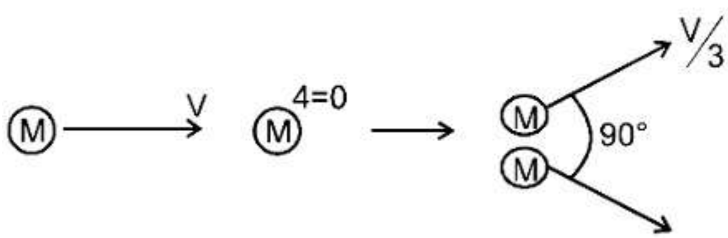


$\vec{P_i} = \vec{P_f}$

$\Rightarrow |P_i| = |P_f| \Rightarrow \sqrt{\left(m\frac{V}{3}\right)^2 + (mV_2)^2}$

$V_2 = \frac{2\sqrt{2}}{3}V$

132. A potentiometer wire of length L and a resistance r are connected in series with a battery of e.m.f. E_0 and a resistance r_1. An unknown e.m.f. E is balanced at a length l of the potentiometer wire. The e.m.f. E will be given by:

(1) $\frac{LE_0r}{l\,r_1}$

(2) $\frac{E_0r}{(r+r_1)}\cdot\frac{l}{L}$

(3) $\frac{E_0l}{L}$

(4) $\frac{LE_0r}{(r+r_1)l}$

Solution: (2)

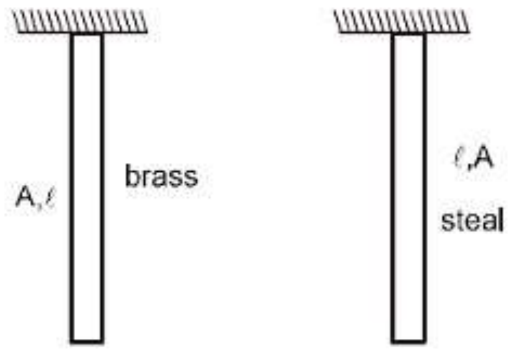
$K = \text{potential gradient} = \left(\frac{E_0r}{r+r_1}\right)\frac{1}{L}$

So $E = K\ell = \frac{E_0r\ell}{(r+r_1)L}$

133. The Young's modulus of steel is twice that of brass. Two wires of same length and of same area of cross section, one of steel and another of brass are suspended from the same roof. If we want the lower ends of the wires to be at the same level, then the weights added to the steel and brass wires must be in the ration of:

(1) 1 : 2
(2) 2 : 1
(3) 4 : 1
(4) 1 : 1

Solution: (2)



$$Y = \frac{W}{A} \cdot \frac{\ell}{\Delta\ell}$$

So $\Delta\ell = \frac{W\ell}{AY}$

$\Delta e_1 = \Delta e_2$ $\qquad \frac{w_1\ell}{AY_1} = \frac{w_2\ell}{AY_2}$

$$\frac{w_1}{w_2} = \frac{Y_1}{Y_2} = 2$$

134. The input signal given to a CE amplifier having a voltage gain of 150 is $V_i = 2\cos\left(15t + \frac{\pi}{3}\right)$. The corresponding output signal will be:

(1) $300\cos\left(15t + \frac{\pi}{3}\right)$
(2) $75\cos\left(15t + \frac{2\pi}{3}\right)$
(3) $2\cos\left(15t + \frac{5\pi}{6}\right)$
(4) $300\cos\left(15t + \frac{4\pi}{3}\right)$

Solution: (4)

CE amplifier causes phase difference of $\pi (= 180^o)$ so $V_{out} = 300\cos\left(15t + \frac{\pi}{3} + \pi\right)$

135. An automobile moves on a road with a speed of $54\ \mathrm{km\ h^{-1}}$. The radius of its wheels is 0.45 m and the moment of inertia of the wheel about its axis of rotation is $3\ \mathrm{kg\ m^2}$. If the vehicle is brought to rest in 15s, the magnitude of average torque transmitted by its brakes to the wheel is:

(1) $6.66\ \mathrm{kg\ m^2 s^{-2}}$
(2) $8.58\ \mathrm{kg\ m^2 s^{-2}}$
(3) $10.86\ \mathrm{kg\ m^2\ s^{-2}}$
(4) $2.86\ \mathrm{kg\ m^2\ s^{-2}}$

