attack of younger leaves of a plant by

C. The reduction in concentration of the

#### Answer: C



peroxyacetyl nitrate

**5.** Green chemistry means such reactions which

- A. Produce colour during reactions
- B. Reduce the use and production of hazardous chemicals
- C. Are related to the depletion of ozone layer
- D. Study the reactions in plants.

#### Answer: B



**6.** Which one of the following statement is not true?

A. pH of drinking water should be between

5.5-9.5

B. Concentration of DO below 6 ppm is good for the growth of fish.

C. Clean water would have a BOD value of less

than 5 ppm.

D. Oxides of sulphur, nitrogen and carbon, are the most widespread air pollutant.

**Answer: B** 



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7. Excess nitrate present in drinking water, vegetables and fruits shall result in

A. methemoglobinemia

B. liver damage

- C. kidney damage
- D. laxative effect

#### Answer: A



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8. Which of the following is not a greenhouse

gas?

- A. Methane
- B. Ozone

C. Carbon dioxide

D. Nitrogen

**Answer: D** 



**Watch Video Solution** 

regarding photochemical smog is not correct? A. Carbon monoxide does not play any role in

9. Which one of the following statements

photochemical smog formation.

B. Photochemical smog is an oxidising agent in character.

C. Photochemical smog is formed through photochemical reaction involving solar energy.

D. Photochemical smog does not cause irritation in eyes and throat.

#### **Answer: D**



**10.** Which one of the following is not a common component of photochemical smog ?

- A. Ozone
- B. Acrolein
- C. Peroxyacetyl nitrate
- D. Chlorofluorocarbons

#### **Answer: D**



**11.** Which of the following is a sink for CO?

A. Microorganisms present in the soil

B. Oceans

C. Plants

D. Haemoglobin

#### **Answer: A**



**12.** Which oxide of nitrogen is not a common pollutant introduced into the atmosphere both due to natural and human activity?

- A.  $N_2O_5$
- B.  $NO_2$
- $\mathsf{C}.\,N_2O$
- D. *NO*

# **Answer: A**



13. Among the following, the one that is not a green house gas is

A. sulphur dioxide

B. nitrous oxide

C. methane

D. ozone.

# **Answer: A**



**14.** Identify the wrong statement in the following:

A. Acid rain is mostly because of oxides of nitrogen and sulphur

B. Chlorofluorocarbons are responsible for ozone layer depletion

C. Greenhouse effect is responsible for global warming

D. Ozone layer does not permit infrared

radiation from the sun to reach the earth.

# **Answer: D**



**15.** The ozone layer forms naturally by the interaction of:

A. the interaction of CFC with oxygen

B. the interaction of UV radiation with oxygen

C. the interaction of IR radiation with oxygen

D. the interaction of oxygen and water vapour

# Answer: B



**16.** The maximum prescribed concentration of cadmium in drinking water in ppm is

A. 0.05

B. 3

C. 2

D. 0.005

**Answer: D** 



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17. (i) Which allotrope of phosphorus is more reactive and why?

(ii) How are the supersonic jet aeroplanes responsible for the depletion of ozone layers?

(iii)  $F_2$  has lower bond dissociation enthalpy

than  $Cl_2$ . Why? (iv) While noble gas is used in filling balloons for meterological observations? A. CO B. NO  $\mathsf{C}.\,SO_2$  $D.O_2$ **Answer: B Watch Video Solution** 

**18.**  $CCl_4$  and freons:

A. are green compounds because they are green coloured

B. deplete ozone concentration

C. cause increase in ozone concentration

D. have no effect on ozone concentration

**Answer: B** 



19. What is DDT among the following?

A. A fertilizer

B. Biodegradable pollutant

C. Non-biodegradable pollutant

D. Greenhouse gas

**Answer: C** 



20. The gas leaked from a storage tank of the Union Carbide plant in Bhopal gas tragedy was:

A. Phosgene

B. Methyl isocyanate

C. Methylamine

D. Ammonia

# **Answer: B**



# 21. Minamata disease is due to

A. 
$$CO^{2+}$$

$$\mathsf{B.}\,Hg^{2\,+}$$

C. 
$$Cu^{2\,+}$$

D. 
$$Zn^{2\,+}$$

# **Answer: B**



22. Among the following, the one that is not a green house gas is

A.  $N_2O$ 

B.  $CO_2$ 

 $C. CH_4$ 

 $D.O_2$ 

# **Answer: D**



**23.** Green chemistry deals with study of?

A. study of plant physiology

B. study of extraction of natural products

from plants

C. detailed study of reactions involved in the

synthesis of chlorophyll

D. utilization of existing knowledge base for

reducing the chemical hazards along with

developmental activities

# **Answer: D**



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**24.** The wrong statement among the following is .

