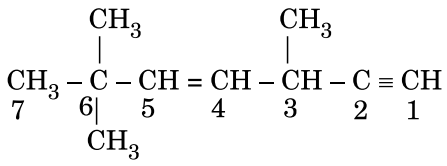
151. The state of hybridization of C_2, C_3, C_5 and C_6 of the hydrocarbon,



is in the following sequence:

(1) sp^3, sp^2, sp^2 and sp **(2)** sp, sp^2, sp^2 and sp^3

(3) sp, sp^2, sp^3 and sp^2 **(4)** sp, sp^3, sp^2 and sp^3

Sol: sp, sp^3, sp^2, sp^3

∴ **Correct choice : (4)**

152. Oxidation numbers of P in PO_4^{3-}, of S in SO_4^{2-} and that of Cr in $Cr_2O_7^{2-}$, are respectively:

(1) + 3, + 6 and + 5 **(2)** + 5, + 3 and + 6

(3) – 3, + 6 and + 6 **(4)** + 5, + 6 and + 6

Sol: PO_4^{3-} (P = + 5)

SO_4^{2-} (S = + 6)

$Cr_2O_7^{2-}$ (Cr = + 6)

∴ **Correct choice : (4)**

153. Lithium metal crystallises in a body centred cubic crystal. If the length of the side of the unit cell of lithium is 351 pm, the atomic radius of the lithium will be:

(1) 151.8 pm **(2)** 75.5 pm **(3)** 300.5 pm **(4)** 240.8 pm

Sol: $a\sqrt{3} = 4r$

$$r = \frac{a\sqrt{3}}{4} = \frac{351 \times 1.732}{4} = 151.98 \text{ pm}$$

∴ **Correct choice : (1)**

154. Which of the following reactions is an example of nucleophilic susbtitution reaction?

(1) $2\ RX + 2\ Na \longrightarrow R - R + 2\ NaX$

(2) $RX + H_2 \longrightarrow RH + HX$

(3) $RX + Mg \longrightarrow RMgX$

(4) $RX + KOH \longrightarrow ROH + KX$

Sol: X^- is replaced by OH^-

∴ **Correct choice : (4)**

155. In the case of alkali metals, the covalent character decreases in the order:

(1) MF > MCl > MBr > MI **(2)** MF > MCl > MI > MBr

(3) MI > MBr > MCl > MF **(4)** MCl > MI > MBr > MF

Sol: MI > MBr > MCl > MF. As the size of the anion decreases covalency decreases

∴ **Correct choice : (3)**

156. Which one of the elements with the following outer orbital configurations may exhibit the largest number of oxidation states?

(1) $3d^5 4s^1$ **(2)** $3d^5 4s^2$ **(3)** $3d^2 4s^2$ **(4)** $3d^3 4s^2$

Sol: The configuration $3d^5\ 4s^2$ can have various oxidation states upto + 7.

∴ **Correct choice : (2)**

157. The stability of + 1 oxidation state increases in the sequence:

(1) Tl < In < Ga < Al **(2)** In < Tl < Ga < Al

(3) Ga < In < Al < Tl **(4)** Al < Ga < In < Tl

Sol: The order is due to 'inert pair effect'

∴ **Correct choice : (4)**

158. Given:

(i) $Cu^{2+} + 2e^- \longrightarrow Cu,\ E^o = 0.337\ V$

(ii) $Cu^{2+} + e^- \longrightarrow Cu^+,\ E^o = 0.153\ V$

Electrode potential, E^o for the reaction, $Cu^+ + e^- \longrightarrow Cu$, will be:

(1) 0.90 V **(2)** 0.30 V **(3)** 0.38 V **(4)** 0.52 V

Sol: $Cu^{2+} + 2e^- \longrightarrow Cu$; $\Delta G^o = -nE^o F = -2 \times F \times 0.337 = -0.674\ F$

$Cu^+ \longrightarrow Cu^{2+} + e^-$; $\Delta G^o = -nE^o F = -1 \times F \times -0.153 = 0.153\ F$

$Cu^+ + e^- \longrightarrow Cu$; $\Delta G^o = -0.521\ F = -nE^oF$; $n = 1$, $E^o = +0.52$ V

∴ **Correct choice : (4)**

159. For the reaction, $N_2 + 3H_2 \longrightarrow 2NH_3$, if $\frac{d\left[NH_3\right]}{dt} = 2 \times 10^{-4}$ mol L^{-1} s^{-1}, the value of $\frac{-d\left[H_2\right]}{dt}$ would be:

(1) 4×10^{-4} mol L^{-1} s^{-1} **(2)** 6×10^{-4} mol L^{-1} s^{-1}

(3) 1×10^{-4} mol L^{-1} s^{-1} **(4)** 3×10^{-4} mol L^{-1} s^{-1}

Sol: $-\frac{1}{3}\frac{d[H_2]}{dt} = \frac{1}{2}\frac{d[NH_3]}{dt}$

$$\frac{-d[H_2]}{dt} = \frac{3}{2}\frac{d[NH_3]}{dt} = \frac{3}{2} \times 2 \times 10^{-4} = 3 \times 10^{-4} \text{ mol } L^{-1} s^{-1}$$

∴ **Correct choice : (4)**

160. Consider the following reaction,

$$\text{ethanol} \xrightarrow{PBr_3} X \xrightarrow{\text{alc. KOH}} Y \xrightarrow[\text{(ii) } H_2O,\ \text{heat}]{\text{(i) } H_2SO_4 \text{ room temperature}} Z;$$

the product Z is:

(1) $CH_3CH_2 - O - CH_2 - CH_3$ **(2)** $CH_3 - CH_2 - O - SO_3H$

(3) CH_3CH_2OH **(4)** $CH_2 = CH_2$

Sol:

$$CH_3CH_2OH \xrightarrow{PBr_3} CH_3CH_2Br \xrightarrow{\text{alc.KOH}} CH_2 = CH_2$$

$$CH_2 = CH_2 \xrightarrow{\text{(i) } H_2SO_4} CH_3 - CH_2 - HSO_4$$

$$CH_3 - CH_2 - HSO_4 \xrightarrow[\text{heat}]{H_2O} CH_3CH_2OH$$

∴ **Correct choice : (3)**

161. The energy absorbed by each molecule (A_2) of a substance is 4.4×10^{-19} J and bond energy per molecule is 4.0×10^{-19} J. The kinetic energy of the molecule per atom will be:

(1) 2.2×10^{-19} J **(2)** 2.0×10^{-19} J

(3) 4.0×10^{-20} J **(4)** 2.0×10^{-20} J

Sol: K.E per atom $= \frac{\left(4.4 \times 10^{-19}\right) - \left(4.0 \times 10^{-19}\right)}{2} = \frac{0.4 \times 10^{-19}}{2} = 2.0 \times 10^{-20}$

∴ **Correct choice : (4)**

162. Amongst the elements with following electronic configurations, which one of them may have the highest ionization energy?

(1) Ne $[3s^2 3p^2]$ **(2)** Ar $[3d^{10} 4s^2 4p^3]$

(3) Ne $[3s^2 3p^1]$ **(4)** Ne $[3s^2 3p^3]$

Sol: Smallest atom having half filled p-sub shell has highest I_0 value

∴ **Correct choice : (4)**

163. In the reaction

$BrO_3^-(aq) + 5\ Br^-_{(aq)} + 6H^+ \rightarrow 3\ Br_2(l) + 3\ H_2O_{(l)}$. The rate of appearance of bromine (Br_2) is related to rate of disappearance of bromide ions as following:

(1) $\frac{d\left(Br_2\right)}{dt} = -\frac{5}{3}\frac{d\left(Br^-\right)}{dt}$

(2) $\frac{d\left(Br_2\right)}{dt} = \frac{5}{3}\frac{d\left(Br^-\right)}{dt}$

(3) $\frac{d\left(Br_2\right)}{dt} = \frac{3}{5}\frac{d\left(Br^-\right)}{dt}$

(4) $\frac{d\left(Br_2\right)}{dt} = -\frac{3}{5}\frac{d\left(Br^-\right)}{dt}$

Sol: $\frac{1}{3}\frac{d\left[Br_2\right]}{dt} = -\frac{1}{5}\frac{d\left[Br^-\right]}{dt}$

$\frac{d\left[Br_2\right]}{dt} = -\frac{3}{5}\frac{d\left[Br^-\right]}{dt}$

∴ **Correct choice : (4)**

164. A 0.0020 m aqueous solution of an ionic compound $Co(NH_3)_5(NO_2)Cl$ freezes at – 0.00732 °C. Number of moles of ions which 1 mol of ionic compound produces on being dissolved in water will be (k_f = – 1.86°C/m)