Solution: (1)

$$\omega_i = \frac{15}{0.45} = \frac{100}{3} \quad \omega_f = 0$$

$$\omega_f = \omega_i + \alpha t$$

$$0 = \frac{100}{3} + (-\alpha)(15)$$

$$\alpha = \frac{100}{45}$$

$$\tau = (I)(\alpha) = 3 \times \frac{100}{45} = 6.66\ \mathrm{N.M}$$

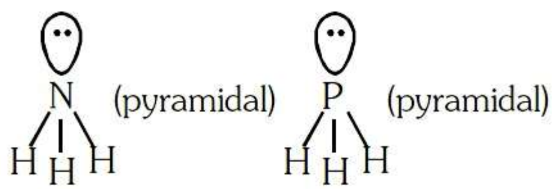
Chemistry

136. In which of the following pairs, both the species are not isostructural?

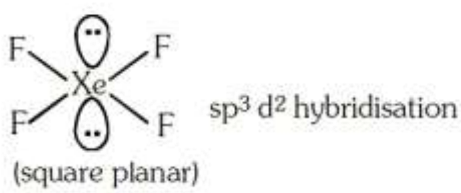
(1) XeF_4, XeO_4
(2) $SiCl_4, PCl_4^+$
(3) $SiCl_4, PCl_4^+$
(4) NH_3, PH_3

Solution: (1)

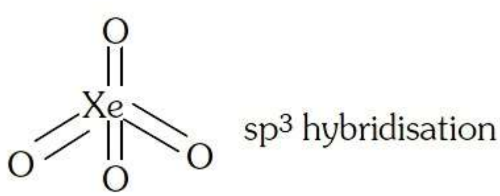
i. Hybridization of NH_3 $[\sigma = 3, lp = 1]$
sp^3 geometry : Tetrahedral



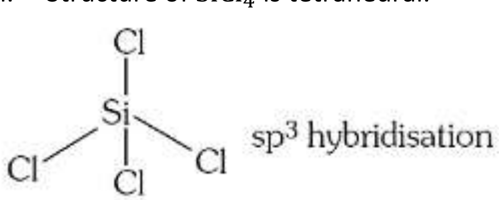
ii. Structures of XeF_4 is square planar.



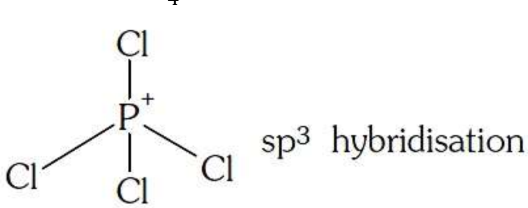
Structure of XeO_4 is tetrahedral



So XeF_4 and XeO_4 are not isostructural.
iii. Structure of $SiCl_4$ is tetrahedral.

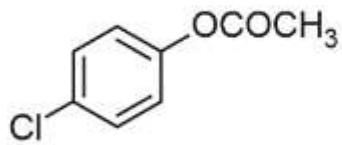


Structure of PCl_4^+ is tetrahedral.

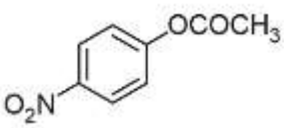


137. Which one of the following esters gets hydrolyzed most easily under alkaline conditions?

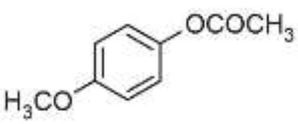
(1)



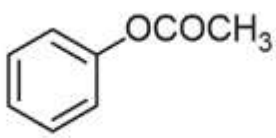
(2)



(3)



(4)



Solution: (2)

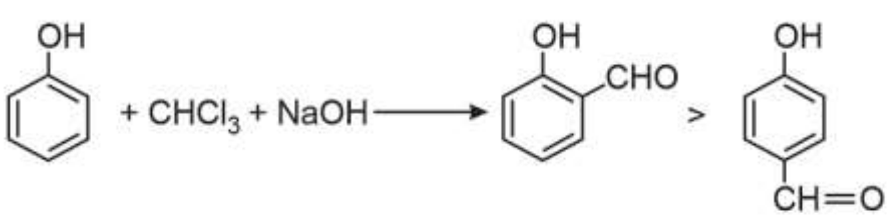
Solution: EWG (Electron withdrawing group) increases reactivity towards nucleophilic substitution reaction. $-NO_2$ is strong electron withdrawing group.

138. Reaction of phenol with chloroform in presence of dilute sodium hydroxide finally introduces which one of the following functional group?

