Exercise-1

PART - I : OBJECTIVE QUESTIONS

Section (A) : Gaseous air pollutants

A-1. Burning of fossil fuels is the main source of, which of the following pollutants ?
(1) Nitrogen oxide (2) Nitric oxide (3) Nitrous oxide (4) Sulphur dioxide

A-2. SO_2 and NO_2 produce pollution by increasing :
(1) alkalinity (2) acidity (3) neutrality (4) buffer action

A-3. Air pollutants that produce photochemical oxidants include :
(1) CO_2, CO and SO_2 (2) N_2O, NO and HNO_3
(3) O_2, Cl_2 and HNO_3 (4) O_3, Cl_2 and SO_2

A-4. Carbon monooxide is pollutant as it :
(1) inactivates nerves (2) inhibits glycolysis
(3) combines with oxygen (4) combines with haemoglobin

A-5. Acid rains are produced by :
(1) excess NO_2 and SO_2 from burning fossil fuels
(2) excess production of NH_3 by industry and coal gas
(3) excess release of carbon monoxide by incomplete combustion
(4) excess formation of CO_2 by combustion and animal respiration.

A-6. Spraying of DDT produces pollution of the type:
(1) air (2) air and water (3) air and soil (4) air, water and soil

A-7. Chlorofluorocarbon releases which of the following chemical harmful to ozone :
(1) fluorine (2) chlorine (3) nitrogen peroxide (4) sulphur dioxide

A-8. Most hazardous metal pollutant of automobile exhausts is :
(1) mercury (2) cadmium (3) lead (4) copper

A-9. Classical smog occurs in places of :
(1) excess CO_2 (2) cool and humid
(3) warm, dry and sunny (4) excess NH_3

A-10. The aromatic compounds present as particulates is/are :
(1) benzene (2) toluene (3) nitrobenzene (4) polycyclic hydrocarbons

A-11. Which of the following statements is true about photochemical smog ?
(1) It is reducing in nature.
(2) it is formed in winter.
(3) It is a sulphurous smog.
(4) Components of the smog, NO and O_3, irritate the nose and throat and their high concentration causes headache, chest pain, dryness of the throat, cough and difficulty in breathing.

A-12. Besides CO_2, the other green house gas is :
(1) CH_4 (2) N_2 (3) Ar (4) O_2

A-13. Which of the following is not a part of green chemistry ?
(1) Photochemistry (2) Sonochemistry (3) Nuclear chemistry (4) Biochemistry

A-14. Ultraviolet radiation from sun causes a reaction that produces :
(1) fluorides (2) carbon monooxide (3) sulphur dioxide (4) ozone

A-15. Ozone depletion in stratosphere shall result in :
(1) forest fires
(2) increased incidence of skin burns and skin cancer
(3) increase in biological oxygen demand
(4) global warming

A-16. Which of the following statements is true ?
(1) London smog is oxidising in nature.
(2) London smog contains H_2SO_4 droplets.
(3) London smog is mixture of smoke, fog and SO_2.
(4) London smog causes bronchitis.

A-17. Which of the following processes does not increase the amount of CO_2 in atmosphere ?
(1) Decay of animals (2) Breathing (3) Photosynthesis (4) Burning of petrol

A-18. Consider the following statements and select the correct option :
S_1 : Dust is a non-viable particle.
S_2 : Particulates acquire negative charge and are attracted by the positive electrode.
S_3 : O_2 is a green house gas.
S_4 : Algae is a viable particulate.
(1) S_1 and S_2 only (2) S_1, S_2 and S_3 only (3) S_1, S_2 and S_4 only (4) S_2, S_3 and S_4

A-19. Which of the following statements is true about ozone layer ?
(1) It is harmful because ozone is dangerous to living organism.
(2) It is beneficial because oxidation reaction can proceed faster in the presence of ozone.
(3) It is beneficial because ozone cuts off the ultra violet radiation of the sun.
(4) It is harmful because ozone cuts out the important radiation of the sun which are vital for photosynthesis.