(1) 3 **(2)** 4 **(3)** 1 **(4)** 2

Sol: $\Delta T_f = i \times k_f \times m$

$i = \frac{\Delta T_f}{k_f \times m} = \frac{0.00732}{1.86 \times 0.002} = 2$

∴ **Correct choice : (4)**

165. What is the dominant intermolecular force or bond that must be overcome in converting liquid CH_3OH to a gas?

(1) Dipole-dipole interaction **(2)** Covalent bonds

(3) London dispersion force **(4)** Hydrogen bonding

∴ **Correct choice : (4)**

166. Which of the following oxides is **not** expected to react with sodium hydroxide?

(1) CaO **(2)** SiO_2 **(3)** BeO **(4)** B_2O_3

∴ **Correct choice : (1)**

167. The segment of DNA which acts as the instrumental manual for the synthesis of the protein is:

(1) ribose **(2)** gene **(3)** nucleoside **(4)** nucleotide

∴ **Correct choice : (2)**

168. Maximum number of electrons in a subshell of an atom is determined by the following:

(1) $2\ell + 1$ **(2)** $4\ell - 2$ **(3)** $2n^2$ **(4)** $4\ell + 2$

Sol: The number of sub shell is $(2\ell + 1)$. The maximum number of electrons in the sub shell is $2(2\ell + 1) = (4\ell + 2)$

∴ **Correct choice : (4)**

169. Half life period of a first-order reaction is 1386 seconds. The specific rate constant of the reaction is:

(1) $0.5 \times 10^{-2}\ s^{-1}$ **(2)** $0.5 \times 10^{-3}\ s^{-1}$

(3) $5.0 \times 10^{-2}\ s^{-1}$ **(4)** $5.0 \times 10^{-3}\ s^{-1}$

Sol: $t_{1/2} = \frac{0.693}{k}$; $k = \frac{0.693}{1386} = 0.5 \times 10^{-3}\ s^{-1}$

∴ **Correct choice : (2)**

170. Which one of the following is employed as a tranquilizer?

(1) Naproxen **(2)** Tetracycline

(3) Chlorpheninamine **(4)** Equanil

∴ **Correct choice : (4)**

171. Al_2O_3 is reduced by electrolysis at low potentials and high currents. If 4.0×10^4 amperes of current is passed through molten Al_2O_3 for 6 hours, what mass of aluminium is produced? (Assume 100% current efficiency. At. mass of Al = 27 g mol^{-1})

(1) 8.1×10^4 g **(2)** 2.4×10^5 g **(3)** 1.3×10^4 g **(4)** 9.0×10^3 g

Sol: Total current = $4.0 \times 10^4 \times 6 \times 60 \times 60$ C

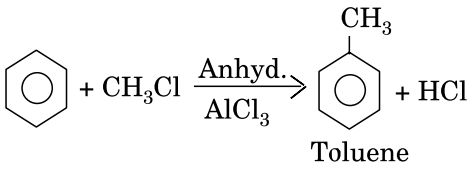
96500 C liberates 9 g of Al (1 g. eq)

$(4 \times 10^4 \times 6 \times 60 \times 60)$ C liberates 8.1×10^4 g of Al

∴ **Correct choice : (1)**

172. Benzene reacts with CH_3Cl in the presence of anhydrous $AlCl_3$ to form:

(1) Chlorobenzene **(2)** Benzylchloride **(3)** Xylene **(4)** Toluene

Sol: 

∴ **Correct choice : (4)**

173. Which of the following is **not** permissible arrangement of electrons in an atom?

(1) n = 5, ℓ = 3, m = 0, s = + 1/2

(2) n = 3, ℓ = 2, m = – 3, s = – 1/2

(3) n = 3, ℓ = 2, m = – 2, s = – 1/2

(4) n = 4, ℓ = 0, m = 0, s = – ?

Sol: For ℓ = 2, m cannot have – 3 value

∴ **Correct choice : (2)**

174. The dissociation constants for acetic acid and HCN at 25°C are 1.5×10^{-5} and 4.5×10^{-10} respectively. The equilibrium constant for the equilibrium

$CN^- + CH_3COOH \rightleftharpoons HCN + CH_3COO^-$ would be:

(1) 3.0×10^{-5} **(2)** 3.0×10^{-4} **(3)** 3.0×10^{4} **(4)** 3.0×10^{5}

Sol: $CH_3COOH \rightleftharpoons CH_3COO^- + H^+$; $K_a = 1.5 \times 10^{-5}$

$H^+ + CN^- \rightleftharpoons HCN$; $\frac{1}{K_a} = \frac{1}{4.5 \times 10^{-10}}$

∴ K_a for $CN^- + CH_3COOH \rightleftharpoons CH_3COO^- + HCN$ is

$$\frac{1.5 \times 10^{-5}}{4.5 \times 10^{-10}} = \frac{1}{3} \times 10^5 = 3.33 \times 10^4$$

∴ **Correct choice : (3)**

175. Propionic acid with $Br_2 | P$ yields a dibromo product. Its structure would be:

(1) $H-\underset{\underset{Br}{|}}{\overset{\overset{Br}{|}}{C}}-CH_2COOH$ **(2)** $CH_2Br - CH_2 - COBr$