(1) $-CHO$
(2) $-CH_2Cl$
(3) $-COOH$
(4) $-CHCl_2$

Solution: (1)

Reimer Tieman reaction



139. Which of the following reaction(s) can be used for the preparation of alkyl halides?

I. $CH_3CH_2OH + HCl \xrightarrow{\text{Anhyd.ZnCl}_2}$

II. $CH_3CH_2OH + HCl \longrightarrow$

III. $(CH_3)_3COH + HCl \longrightarrow$

IV. $(CH_3)_2CHOH + HCl \xrightarrow{\text{Anhyd.ZnCl}_2}$

(1) III and IV only
(2) I, III and IV only
(3) I and II only
(4) IV only

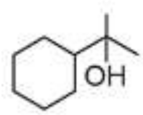
Solution: (2)

I and IV can be used due to presence of anhydrous $ZnCl_2$ (III) gives alkyl halide due to formation of more stable carbocation.

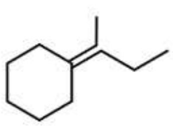
140. In an S_N1 reaction on chiral centres, there is:
(1) 100% inversion
(2) 100% racemization
(3) Inversion more than retention leading to partial racemization
(4) 100% retention

Solution: (3)

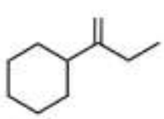
S_N1 reaction gives racemic mixture with slight predominance of that isomer which corresponds to inversion because S_N1 also depends upon the degree of 'shielding' of the front side of the reacting carbon.

141. Which of the following is not the product of dehydration of  ?

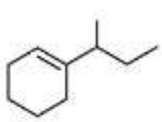
(1)



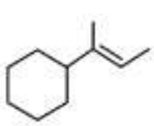
(2)



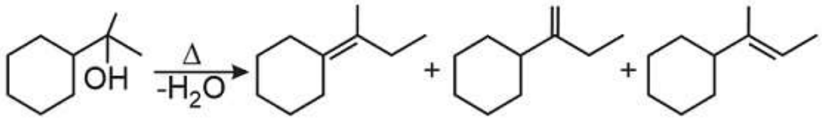
(3)



(4)



Solution: (3)



142. On heating which of the following releases CO_2 most easily?
(1) $CaCO_3$
(2) K_2CO_3
(3) Na_2CO_3
(4) $MgCO_3$

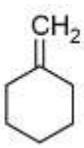
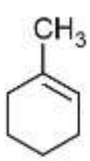
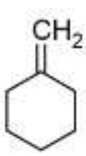
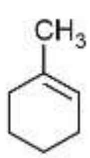
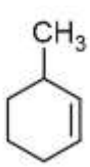
Solution: (4)

Thermal stability order

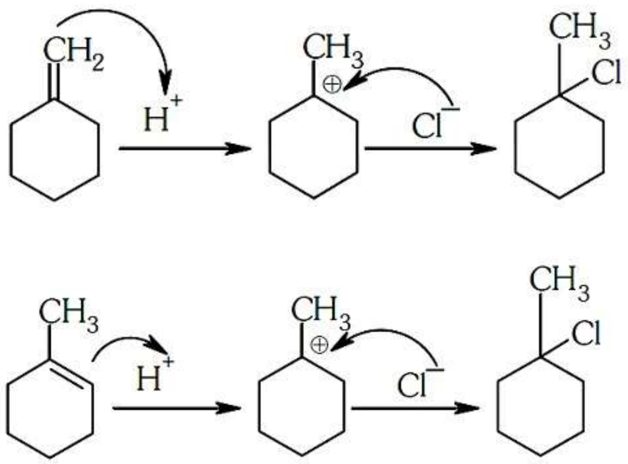
$$K_2CO_3 > Na_2CO_3 > CaCO_3 > MgCO_3$$

Therefore $MgCO_3$ releases CO_2 most easily.

$$MgCO_3 \xrightarrow{\Delta} MgO + CO_2$$

143. In the reaction with HCl, an alkene reacts in accordance with the Markovnikov's rule, to give a product 1-chloro-1-methylcyclohexane. The possible reaction alkene is:
(1)

(2)

(3)

and

(4)


Solution: (3)



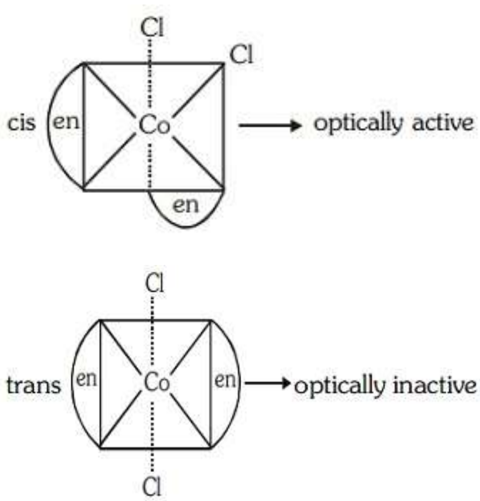
144. Number of possible isomers for the complex $[Co(en)_2Cl_2]Cl$ will be: (en = ethylene diamine)
(1) 4
(2) 2
(3) 1
(4) 3

Solution: (4)

$[Co(en)_2Cl_2]Cl$

Possible isomers

(i) Geometrical isomers



(ii) In trans form plane of symmetry present, so trans form is optically inactive but cis is optically active.