A-20. Incomplete combustion of petrol or diesel oil in automobile engines can be best detected by testing the fuel gases for the presence of ?
(1) CO and water vapour (2) CO
(3) NO_2 (4) SO_2

A-21. The basic component of smog is :
(1) PAN (2) PBN (3) NO_2 (4) All of these

A-22. In antartica, ozone depletion is due to the formation of the following compound :
(1) Acrolein (2) peroxy acetyl nitrate
(3) SO_2 and SO_3 (4) chlorine nitrate

A-23. Pick up the correct statement :
(1) CO which is a major pollutant resulting from the combustion of fuels in automobiles plays a major role in photochemical smog.
(2) Classical smog has an oxidizing character while the photochemical smog is reducing in character.
(3) The photochemical smog occurs in day time whereas the classical smog occurs in the morning hours.
(4) During formation of smog the level of ozone in the atmosphere goes down.

A-24. High concentration of fluoride is poisonous and harmful to bones and teeth at levels over
(1) 1 ppm (2) 3 ppm (3) 5 ppm (4) 10 ppm

A-25. Which of the following is not a green house gas ?
(1) CO_2 (2) CH_4 (3) O_3 (4) CCl_2F_2

A-26. An object is located at a height of 5 km from the surface of the earth. The object is located in which part of the atmosphere.
(1) Thermosphere (2) Mesosphere (3) Stratosphere (4) Troposphere

A-27. Which of the following is secondary pollutant ?
(1) CO_2 (2) N_2O (3) PAN (4) SO_2

A-28. Which of the following compounds helps in achieving equlibrium between O_2 and CO_2 in atmosphere ?
(1) Chlorophyll (2) Vitamin-12 (3) Porphyrin (4) Ethyl salicylic acid

Section (B) : Water pollution , soil pollution and waste management

B-1. Which causes water pollution ?
(1) Pathogens (2) Automobile exhausts
(3) *PCBs* (4) (1) and (3)

B-2. Most abundant water pollutant is :
(1) detergents (2) pesticides
(3) industrial wastes (4) ammonia

B-3. Drained sewage has biological oxygen demand (BOD) :
(1) more than that of water (2) less than that of water
(3) equal to that of water (4) none of the above

B-4. Eutrophication causes reduction in :
(1) dissolved hydrogen (2) dissolved oxygen (3) dissolved salts (4) all the above

B-5. Which of the following will increase the BOD of water supply ?
(1) CO_2 (2) O_3 (3) H_2O (4) C_2H_5OH

B-6. Sewage water is purified by :
(1) microorganism (2) light (3) fishes (4) aquatic plants

B-7. Which of the following is not a herbicide ?
(1) Sodium chlorate (2) Sodium arsenate (3) Phosphate (4) Triazines

B-8. Domestic waste mostly constitutes :
(1) non-biodegradable pollutants (2) biodegradable pollutants
(3) effluents (4) air pollution

B-9. Measurement of the rate of oxygen utilisation by a unit volume of water over a period of time is to measure :
(1) fermentation (2) biogas generation
(3) biosynthetic pathway (4) biological oxygen demand.

B-10. Fishes die in water bodies polluted by sewage due to :
(1) pathogens (2) clogging of gills by silt
(3) reduction in oxygen (4) foul smell

B-11. Which of the following statements is false ?
(1) The industrial and domestic sewage discharge is the main reason for river water pollution.
(2) Surface water contains a lot of organic matter and mineral nutrients.
(3) Oil spill in sea water causes heavy damage to fishery.
(4) Oil slick in sea water increases dissolved oxygen.

B-12. Which of the following statements is false ?
(1) The lower the concentration of dissolved oxygen, the more polluted is the water sample.
(2) The tolerable limit of lead in drinking water is 50 ppb.
(3) Water is considered pure if it has BOD less than 5 ppm.
(4) The safe limit of copper in drinking water is 10 ppm.