(3) $CH_3-\underset{\underset{Br}{|}}{\overset{\overset{Br}{|}}{C}}-COOH$ **(4)** $CH_2\ Br - CHBr - COOH$

Sol: α hydrogen is substituted by bromine

∴ **Correct choice : (3)**

176. The values of ΔH and ΔS for the reaction, $C_{(graphite)} + CO_{2\ (g)} \longrightarrow 2CO_{(g)}$ are 170 kJ and 170 JK^{-1}, respectively. This reaction will be spontaneous at

(1) 910 K **(2)** 1110 K **(3)** 510 K **(4)** 710 K

Sol: $\Delta G = \Delta H - T\,\Delta S$

$0 = (170 \times 10^3\ J) - T\ (170\ JK^{-1})$

$T = 1000\ K$

For spontaneity, ΔG is – ve

Hence T should be > 1000 K

∴ **Correct choice : (2)**

177. Copper crystallises in a face-centred cubic lattice with a unit cell length of 361 pm. What is the radius of copper atom in pm?

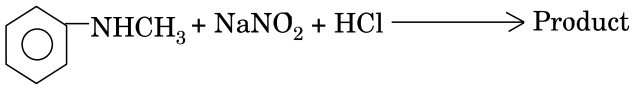
(1) 157 **(2)** 181 **(3)** 108 **(4)** 128

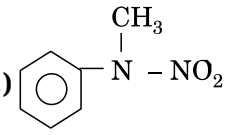
Sol: $a\ \sqrt{2} = 4\ r$

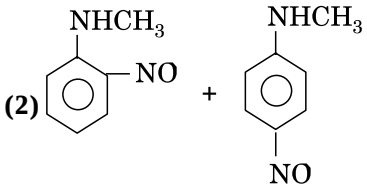
$$r = \frac{a \times 1.414}{4} = \frac{361 \times 1.414}{4} = 128\ pm$$

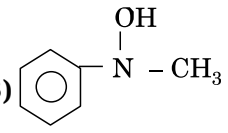
∴ **Correct choice : (4)**

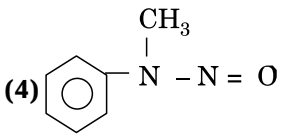
178. Predict the product:



(1) 

(2) 

(3) 

(4) 

Sol: Secondary amine with ($NaNO_2$ + HCl) gives a nitroso product

∴ **Correct choice : (4)**

179. $H_2COH \cdot CH_2OH$ on heating with periodic acid gives:

(1) 2 HCOOH **(2)** $\begin{matrix}CHO\\|\\CHO\end{matrix}$

(3) $2\ \begin{matrix}H\\\diagdown\\\ \ C=O\\\diagup\\H\end{matrix}$ **(4)** $2\ CO_2$

Sol: $\begin{matrix}CH_2OH\\|\\CH_2OH\end{matrix} \xrightarrow{HIO_4} CH_2O + CH_2O$

∴ **Correct choice : (3)**

180. According to MO theory which of the following lists ranks the nitrogen species in terms of increasing bond order?

(1) $N_2^{2-} < N_2^{-} < N_2$ **(2)** $N_2 < N_2^{2-} < N_2^{-}$

(3) $N_2^{-} < N_2^{2-} < N_2$ **(4)** $N_2^{-} < N_2 < N_2^{2-}$

Sol: Bond order $N_2 = 3$

$N_2^{-} = 2.5$

$N_2^{2-} = 2.0$

∴ **Correct choice : (1)**

181. Out of TiF_6^{2-}, COF_6^{3-}, Cu_2Cl_2 and $NiCl_4^{2-}$ (Z of Ti = 22, CO = 27, Cu = 29, Ni = 28) the colourless species are:

(1) Cu_2Cl_2 and $NiCl_4^{2-}$ **(2)** TiF_6^{2-} and Cu_2Cl_2

(3) COF_6^{3-} and $NiCl_4^{2-}$ **(4)** TiF_6^{2-} and COF_6^{3-}

Sol: Cu_2Cl_2 ($Cu^+ = 3d^{10}$)

TiF_6^{2-} ($Ti^{4+} = 3d^0$)

∴ **Correct choice : (2)**

182. Which of the following molecules acts as a Lewis acid?

(1) $(CH_3)_2O$ **(2)** $(CH_3)_3P$ **(3)** $(CH_3)_3N$ **(4)** $(CH_3)_3B$

Sol: $(CH_3)_3B$ – is electron deficient

∴ **Correct choice : (4)**

183. The IUPAC name of the compound having the formula $CH \equiv C - CH = CH_2$ is:

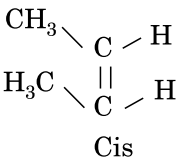
(1) 1-butyn-3-ene **(2)** but-1-yne-3-ene **(3)** 1-butene-3-yne **(4)** 3-butene-1-yne

∴ **Correct choice : (3)**

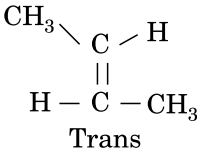
184. Which of the following compounds will exhibit cis-trans (geometrical) isomerism?