Total number of stereoisomer = 2 + 1 = 3

145. A gas such as carbon monoxide would be most likely to obey the ideal gas law at:
(1) Low temperatures and low pressures
(2) High temperatures and low pressures
(3) Low temperatures and high pressures
(4) High temperatures and high pressures

Solution: (2)

Real gases show ideal gas behaviour at high temperatures and low pressures.

146. If Avogadro number N_A , is changed from $6.022 \times 10^{23}\ \text{mol}^{-1}$ to $6.022 \times 10^{20}\ \text{mol}^{-1}$, this would change:
(1) The ratio of elements to each other in compound.
(2) The definition of mass in units of grams
(3) The mass of one mole of carbon
(4) The ratio of chemical species to each other in a balanced equation.

Solution: (3)

∵ Mass of 1 mol $(6.022 \times 10^{23}$ atoms$)$ of carbon = 12g

If Avogadro Number (N_A) is changed then mass of 1 mol $(6.022 \times 10^{20}$ atom$)$ of carbon

$$= \frac{12 \times 6.022 \times 10^{20}}{6.022 \times 10^{23}} = 12 \times 10^{-3}\ \text{g}$$

147. Gadolinium belongs of 4f series. Its atomic number is 64. Which of the following is the correct electronic configuration of gadolinium?
(1) $[Xe]4f^7 5d^1 6s^2$
(2) $[Xe]4f^8 6d^2$
(3) $[Xe]4f^9 5s^1$
(4) $[Xe]4f^7 5d^1 6s^2$

Solution: (4)

$$_{64}Gd = \quad _{54}[Xe]6s^2\ 4f^7\ 5d^1$$

148. What is the pH of the resulting solution when equal volumes of 0.1 m NaOH and 0.01 M HCl are mixed?
(1) 1.04
(2) 12.65
(3) 2.0
(4) 7.0

Solution: (2)

$$N_1V_1 - N_2V_2 = N.V.$$

$$0.1 \times 1 - 0.01 \times 1 = N \times 2$$

$[OH^-] = N_R = 0.\frac{09}{2} = 0.045\ N$

$pOH = -\log(0.045) = 1.35$

$\therefore pH = 14 - pOH = 14 - 1.35 = 12.65$

149. Decreasing order of stability of O_2, O_2^-, O_2^+ and O_2^{2-} is:
(1) $O_2^- > O_2^{2-} > O_2^+ > O_2$
(2) $O_2^+ > O_2 > O_2^- > O_2^{2-}$
(3) $O_2^{2-} > O_2^- > O_2 > O_2^+$
(4) $O_2 > O_2^+ > O_2^{2-} > O_2^-$

Solution: (2)

Given species: $O_2, O_2^-, O_2^+, O_2^{2-}$

Total number of electrons

$O_2 \longrightarrow 16e^-$

$O_2^- \longrightarrow 17e^-$

$O_2^+ \longrightarrow 15e^-$

$O_2^{2-} \longrightarrow 18e^-$

	O_2^+	O_2	O_2^-	O_2^{2-}
Bond order	2.5	2	1.5	1

$\text{Stability} \times \text{Bond order}$

Stability order $[O_2^+ > O_2 > O_2^- > O_2^{2-}]$

150. The correct statement regarding defects in crystalline solids is :
(1) Frenkel defect is found in halides of alkaline metals
(2) Schottky defects have no effect on the density of crystalline solids
(3) Frenkel defects decrease the density of crystalline solids
(4) Frenkel defect is a dislocation defect

Solution: (4)

Frenkel defect is a dislocation defect.

151. Which of the following statements is not correct for a nucleophile?
(1) Nucleophiles are not electron seeking
(2) Nucleophile is a Lewis acid
(3) Ammonia is a nucleophile
(4) Nucleophiles attack low e^- density sites

Solution: (2) Reason: Nucleophiles are electron rich species so act as Lewis base.