B-13. Phosphate pollution is caused by :
(1) weathering of phosphate rock only
(2) agriculture fertilizers only
(3) phosphate rocks and sewage
(4) sewage and agricultural fertilizers.

B-14. Modes of controlliing pollution in large cities includes :
(1) cleanliness and less use of insecticides
(2) proper disposal of organic wastes, sewage and industrial effluents.
(3) use of liquefied carbondioxide with a suitable detergent in place of tetrachloroethene for dry cleaning.
(4) all the above

B-15. Green chemistry means such reactions which
(1) produce colour during reactions.
(2) reduce the use and production of hazardous chemicals.
(3) are related to the depletion of ozone layer.
(4) study the reactions in plants.

B-16. The process of 'eutrophication' is due to :
(1) increase in concentration of insecticide in water.
(2) increase in concentration of fluoride ion in water.
(3) the reduction in concentration of the dissolved oxygen in water due to phosphate pollution.
(4) attack of younger leaves of a plant by peroxyacetyl nitrate.

PART - II : ASSERTION / REASONING

Assertion / Reason

This section contains reasoning type questions. Each question has 4 choices (1), (2), (3) and (4), out of which **ONLY ONE** is correct.
(1) If both assertion and reason are true and reason is a correct explanation of assertion.
(2) If both assertion and reason are true but reason is not a correct explanation of assertion.
(3) If assertion is true but reason is false.
(4) If assertion and reason both are false.

1. **Assertion :** The pH of rain water is 5.6
Reason : H^+ ions are formed by the reaction of rain water with carbondioxide present in the atmosphere

2. **Assertion :** Bacteria, fungi, molds and algae are viable particulates.
Reason : Smoke particulates consist of solid or mixture of solid and liquid particles formed during combustion of organic matter.

3. **Assertion :** Photochemical smog results from the action of sunlight on unsaturated hydrocarbons and nitrogen oxides liberated by automobiles and factories.
Reason : Classical smog is a mixture of smoke, fog and sulphurdioxide.

4. **Assertion :** In the stratosphere, ozone is produced by the action of UV radiations on dioxygen.
Reason : UV radiations split the molecular oxygen into free oxygen (O) atoms which combine with molecular oxygen to form ozone.

5. **Assertion :** The deficiency of fluoride in drinking water causes diseases such as tooth decay etc.
Reason : The F^- ions make the enamel on teeth much harder by converting hydroxyapatite, the enamel on the surface of the teeth, into much harder fluorapatite.

6. **Assertion :** Green plants maintain an appropriate level of CO_2 in the atmosphere.
Reason : Green plants require CO_2 for photosynthesis and they, in turn, releases oxygen.

Exercise-2

PART - I : OBJECTIVE QUESTIONS

Single choice type

1. Which of the following statement is correct ?
(1) Lower stratosphere consists of considerable amount of ozone.
(2) Ozone layer protects humans living on earth from the harmful effect of ultraviolet radiations coming from sun.
(3) Ozone is thermodynamically stable.
(4) Smoke clouds play significant role in creating ozone over antarctica.

2. Which of the following compound belong to the class of freons ?
(1) CCl_4 (2) $COCl_2$ (3) C_3O_2 (4) CF_2Cl_2

3. The extensive use of CFC'S as refrigerant fluids and in aerosol is because of :
(1) its high chemical stability (2) good absorber of UV radiation
(3) its polar nature (4) high toxicity

4. In stratosphere, which of the following radical retards the formation of O_3 ?
(1) $\dot{C}H_3$ (2) $\dot{C}I$ (3) $\dot{F}$ (4) Cl_2

5. Which of the following helps in creating ozone over antractia ?
(1) Radioactive clouds (2) Polar stratospheric clouds
(3) Spring clouds (4) Smoke clouds