A. Acid rain is mostly because of oxides of nitrogen and sulphur

B. Greenhouse effect is responsible for global

warming.

ozone layer depletion.

C. Ozone layer does not permit infrared

D. Chlorofluorocarbons are responsible for

radiation from the sun to reach earth.

# **◯** Watch

**Answer: C** 

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**25.** The concentration of fluoride, lead, nitrate and iron in a water sample from an underground lake was found to be 1000 ppb,40 ppb,100 ppm

and 0.2 ppm,	respectively.	This	wate	er is
unsuitable for	drinking	due	to	high
concentration of				
A. Fluoride				
B. Lead				
C. Nitrate				
D. Iron				
Answer: C				
Watch Video Solution				

**26.** Which one of the following is not a common component of photochemical smog ?

A. Ozone

B. Acrolein

C. Peroxyacetylnitrate

D. Chlorofluorocarbons

#### **Answer: D**



of following anions  $F^{\,-}=10, SO_4^{2\,-}=100, NO_3^{\,-}=50$ 

27. A water sample has ppm level concentration

the anion/anions that make/makes the water

sample unsuitable for drinking is/are

A. only  $NO_3^-$  B. both  $SO_4^{2-}$  and  $NO_3^{2-}$ 

4

C. only  $F^{\,-}$ 

D. only  $SO_4^{2\,-}$ 

**Answer: C** 



28. Green fuel is the obtained from

A. bio-waste

B. metal waste

C. plastic waste

D. chemical waste

Answer: A



**29.** Which of the following is present in maximum amount in acid rain?

A.  $HNO_3$ 

B.  $H_2SO_4$ 

 $\mathsf{C}.\,HCl$ 

D.  $H_2CO_3$ 

Answer: B



ion in drinking water is up to 1 ppm as fluoride ion is required to make teeth enamel harder by converting  $\left[3Ca_3(PO_4)_2.\ Ca(OH)_2\right]$  A.  $\left[CaF_2\right]$ 

30. The recommended concentration of fluoride

B.  $\left[3(CaF_2).\ Ca(OH)_2
ight]$ C.  $\left[3Ca_3(PO_4)_2.\ CaF_2
ight]$ 

D.  $\left[3\{Ca(OH)_2\}.\ CaF_2
ight]$ 

Answer: C

**31.** The molecule that has minimum/no role in the formation of photochemical smog, is:

A. NO

B.  $CH_2 = O$ 

 $\mathsf{C}.\,O_3$ 

D.  $N_2$ 

**Answer: D** 



**32.** Water samples with BOD values of 4 ppm and

18 ppm, respectively are:

A. Clean and highly polluted

B. Clean and clean

C. Highly polluted and clean

D. Highly polluted and highly polluted

Answer: A



# **33.** Eutrophication causes

- A. increase of nutrients in water
- B. reduction in water pollution
- C. reduction in dissolved oxygen
- D. decrease in BOD