152. The hybridization involved in complex $[Ni(CN)_4]^{2-}$ is: (Atomic number of Ni = 28)

(1) d^2sp^3
(2) dsp^2
(3) sp^3
(4) d^2sp^2

Solution: (2)

$$[Ni(CN)_4]^{2-}$$

Oxidation state of Ni is +2

$$x - 4 = 2$$

$$x = +2$$

153. The stability of +1 oxidation state among Al, Ga, In and TI increases in the sequence:
(1) $In < TI < Ga < Al$
(2) $Ga < In < Al < TI$
(3) $Al < Ga < In < TI$
(4) $TI < In < Ga < Al$

Solution: (3)

Stability of +1 oxidation state due to inert pair effect $TI < In < Ga < Al$.

154. The sum of coordination number and oxidation number of metal M in the complex $[M(en)_2(C_2O_4)]Cl$ (Where en is ethylenediamine) is:
(1) 8
(2) 9
(3) 6
(4) 7

Solution: (2)

$$[M(en)_2(C_2O_4)]Cl$$

Oxidation state of M = +3

Coordination number of M = 6

Sum of oxidation state + Coordination number = 3 + 6 = 9

155. Which of the statements given below is incorrect?
(1) OF_2 is an oxide of fluorine.
(2) Cl_2O_7 is an anhydride of perchloric acid
(3) O_3 molecule is bent.
(4) ONF is isoelectronic with O_2N^-

Solution: (1)

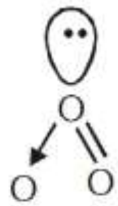
i. No. of electron in ONF = 24

No. of electron in $NO_2^- = 24$

Both are isoelectronic.

ii. OF_2 is a fluoride of oxygen not oxide of fluorine because EN of fluorine is more than oxygen.
$OF_2 = \text{Oxygen difluoride}$

iii. Cl_2O_7 is an anhydride of perchloric acid.
$2HClO_4 \xrightarrow{\Delta, -H_2O} Cl_2O_7$

iv. O_3 molecules is bent  shape.

156. In the extraction of copper from its sulphide ore, the metal is finally obtained by the reduction of cuprous oxide with:
(1) Sulphur dioxide
(2) Iron (II) sulphide
(3) Carbon monoxide
(4) Copper (I) sulphide

Solution: (4)

Self reduction

$$Cu_2S + 2Cu_2O \longrightarrow 6Cu + SO_2 \uparrow$$

157. Which one of the following pairs of solution is not an acidic buffer?
(1) H_3PO_4 and Na_3PO_4
(2) $HClO_4$ and $NaClO_4$
(3) CH_3COOH and CH_3COONa
(4) H_2CO_3 and Na_2CO_3

Solution: (2)

Strong acid with its salt can not form buffer solution. $HClO_4$ and $NaClO_4$ cannot act as an acidic buffer.

158. Assuming complete ionization, same moles of which of the following compounds will require the least amount of acidified $KMnO_4$ for complete oxidation?

(1) $Fe(NO_2)_2$
(2) $FeSO_4$
(3) $FeSO_3$
(4) $FeSO_3$

Solution: (2)

$MnO_4^- \longrightarrow Mn^{2+}$; Change in oxidation no. = 5

In option,

i. $Fe^{2+} \longrightarrow Fe^{3+}$

Change in oxidation no. = 1

ii. $Fe^{2+} \longrightarrow Fe^{3+}$

Change in oxidation no. = 1

$SO_3^{2-} \longrightarrow SO_4^{2-}$

Change in oxidation no. = 2

$= 1 + 2 = 3$

iii. $Fe^{2+} \longrightarrow Fe^{3+}$

Change in oxidation no. = 1

$C_2O_4^{2-} \longrightarrow 2CO_2$

Change in oxidation no. = 2

$= 1 + 2 = 3$

iv. $Fe^{2+} \longrightarrow Fe^{3+}$

Change in oxidation no. = 1

$2NO_2^- \longrightarrow 2NO_3^-$

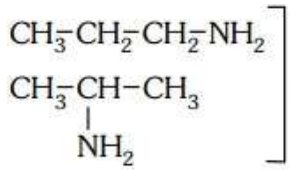
Change in oxidation no. = 4

$= 1 + 4 = 5$

159. The number of structural isomers possible from the molecular formula C_3H_9N is:
(1) 3
(2) 4
(3) 5
(4) 2

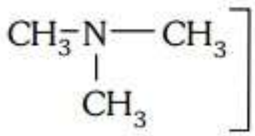
Solution: (2)

C_3H_9N :



1° amine

$CH_3 - CH_2 - NH - CH_3$ } 2° amine



3° amine

160. 20.0 g of a magnesium carbonate sample decomposes on heating to give carbon dioxide and 8.0 g magnesium oxide. What will be the percentage purity of magnesium carbonate in the sample?
(Atomic weight: Mg = 24)
(1) 84
(2) 75
(3) 96
(4) 60

Solution: (1)

$$MgCO_3(s) \longrightarrow MgO(s) + CO_2(g)$$

$$\text{Moles of } MgCO_3 = \frac{20}{84} = 0.238 \text{ mol}$$

From above equation.