6. Which are natural sinks for $\dot{C}lO$ radicals in other parts of stratosphere ?
(1) SO_2 and NO_2 (2) NO and NO_2 (3) CH_4 and NO_2 (4) Cl_2 and F_2

7. Eutrophication is a source of water pollution. It occurs when water :
(1) is low in nutrients (2) is high in nutrients
(3) has high temperature (4) has excess amount of organic matter

8. Which of the following statements is false ?
(1) Absorption of the terrestrially radiated heat by the carbondioxide is the main cause of global warming.
(2) The global warming will increases the rate of melting of **polar ice caps** increasing the sea level.
(3) The global warming of the earth surface is mainly due to reforestation.
(4) CO_2, NO, CH_4, O_3, CCl_4 and water vapour are green house gases.

9. Which of the following is the primary precursor of photochemical smog ?
(1) Hydrocarbon (2) Ozone (3) PAN (4) Water vapour

10. Photochemical smog can be reduced by :
(1) using catalytic converter in the automobiles
(2) plantation of certain plants like pinus, juniperus, vitis etc.
(3) both (1) and (2)
(4) None

11. In stratosphere CFCs gets broken down by the action of powerful UV radiation releasing :
(1) $\dot{C}H_3$ (2) $\dot{C}IO$ (3) $\dot{C}l$ (4) $\dot{C}FCl_2$

12. Which of the following statements is false ?
(1) Over antarctica, the depletion of ozone layer is due to the formation of chlorine nitrate.
(2) Both O_3 and NO_2 reacts with unburnt hydrocarbons in the polluted air to give PAN.
(3) Classical smog consists of a mixture of smog, fog and sulphurdioxide.
(4) Gaseous pollutants consist of oxide of carbon, sulphur and nitrogen along with dust, fumes smoke, smog etc.

13. Which of the following does not contribute to water pollution ?
(1) Pathogens (2) Organic wastes
(3) chemical pollutants (4) none

14. Which of the following is false.
(1) Green house gases are carbondioxide, methane, water vapours, nitrous oxide, CFCs and ozone.
(2) CO is highly poisonous to living beings because of its ability to block the delivery of oxygen to the organs and tissues.
(3*)The troposphere contains dinitrogen, dioxygen, ozone and little water.
(4) The primary source of air borne lead emission is leaded-petrol

15. Which of the following is false.
(1) Photochemical smog has high concentration of reducing agents and is, therefore, called as reducing smog.
(2) Non-viable particulates consist of smoke, dust, mist, fumes etc.
(3) Classical smog occurs in cool humid climate and it is mixture of smoke, fog and sulphurdioxide.
(4) Ozone reacts with unburnt hydrocarbons in polluted air to produce peroxyacetyl nitrate (PAN).

16. Which of the following is incorrect about the size of particulates ?
(1) Soot particles have diameter of about 5 nm.
(2) H_2SO_4 fog particles have size of 500–1000 nm.
(3) Fly ash particles have diameter of 5×10^5 nm.
(4) All particulates have same size.

PART - II : COMPREHENSION

Read the following comprehension carefully and answer the questions :

Comprehension # 1

Ozone is an unstable, dark blue diamagnetic gas. It strongly absorbs the UV radiation, thus protecting the people on the earth from the harmful UV radiation from the sun. The use of chlorofluorocarbon (CFC) in aerosols and refrigerators, and their subsequent escape into the atmosphere, is blamed for making holes in the ozone layer over the Antarctic and Arctic.

Ozone acts as a strong oxidising agent in acidic and alkaline medium. For this property ozone is used as a germicide and disinfectant for sterilising water and improving the atmosphere of crowded places.

