

INORGANIC CHEMISTRY
TIME :30 Min

- Choose INCORRECT statement :
 (1) The F^- ion makes the enamel on teeth much harder by converting hydroxyapatite, $[3Ca_3(PO_4)_2 \cdot Ca(OH)_2]$, the enamel on the surface of the teeth, into much harder fluoroapatite $[3Ca_3(PO_4)_2 \cdot CaF_2]$.
 (2) Excess nitrate in drinking water can cause such as methemoglobinemia (blue body syndrome)
 (3) Hydrogen peroxide (H_2O_2) is used for the purpose of bleaching clothes in the process of laundry
 (4) None of these
- Which of the following can cause depletion of ozone?
 (1) H_2S (2) CO_2
 (3) Smoke (4) CFC
- High concentration hydrocarbon pollutants in atmospheric air causes :-
 (1) Cancer
 (2) Silicosis
 (3) Respiratory diseases (asthma)
 (4) Both (1) and (3)
- Which of the following species is not responsible for acid rain.
 (1) CH_4 (2) SO_2
 (3) NO_2 (4) CO_2
- Which of the following causes water pollution?
 (i) Pathogens (ii) Organic wastes
 (iii) Pesticides (iv) Toxic heavy metals
 (1) (i) & (ii) only (2) (ii) & (iii) only
 (3) (i) & (iii) only (4) All of these
- Which of the following CANNOT be degraded by natural processes?
 (i) DDT (ii) Plastic materials (iii) Heavy metals (iv) Nuclear wastes
 (1) (i), (ii), (iv) only (2) (ii), (iv) only
 (3) (ii), (iii) only (4) All of these
- Which statement does NOT distinguish troposphere and stratosphere?
 (1) It is a turbulent dusty zone containing air, much water vapour and clouds.
 (2) It is the region of strong air movement and cloud formation
 (3) It contains dinitrogen, dioxygen, ozone and little water vapour
 (4) It is a part of atmosphere
- Which is NOT a gaseous air pollutant?
 (1) smoke (2) hydrocarbons
 (3) Ozone (4) Oxides of sulphur
- Choose the INCORRECT statement
 (1) Sulphur dioxide is a poisonous gas to both plants and animals
 (2) Even a low concentration of sulphur dioxide causes respiratory diseases and stiffness of flower buds.
 (3) Uncatalysed oxidation of sulphur dioxide is slow
 (4) Rate of production of NO_2 is faster when nitric oxide reacts with ozone in the stratosphere
- The irritant redhaze in the traffic and congested places is due to
 (1) oxides of Sulphur
 (2) SO_2 only
 (3) oxides of nitrogen
 (4) SO_3 only
- Incomplete combination of automobile fuel leads to formation of
 (1) NO_2 (2) SO_2
 (3) SO_3 (4) Hydrocarbons
- Which of the following are toxic?
 (1) NO_2 (2) SO_2
 (3) CO (4) All of these
- Which of the following process(es) release CO_2 in atmosphere?
 (1) Respiration
 (2) Burning of fossil fuels for energy
 (3) Manufacture of cement
 (4) All of these
- CO_2 gas is present in:-
 (1) Troposphere only
 (2) Stratosphere only
 (3) Uniformly in the whole atmosphere
 (4) 0.3% by volume of the atmosphere
- Formation of acid from polluting oxides involves
 (1) catalytic oxidation (2) hydrolysis
 (3) Both (1) and (2) (4) hydration
- Choose the INCORRECT match - regarding acid rain
 (1) Aerosol particles of oxides – Wet deposition
 (2) Aerosol particles of ammonium salts – Wet deposition
 (3) SO_2 absorption – dry deposition
 (4) SO_2 absorption – wet deposition