1 mole $MgCO_3$ gives 1 mole MgO

∴ 0.238 mole $MgCO_3$ will give 0.238 mole MgO

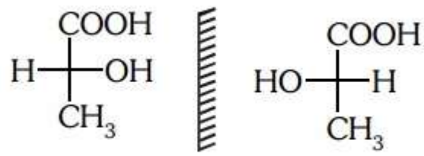
$$= 0.238 \times 40 \text{ g} = 9.523 \text{ g MgO}$$

$$\text{Practical yield of MgO} = 8 \text{ g MgO}$$

$$\therefore \% \text{ Purity} = \frac{8}{9.523} \times 100 = 84\%$$

161. Two possible stereo-structures of $CH_3CHOH \cdot COOH$, which are optically active, are called:
(1) Mesomers
(2) Diastereomers
(3) Atropisomers
(4) Enantiomers

Solution: (4)



Both are enantiomers.

162. The heat of combustion of carbon to CO_2 is -393.5 kJ/mol. The heat released upon formation of 35.2 g of CO_2 from carbon and oxygen gas is:
(1) -3.15 kJ
(2) -315 kJ
(3) $+315$ kJ
(4) -630 kJ

Solution: (2) Formation of CO_2 from carbon and dioxygen gas can be represented as

$$C(s) + O_{2(g)} \rightarrow CO_{2(g)}\ ;\ \Delta_f H = -393.5\ \text{kJ mol}^{-1}$$

(1 mole = 44 g)

Heat released on formation of 44 g CO_2

$= -393.5\ \text{kJ mol}^{-1}$

$= \frac{-393.5\ \text{kJ mol}^{-1}}{44\ \text{g}} \times 35.2\ \text{g}$

$= -315\ \text{kJ}$

163. The rate constant of the reaction $A \longrightarrow B$ is 0.6×10^{-3} mole per second. If the concentration of A is 5M, then concentration of B after 20 minutes is:
(1) 0.72 M
(2) 1.08 M
(3) 3.60 M
(4) 0.36 M

Solution: (1)

For zero order reaction:

$x = K \cdot t$

$= 0.6 \times 10^{-3} \times 20 \times 60$

$x = 0.72\ \text{M}$

164. The formation of the oxide ion, $O^{2-}(g)$, from oxygen atom requires first an exothermic and then an endothermic step as shown in below:

$$O(g) + e^- \longrightarrow O^-(g) \;\; ; \;\; \Delta_f H^\ominus = -141 \text{ kJ mol}^{-1}$$

$$O^-(g) + e^- \longrightarrow O^{2-}(g) \; ; \;\; \Delta_f H^\ominus = +780 \text{ kJ mol}^{-1}$$

Thus process of formation of O^{2-} in gas phase is unfavourable though O^{2-} is isoelectronic with neon. It is due to the fact that,

(1) Addition of electron in oxygen results in larger size of the ion.
(2) Electron repulsion outweighs the stability gained by achieving noble gas configuration.
(3) O^- ion has comparatively smaller size than oxygen atom.
(4) Oxygen is more electronegative.

Solution: (2)

165. What is the mass of the precipitate formed when 50 mL of 16.9% solution of $AgNO_3$ is mixed with 50 mL of 5.8% NaCl solution?
(Ag = 107.8, N = 14, O = 16, Na = 23, Cl = 35.5)
(1) 14 g
(2) 28 g
(3) 3.5 g
(4) 7 g

Solution: (4) 16.9 g $AgNO_3$ is present in 100 mL solution.