1. CFCs damage ozone layer by reactions :

(1) $O_3 + h\nu \longrightarrow O + O_2$ (2) $\dot{Cl} + O_3 \longrightarrow Cl\dot{O} + O_2$

(3) $Cl\dot{O} + O \longrightarrow \dot{Cl} + O_2$ (4) all of the above

2. Identify the incorrect statement with respect to ozone ?
(1) Ozone is formed in the upper atmosphere by a photochemical reaction involving dioxygen.
(2) Ozone protects the earth's inhabitants by absorbing UV radiations.
(3) Ozone can also be made by heating O_2 over 2500^0C and quenching
(4) Chlorine gas is preferred over ozone for the purification of drinking water and for water treatment in swimming pools.

3. Which of the following statement is correct ?
(1) The dark blue colour of ozone is due to intense absorption of green light.
(2) Oxides of nitrogen and the halogen cannot damage the O_3 layer.
(3) Ozone oxidises dry iodine to I_2O_5.
(4) Ozone forms orange coloured compound KO_3 with potassium hydroxide.

Comprehension # 2

Pesticides are synthetic toxic chemicals which are used in agriculture to control the damages caused by insects, rodents, weeds and various crop diseases. Their repeated use gives rise to pests that are resistant to that group of pesticides. As a result, these pesticides become ineffective for those pests. Examples are DDT, aldrin, dieldrin etc.

Herbicides are the chemicals used to control weeds, earlier inorganic compounds such as sodium chlorate, and sodium arsenite were used but arsenic compounds being toxic to mammals, are no longer preferred instead organic compounds such as triazines, are now considered as better herbicides, especially for the corn-fields.

4. Which of the following is a biodegradable pesticide ?
(1) DDT (2) Aldrin (3) Dieldrin (4) None of these

5. Which of the following compounds belongs to herbicides (Weedisides) ?
(1) Sodium arsenite (2) Sodium chlorate (3) Triazines (4) All of these

6. Which of the following statements is false ?
(1) The fly ash and slag of steel industry is being used by the cement industries
(2) Industrial wastes, agricultural pollutants and radioactive pollutants are the sources of soil pollutants.
(3) The recycling of material such as paper, glass and some kinds of plastics would help in the conservation of natural sources.
(4) BHC, malathon and chlorinated hydrocarbon are herbicides.

PART - III : MATCH THE COLUMN

1. Match the entries of **column-I** with appropriate enteries of **column-II**. Each entry in **column-I** may have one or more than one correct option(s) from **column-II**.

Column-I	**Column-II**
(1) Acid rain	(p) Oxides of nitrogen
(2) Green house effect	(q) Oxides of sulphur
(3) Ozone hole	(r) Carbon dioxide
(4) Eutrophication	(s) Phosphate fertilizer i.e. plant nutrient (excess).
	(t) Chlorofluorocarbon (CFCs)

2. Match the entries of **column-I** with appropriate enteries of **column-II**. Each entry in **column-I** may have one or more than one correct option(s) from **column-II**.

Column-I	**Column-II**
(1) Classical smog	(p) SO_2
(2) Photochemical smog	(q) NO_2
(3) Particulate Pollutants	(r) bacteria
(4) Gaseous pollutants	(s) smoke
	(t) Fe_3O_4

Exercise-3

JEE (MAIN) / AIEEE PROBLEMS (PREVIOUS YEARS)

JEE(MAIN) OFFLINE PROBLEMS

1. The smog is essentially caused by the presence of : **[AIEEE 2004, 3/225]**
(1) O_2 and O_3 (2) O_2 and N_2
(3) Oxides of sulphur and nitrogen (4) O_3 and N_2

2. Identify the wrong statement in the following : **[AIEEE 2008, 3/105]**
(1) Ozone layer does not permit infrared radiation from the sun to reach the earth.
(2) Acid rain is mostly because of oxides of nitrogen and sulphur.
(3) Chlorofluorocarbons are responsible for ozone layer depletion.
(4) Green house effect is responsible for global warming.