17. Viable particulates are
 (1) Smoke (2) Dust
 (3) Fumes (4) None of these
18. Non-viable particulates are
 (1) bacteria (2) fungi
 (3) moulds (4) None of these
19. Choose the CORRECT statement regarding "classical smog."
 (1) It occurs in a cool humid climate
 (2) It is a mixture of smoke, fog and sulphur dioxide
 (3) Chemically it is a reducing mixture
 (4) All of these
20. Choose the CORRECT statement regarding photochemical smog
 (1) It occurs in warm, dry and sunny climate
 (2) It mainly results from the action of sunlight on unsaturated hydrocarbons and nitrogen oxides produced by automobiles and factories.
 (3) It has high concentration of oxidising agents
 (4) All of these
21. Which reaction is NOT involved in photochemical smog formation?
 (1) $3\text{CH}_4 + 2\text{O}_3 \longrightarrow 3\text{CH}_2 = \text{O} + 3\text{H}_2\text{O}$
 (2) $\text{SO}_2 + \frac{1}{2}\text{O}_2 \longrightarrow \text{SO}_3$
 (3) $\text{NO}_{2(g)} \xrightarrow{h\nu} \text{NO}_{(g)} + \text{O}_{(g)}$
 (4) $\text{NO}_{(g)} + \text{O}_{3(g)} \longrightarrow \text{NO}_{2(g)} + \text{O}_{2(g)}$
22. Common components of photochemical smog may NOT contain
 (1) (PAN) peroxyacetylnitrate
 (2) Acrolein
 (3) Formaldehyde
 (4) SO_2
23. The main reason of ozone layer depletion is
 (1) CFCs (2) Cl_2
 (3) SO_2 (4) NO
24. Ozone hole formation mechanism involves the following reactions :-
 (i) $\text{CF}_2\text{Cl}_{2(g)} \xrightarrow{uv} \dot{\text{Cl}}_{(g)} + \text{CF}_2\text{Cl}_{(g)}$
 (ii) $\dot{\text{Cl}}_{(g)} + \text{O}_{3(g)} \longrightarrow \dot{\text{ClO}}_{(g)} + \text{O}_{2(g)}$
 (iii) $\dot{\text{ClO}}_{(g)} + \text{O}_{(g)} \longrightarrow \dot{\text{Cl}}_{(g)} + \text{O}_{2(g)}$
 (iv) $\dot{\text{ClO}}_{(g)} + \text{NO}_{2(g)} \longrightarrow \text{ClONO}_{2(g)}$
 (v) $\dot{\text{Cl}}_{(g)} + \text{CH}_{4(g)} \longrightarrow \dot{\text{CH}}_{3(g)} + \text{HCl}_{(g)}$
 (vi) $\text{ClONO}_{2(g)} + \text{H}_2\text{O}_{(g)} \longrightarrow \text{HOCl}_{(g)} + \text{HNO}_{3(g)}$
 (vii) $\text{ClONO}_{2(g)} + \text{HCl}_{(g)} \longrightarrow \text{Cl}_{2(g)} + \text{HNO}_{3(g)}$
 (viii) $\text{HOCl}_{(g)} \xrightarrow{h\nu} \dot{\text{OH}}_{(g)} + \dot{\text{Cl}}_{(g)}$
 (ix) $\text{Cl}_{2(g)} \xrightarrow{h\nu} 2\dot{\text{Cl}}_{(g)}$
- Choose the CORRECT set of reactions occurring according to the season in Antarctica
- SEASON
 (1) Summer – (iv), (v)
 (2) Winter – (vi), (vii)
 (3) Spring – (viii), (ix)
 (4) All of these
25. Clean water has BOD value
 (1) < 5 ppm (2) < 6 ppm
 (3) < 17 ppm (4) > 7 ppm
26. The process in which nutrient enriched water bodies support a dense plant population, which kills animal life by depriving it of oxygen and results in subsequent loss of biodiversity is known as
 (1) Eutrophication
 (2) Biochemical oxygen demand
 (3) Water pollution
 (4) Soil pollution
27. Choose the CORRECT set for International standards for drinking water.
 (i) $\text{F}^- < 2\text{ppm}$ (ii) $\text{Pb} < 50\text{ppb}$
 (iii) $\text{SO}_4^{2-} \leq 500\text{ppm}$ (iv) $\text{NO}_3^- \leq 50\text{ppm}$
 (1) (i) only (2) (i), (ii) only
 (3) (ii) & (iv) only (4) i, ii, iii, iv

28. Blue baby syndrome is caused due to excess
- (1) Fluoride
 - (2) Sulphate
 - (3) Nitrate
 - (4) Lead
29. Flyash and slag are used by
- (1) Steel industry
 - (2) Cement industry
 - (3) Thermal power plants
 - (4) All of these
30. Choose the INCORRECT match for maximum prescribed concentration of some metals in drinking water

	Metal	Maximum Concentration (ppm or mg dm^{-3})
(i)	Fe, Al	0.2
(ii)	Mn	0.05
(iii)	Cu	3.0
(iv)	Zn	5.0
(v)	Cd	0.005
(vi)	Pb	50

- (1) (i), (vi) only
- (2) (v) only
- (3) (vi) only
- (4) (iii), (iv) only