$\therefore$ 8.45 g $AgNo_3$ is present in 50 mL solution

5.8 g NaCl is present in 100 mL solution

$\therefore$ 2.9 g NaCl is present in 50 mL solution

	$AgNO_3$	+	NaCl	→	AgCl	+	$NaNO_3$
	$\frac{8.45}{170}$ mol		$\frac{2.9}{58.5}$				
	= 0.049 mol		= 0.049 mol	→	0		0
After reaction	0		0	→	0.049 mol		0.049 mol

Mass of AgCl precipitated

$= 0.049 \times 143.5$ g

$= 7$ g AgCl

166. Which is the correct order of increasing energy of the listed orbitals in the atom of titanium?
(Atomic No. Z = 22)
(1) 3s 3p 4s 3d

(2) 3s 4s 3p 3d
(3) 4s 3s 3p 3d
(4) 3s 3p 3s 4d

Solution: (1) $\mathrm{Ti}(22) = 1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^2$

Order of energy is 3s 3p 4s 3d

167. Reaction of a carbonyl compound with one of the following reagents involves nucleophilic addition followed by elimination of water. The reagent is:
(1) Sodium hydrogen sulphite
(2) A Grignard reagent
(3) Hydrazine in presence of feebly acidic solution
(4) Hydrocyanic acid

Solution: (3) With Ammonia derivation carbonyl compounds give addition followed by elimination reaction. Slightly acidic medium will generate a nucleophilic centre for weak base like ammonia derivatives.

168. The variation of the boiling points of the hydrogen halides is in the order $\mathrm{HF} > \mathrm{HI} > \mathrm{HBr} > \mathrm{HCl}$. What explains the higher boiling point of hydrogen fluoride?
(1) The effect of nuclear shielding is much reduced in fluorine which polarizes the HF molecule.
(2) The electronegativity of fluorine is much higher than for other elements in the group.
(3) There is strong hydrogen bonding between HF molecules.
(4) The bond energy of HF molecules is greater than in other hydrogen halides.

Solution: (3)

Due to strong H-bonding in HF molecule, boiling point is highest for HF.

$\mathrm{HF} > \mathrm{HI} > \mathrm{HBr} > \mathrm{HCl}$

169. The name of complex ion, $[\mathrm{Fe(CN)_6}]^{3-}$ is :
(1) Hexacyanidoferrate (III) ion
(2) Hexacyanoiron (III) ion
(3) Hexacyanitoferrate (III) ion
(4) Tricyanoferrate (III) ion

Solution: (1)

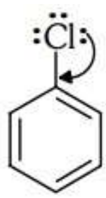
$[\mathrm{Fe(CN)_6}]^{3-}$

Hexacyanidoferrate (III) ion

170. Method by which Aniline cannot be prepared is:

(1) Potassium salt of phthalimide treated with chlorobenzene followed by hydrolysis with aqueous NaOH solution.
(2) Hydrolysis of phenylisocyanide with acidic solution
(3) Degradation of benzamide with bromine in alkaline solution
(4) Reduction of nitrobenzene with H_2/Pd in ethanol

Solution: (1)



Due to resonance C – Cl bond acquires double bond character.

171. If the equilibrium constant for $N_2(g) + O_2(g) \rightleftharpoons 2NO(g)$ is K, the equilibrium constant for $\frac{1}{2}N_2(g) + \frac{1}{2}O_2(g) \rightleftharpoons NO(g)$ will be:
(1) K^2
(2) $K^{\frac{1}{2}}$
(3) $\frac{1}{2}K$
(4) K

Solution: (2)

$$N_2(g) + O_2(g) \rightleftharpoons 2NO(g) \quad ; K$$

$$\frac{1}{2}N_2(g) + \frac{1}{2}O_2(g) \rightleftharpoons NO(g)\,; K'$$

$$K = \frac{[NO]^2}{[N_2]\ \ [O_2]}$$

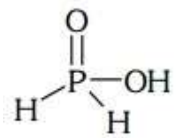
$$K' = \frac{NO}{[N_2]^{1/2}[O_2]^{1/2}}$$

$$\therefore K' = \sqrt{K}$$

172. Strong reducing behaviour of H_3PO_2 is due to:
(1) Presence of two –OH groups and one P– H bond
(2) Presence of one –OH group and two P – H bonds
(3) High electron gain enthalpy of phosphorus
(4) High oxidation state of phosphorus

Solution: (2) Strong reducing behaviour of H_3PO_2

All oxy-acid of phosphorus which contain P – H bond act as reductant.



Presence of one –OH group and two P – H bonds.

173. 2,3-Dimethyl-2-butene can be prepared by heating which of the following compounds with a strong acid?