3. Identify the incorrect statement from the following **[AIEEE 2011, 4/120]**
(1) Ozone absorb the intense ultraviolet radiation of the sun.
(2) Depletion of ozone layer is because of its chemical reaction with chlorofluro carbon.
(3) Ozone absorbs infrared radiation
(4) Oxides of nitrogen in the atmosphere can cause the depletion of ozone layer

4. The concentration of fluoride, lead, nitrate and iron in a water sample from an undergroud lake was found to be 1000 ppb, 40 ppb, 100 ppm and 0.2 ppm, respectively. This water is unsuitable for drinking due to high concentration of : **[JEE(Main) 2016, 4/120]**
(1) Lead (2) Nitrate (3) Iron (4) Fluoride

5. A water sample has ppm level concentration of following anions **[JEE(Main) 2017, 4/120]**
$F^- = 10$; $SO_4^{2-} = 100$; $NO_3^- = 50$
The anion/anions that make/makes the water sample unsuitable for drinking is/are:
(1) both SO_4^{2-} and NO_3^- (2) only F^-
(3) only SO_4^{2-} (4) only NO_3^-

6. The recommended concentration of fluoride ion in drinking water is up to 1 ppm as fluoride ion is required to made teeth enamel harder by converting $[3Ca_3(PO_4)_2 \cdot Ca(OH)_2]$ to: **[JEE(Main)2018, 4/120]**
(1) $[3Ca_3(PO_4)_2 \cdot CaF_2]$ (2) $[3\{Ca(OH)_2\} \cdot CaF_2]$ (3) $[CaF_2]$ (4) $[3(CaF_2) \cdot Ca(OH_2]$

JEE(MAIN) ONLINE PROBLEMS

1. Which of the following statements about the deletion of ozone layer is correct ?
[JEE(Main) 2014 Online (11-04-14), 4/120]
(1) The problem of ozone depletion is less serious at poles because NO_2 solidifies and is not available for consuming $ClO^{\bullet}$ radius.
(2) The problem of ozone depletion is more serious at poles because ice crystable in the clouds over poles act as catalyst for photochemical reactions involving the decomposition of ozone by $Cl^{\bullet}$ and $ClO^{\bullet}$ radicals.
(3) Freons, chlorofluorocarbons, are inert chemically, they do not react with ozone in stratosphere.
(4) Oxides of nitrogen also do not react with ozone in stratosphere.

2. Global warming is due to increase of : **[JEE(Main) 2014 Online (12-04-14), 4/120]**
(1) methane and nitrous oxide in atmosphere (2) methane and CO_2 in atmosphere
(3) methane and O_3 in atmosphere (4) methane and CO in atmosphere

3. Addition of phosophate fertilisers to water bodies causes : **[JEE(Main) 2015 Online (11-04-15), 4/120]**
(1) increase in amount of dissolved oxygen in water
(2) deposition of calcium phosphate
(3) increase in fish population
(4) enhanced growth of algae

4. Which one of the following substances used in dry cleaning is a better strategy to control environmental pollution? **[JEE(Main) 2016 Online (10-04-16), 4/120]**
(1) Nitrogen dioxide (2) Sulphur dioxide
(3) Tetrachloroethylene (4) Carbon dioxide.

5. Identify the pollutant gases largely responsible for the discoloured and lustreless nature of marble of the Taj Mahal. **[JEE(Main) 2017 Online (08-04-17), 4/120]**
(1) SO_2 and NO_2 (2) SO_2 and O_3 (3) O_3 and CO_2 (4) CO_2 and NO_2

6. Which of the following is a set of green house gases? **[JEE(Main) 2017 Online (09-04-17), 4/120]**
(1) CO_2, CH_4, N_2O, O_3 (2) O_3, NO_2, SO_2, Cl_2
(3) CH_4, O_3, N_2, SO_2 (4) O_3, N_2, CO_2, NO_2

7. The correct match between items of List-I and List-II is : **[JEE(Main) 2018 Online (15-04-18), 4/120]**

	List-I		**List-II**
(A)	Coloured impurity	(P)	Steam distillation
(B)	Mixture of o-nitrophenol and p-nitrophenol	(Q)	Fractional distillation
(C)	Crude Naphtha	(R)	Charcoal treatment
(D)	Mixture of glycerol and sugars	(S)	Distillation under reduced pressure