#### **Answer: A**



**34.** pH of rain water is approximately

A. 6.5

B. 7.5

C. 5.6

D. 7.0

#### **Answer: C**



35. Peroxyacety nitrate (PAN) ,an eye irritant is produced by:

A. Acid rain

B. Photochemical smog

C. Classical smog

D. Organic waste

# **Answer: B**



**36.** Which is wrong with respect to our responsibility as a human being to protect our environment?

A. Restricting the use of vehicles.

B. Avoiding the use of floodlighted facilities.

C. Setting up compost tin in gardens.

D. Using plastic bags.

**Answer: D** 



**37.** The primary pollutant that leads to photochemical smog is :

A. sulphur dioxide

B. acrolein

C. ozone

D. nitrogen oxides

**Answer: D** 



38. The concentration of dissolved oxygen (DO) in cold water can go upto:

A. 10 ppm

B. 14 ppm

C. 16 ppm

D. 8 ppm

# **Answer: A**



39. The maximum prescribed concentration of copper in drinking water is:

A. 5 ppm

B. 0.5 ppm

C. 0.05 ppm

D. 3 ppm

#### **Answer: D**



40. Taj Mahal is being slowly disfigured and discoloured. This is primarily due to:

A. Water pollution

B. Global warming

C. Soil pollution

D. Acid rain

# **Answer: D**



**41.** The correct set of species responsible for the photochemical smog is:

A. NO,  $NO_2$ ,  $O_3$  and hydrocarbons

B.  $N_2,\,O_2,\,O_3$  and hydrocarbons

C.  $N_2, NO_2$  and hydrocarbons

D.  $CO_2, NO_2, SO_2$  and hydrocarbons

# Answer: A



42. The compound that is NOT a common component of photochemical smog is:

A. 
$$O_3$$

$$\mathsf{B.}\,\mathit{CH}_2 = \mathit{CHCHO}$$

C. 
$$CF_2Cl_2$$

D. 
$$H_3C-C-OONO_2$$

# **Answer: C**



**43.** The higher concentration of which gas in air can cause stiffness of flower buds ?

A.  $SO_2$ 

B.  $NO_2$ 

 $\mathsf{C}.\,CO_2$ 

D. *CO* 

#### **Answer: A**



44. Which of the following conditions in drinking

water causes methemoglobinemia?

A. > 50 ppm of load

B. > 100 ppm of sulphate

C. > 50 ppm of chloride

D. > 50 ppm of nitrate

# **Answer: D**



45. Which of the following pollution takes place in sunlight.

A. oxidising smog

B. acid rain

C. reducing smog

D. fog

### **Answer: A**



**46.** The layer of atmosphere between 10 km to 50

km above the sea level is called as:

A. troposphere

B. mesosphere

C. stratosphere

D. thermosphere.

#### **Answer: C**



# Competition File Objective Type Questions C Multiple Choice Questions

- A.  $CH_4$
- B.  $NO_2$
- C.  $SO_2$ 
  - D.  $O_3$

# Answer: C::D



2. Which of the following conditions shows the polluted enviorment ?

A. pH of rain water in 5.6

B. eutrophication

C. biochemical oxygen demand 10 ppm .

D. amount of carbon dioxide in

the

atmosphere is 0.03 %

Answer: B::C



3. The acids present in acid rain are \_\_\_\_\_.

a)Peroxyacetylnitrate b) $H_2CO_3$  c) $HNO_3$  d)

 $H_2DO_4$ 

A.  $H_2CO_3$ 

B. Peroxyacetylnitrate

 $\mathsf{C}.\,H_2SO_4$ 

D.  $HNO_3$ 

Answer: A::C::D



4. The atmosphere surrounding us may be divided into the following regions.

A. mesosphere

B. hemisphere

C. thermosphere

D. catosphere

### Answer: A::C



## 5. The ozone layer is depleted by

A.  $SO_2$ 

B.  $C_x H_y$ 

 $\mathsf{C}.\,NO$ 

D. CFCs

#### **Answer: C::D**



# **Unit Practice Test**

**1.** Which of the following is not a common component of photochemical smog?

- A. Acrolein

B. Ozone

C. Chlorofluorocarbons

D. Peroxyacetyl nitrate

Answer: C



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

A.  $CO_2$ 

B.  $CH_4$ 

 $\mathsf{C}.\,O_2$ 

D. Water vapour

Answer: C



3. Which of the following in drinking water causes blue baby syndrome?

A. 
$$NO_3^-$$
 ions

B.  $SO_4^{2-}$  ions

 $\mathsf{C.}\,F^{\,-}$  ions

D. Lead

#### **Answer: A**



**4.** Assertion: Acid rain has pH above 5.6.

Reason: Acid rain is caused by dissolution of acids such as  $HNO_3$  and  $H_2SO_4$  in rain water.

A. Assertion and reason both are correct statements and reason is correct

explanation for assertion.

B. Assertion and reason both are correct statements but reason is not correct

explanation for assertion.

D. Assertion is wrong statement but reason is

C. Assertion is correct statement but reason

# Answer: D

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is wrong statement.

correct statement.

5. On the basis of chemical reactions involved, explain how do chlorofluorocarbons cause thinning of ozone layer is stratosphere?



6. What dos BOD and COD stands for?



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7. What are herbicides? Give one example.



**8.** What is the major cause of ozone layer destruction?



tragedy was

9. The gas which was released in Bhopal gas



10. What is pneumoconiosis? How does it occur?



**11.** Statues and monuments in India are affected by acid rain. How?



**12.** What is smog? How is classical smog different from photochemical smogs?



13. Give a brief account of green chemistry.



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- 14. Explain
- (i) Green house effect
- (ii) Tropospheric pollution.



15. What are the reactions involved for ozone

layer depletion in the stratosphere?