(1) $(CH_3)_2CH-CH_2-CH=CH_2$

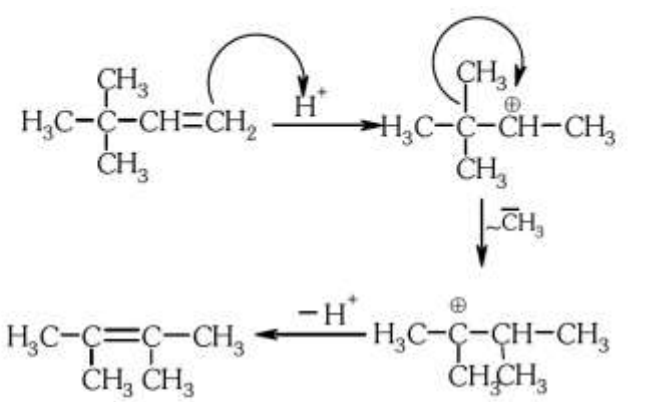
(2) D

$(CH_3)_2CH-\underset{CH_3}{\underset{|}{C}H}-CH=CH_2$

(3) $(CH_3)_3C-CH=CH_2$

(4) $(CH_3)_2C=CH-CH_2-CH_3$

Solution: (3)



2,3-Dimethyl-2-butene

174. Aqueous solution of which of the following compounds is the best conductor of electric current?

(1) Fructose, $C_6H_{12}O_6$

(2) Acetic acid, $C_2H_4O_2$

(3) Hydrochloric acid, HCl

(4) Ammonia, NH_3

Solution: (3) Aqueous solution of HCl is the best conductor of electric current because HCl is strong acid, so it dissociates completely into ions.

175. The vacant space in bcc lattice unit cell is:

(1) 32%

(2) 26%

(3) 48%

(4) 23%

Solution: (1) Packing efficiency in bcc lattice $= 68\%$

$\therefore$ Vacant space in bcc lattice $= 100 - 68 = 32\%$

176. What is mole fraction of the solute in a 1.00 m aqueous solution?

(1) 0.0177
(2) 0.177
(3) 1.770
(4) 0.0354

Solution: (1)

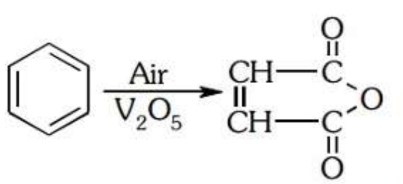
1.0 m solution means 1 mole solute is present in 1000 g water.

$$n_{H_2O} = 55.5 \text{ mol } H_2O$$

$$X_{Solute} = \frac{n_{Solute}}{n_{Solute} + n_{H_2O}} = \frac{1}{1 + 55.5} = 0.0177$$

177. The oxidation of benzene by V_2O_5 in the presence of air produces:
(1) Benzaldehyde
(2) Benzoic anhydride
(3) Maleic anhydride
(4) Benzoic acid

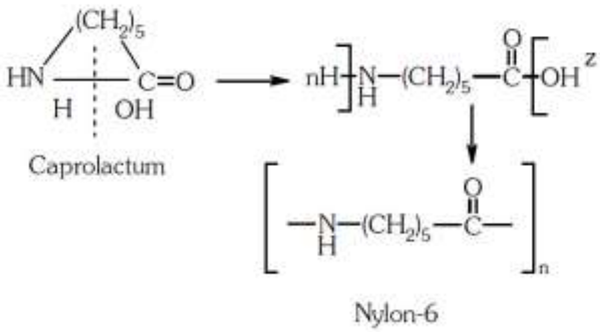
Solution: (3)



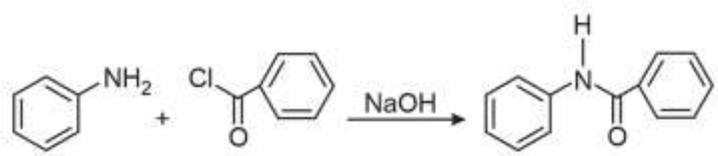
Maleic anhydride

178. Caprolactum is used for the manufacture of:
(1) Nylon-6,6
(2) Nylon-6
(3) Teflon
(4) Terylene

Solution: (2)



179. The following reaction



Is known by the name:

(1) Schotten-Baumen reaction
(2) Friedel-Craft's reaction
(3) Perkin's reaction
(4) Acetylation reaction

Solution: (1)

Benzoylation of aniline is an example of Schotten-Bauman reaction.

180. The number of water molecules is maximum in:
(1) 18 moles of water
(2) 18 molecules of water
(3) 1.8 gram of water
(4) 18 gram of water

Solution: (1)

$\because$ 1 mole water $= 6.02 \times 10^{23}$ moleucles

$\therefore$ 18 mole water $= 18 \times 6.02 \times 10^{23}$ molecules

So, 18 mole water has maximum number of molecules.