(1) (A)-(R), (B)-(S), (C)-(P), (D)-(Q) (2) (A)-(P), (B)-(S), (C)-(R), (D)-(Q)
(3) (A)-(R), (B)-(P), (C)-(Q), (D)-(S) (4) (A)-(R), (B)-(P), (C)-(S), (D)-(Q)

8. Biochemical oxygen Demand (BOD) value can be a measure of water pollution caused by the organic matter. Which of the following statements is correct ? **[JEE(Main) 2018 Online (15-04-18), 4/120]**
(1) Aerobic bacteria decrease the BOD value
(2) Anaerobic bacteria increase the BOD value
(3) Clean water has BOD value higher than 10 ppm.
(4) Polluted water has BOD value higher than 10 ppm

9. A water sample has ppm level concentration of the following metals :
[JEE(Main) 2019 Online (09-01-19) S1, 4/120]
Fe = 0.2; Mn = 5.0; Cu = 3.0; Zn = 5.0. The metal that makes the water sample unsuitable for drinking is :
(1) Fe (2) Zn (3) Cu (4) Mn

10. Which of the following conditions in drinking water causes methemobinemia?
[JEE(Main) 2019 Online (09-01-19) S2, 4/120]
(1) > 100 ppm of sulphate (2) > 50 ppm of lead
(3) > 50 ppm of nitrate (4) > 50 ppm of chloride

11. The pH of rain water, is approximately : **[JEE(Main) 2019 Online (09-01-19) S2, 4/120]**
(1) 7.0 (2) 6.5 (3) 7.5 (4) 5.6

12. Water filled in two glasses A and B have BOD values of 10 and 20, respectively. The correct statement regarding them, is : **[JEE(Main) 2019 Online (10-01-19) S1, 4/120]**
(1) A is more polluted than B. (2) Both A and B are suitable for drinking.
(3) A is suitable for drinking, whereas B is not. (4) B is more polluted than A

13. The reaction that is **NOT** involved in the ozone layer depletion mechanism in the stratosphere is:
[JEE(Main) 2019 Online (10-01-19) S2, 4/120]

(1) $HOCl(g) \xrightarrow{h\upsilon} \overset{\bullet}{O}H\,(g) + \overset{\bullet}{Cl}\,(g)$ (2) $CF_2Cl_2(g) \xrightarrow{h\upsilon} \overset{\bullet}{Cl}\,(g) + \overset{\bullet}{C}F_2Cl\,(g)$

(3) $\overset{\bullet}{Cl}O\,(g) + O(g) \longrightarrow \overset{\bullet}{Cl}\,(g) + O_2\,(g)$ (4) $CH_4 + 2O_3 \longrightarrow 3CH_2{=}O + 3H_2O$

14. Peroxyacetyl nitrate (PAN), an eye irritant is produced by:
[JEE(Main) 2019 Online (11-01-19) S1, 4/120]
(1) Classical smog (2) Organic waste
(3) Photochemical smog (4) Acid rain

15. The concentration of dissolved oxygen (DO) in cold water can go upto:
[JEE(Main) 2019 Online (11-01-19) S1, 4/120]
(1) 8 ppm (2) 16 ppm (3) 14 ppm (4) 10 ppm

16. The higher concentration of which gas in air can cause stiffness of flower buds?
[JEE(Main) 2019 Online (11-01-19) S2, 4/120]
(1) NO_2 (2) CO (3) SO_2 (4) CO_2

17. Taj Mahal is being slowly disfigured and discoloured. This is primarily due to :
[JEE(Main) 2019 Online (11-01-19) S2, 4/120]
(1) water pollution (2) acid rain (3) soil pollution (4) global warming

18. Water samples with values of 4 ppm and 18 ppm, respectively, are :
[JEE(Main) 2019 Online (12-01-19) S1, 4/120]
(1) Highly polluted and Clean (2) Clean and Clean
(3) Highly polluted and Highly polluted (4) Clean and Highly polluted

19. The molecule that has minimum/no role in the formation of photochemical smog is :
[JEE(Main) 2019 Online (12-01-19) S1, 4/120]
(1) $CH_2 = O$ (2) NO (3) N_2 (4) O_3

20. The compound that is NOT a common component of photochemical smog is:
[JEE(Main) 2019 Online (12-01-19) S2, 4/120]
(1) $H_3C{-}\overset{\overset{O}{\|}}{C}{-}OONO_2$ (2) O_3 (3) CF_2Cl_2 (4) $CH_2{=}CHCHO$

21. The upper stratosphere consisting of the ozone layer protects us from the sun's radiation that falls in the wavelength region of : **[JEE(Main) 2019 Online (12-01-19) S2, 4/120]**
(1) 0.8 – 1.5 nm (2) 400 – 550 nm (3) 200 – 315 nm (4) 600 – 750 nm

Answers

EXERCISE - 1

PART - I

A-1.	(4)	**A-2.**	(2)	**A-3.**	(2)	**A-4.**	(4)	**A-5.**	(1)
A-6.	(4)	**A-7.**	(2)	**A-8.**	(3)	**A-9.**	(2)	**A-10.**	(4)
A-11.	(4)	**A-12.**	(1)	**A-13.**	(3)	**A-14.**	(4)	**A-15.**	(2)
A-16.	(3)	**A-17.**	(3)	**A-18.**	(3)	**A-19.**	(3)	**A-20.**	(2)
A-21.	(1)	**A-22.**	(4)	**A-23.**	(1)	**A-24.**	(3)	**A-25.**	(4)
A-26.	(4)	**A-27.**	(3)	**A-28.**	(1)	**B-1.**	(4)	**B-2.**	(1)
B-3.	(1)	**B-4.**	(2)	**B-5.**	(1)	**B-6.**	(1)	**B-7.**	(3)
B-8.	(2)	**B-9.**	(4)	**B-10.**	(3)	**B-11.**	(4)	**B-12.**	(4)
B-13.	(4)	**B-14.**	(4)	**B-15.**	(2)	**B-16.**	(3)		

PART - II

1.	(3)	**2.**	(2)	**3.**	(2)	**4.**	(1)	**5.**	(1)
6.	(1)								

EXERCISE - 2

PART - I

1.	(2)	**2.**	(4)	**3.**	(1)	**4.**	(2)	**5.**	(2)
6.	(3)	**7.**	(2)	**8.**	(3)	**9.**	(1)	**10.**	(3)
11.	(3)	**12.**	(4)	**13.**	(4)	**14.**	(3)	**15.**	(1)
16.	(4)								

PART - II

1.	(4)	**2.**	(4)	**3.**	(4)	**4.**	(4)	**5.**	(4)
6.	(4)								

PART - III

1.	(1 – p,q); (2 – r); (3 – p,t); (4 – s)	**2.**	(1 – p); (2 – q); (3 – r,s,t); (4 – p,q)

EXERCISE - 3

JEE(MAIN) OFFLINE PROBLEMS

1.	(3)	**2.**	(1)	**3.**	(3)	**4.**	(2)	**5.**	(2)
6.	(1)								

JEE(MAIN) ONLINE PROBLEMS

1.	(2)	**2.**	(2)	**3.**	(4)	**4.**	(4)	**5.**	(1)
6.	(1)	**7.**	(3)	**8.**	(4)	**9.**	(4)	**10.**	(3)
11.	(4)	**12.**	(4)	**13.**	(4)	**14.**	(3)	**15.**	(4)
16.	(3)	**17.**	(2)	**18.**	(4)	**19.**	(3)	**20.**	(3)
21.	(3)								