(1) Butanol **(2)** 2-Butyne **(3)** 2-Butenol **(4)** 2-Butene

Sol:



Cis



Trans

∴ **Correct choice : (4)**

185. Which of the following **does not** show optical isomerism?

(1) $[CO(NH_3)_3Cl_3]^0$ **(2)** $[CO\ (en)\ Cl_2\ (NH_3)_2]^+$

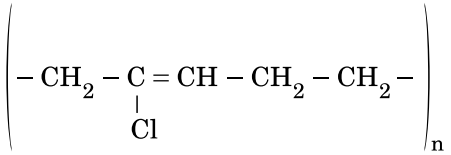
(3) $[CO\ (en)_3]^{3+}$ **(4)** $[CO\ (en)_2Cl_2]^+$ (en = ethylenediamine)

∴ **Correct choice : (1)**

186. Structures of some common polymers are given. Which one is **not** correctly presented?

Neoprene

(1)



(2) Terylene

(3) Nylon 66

$+NH(CH_2)_6\ NH\ CO\ (CH_2)_4 - CO -]_2$

(4) Teflon

$+CF_2 - CF_2 -)_n$

Sol: Correct representation is $\left(-CH_2 - \underset{\underset{Cl}{|}}{C} = CH - CH_2 - \right)_n$

∴ **Correct choice : (1)**

187. The ionization constant of ammonium hydroxide is 1.77×10^{-5} at 298 K. Hydrolysis constant of ammonium chloride is:

(1) 6.50×10^{-12} **(2)** 5.65×10^{-13}

(3) 5.65×10^{-12} **(4)** 5.65×10^{-10}

Sol: $K_h = \frac{K_w}{K_b} = \frac{1 \times 10^{-14}}{1.77 \times 10^{-5}} = 5.65 \times 10^{-10}$

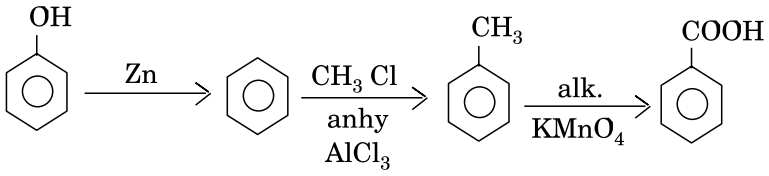
∴ **Correct choice : (4)**

188. Consider the following reaction:

$$\text{Phenol} \xrightarrow[\text{Zn dust}]{} X \xrightarrow[\text{Anhydrous } AlCl_3]{CH_3Cl} Y \xrightarrow{\text{Alkaline } KMnO_4} Z \ ,$$

the product Z is:

(1) Benzaldehyde **(2)** Benzoic acid **(3)** Benzene **(4)** Toluene

Sol: 

∴ **Correct choice : (2)**

189. The equivalent conductance of $\frac{M}{32}$ solution of a weak monobasic acid is 8.0 mhos cm^2 and at infinite dilution is 400 mhos cm^2. The dissociation constant of this acid is:

(1) 1.25×10^{-6} **(2)** 6.25×10^{-4} **(3)** 1.25×10^{-4} **(4)** 1.25×10^{-5}

Sol: $\alpha = \frac{\Lambda}{\Lambda_D} = \frac{8.0}{400} = 2 \times 10^{-2}$

$$K_a = \frac{C\alpha^2}{(1-\alpha)} \approx C\alpha^2 = \frac{1}{32} \times \left(2 \times 10^{-2}\right)^2 = 1.25 \times 10^{-5}$$

∴ **Correct choice : (4)**

190. The straight chain polymer is formed by:

(1) hydrolysis of CH_3SiCl_3 followed by condensation polymerisation

(2) hydrolysis of $(CH_3)_4Si$ by addition polymerisation

(3) hydrolysis of $(CH_3)_2SiCl_2$ followed by condensation polymerisation

(4) hydrolysis of $(CH_3)_3SiCl$ followed by condensation polymerisation

∴ **Correct choice : (3)**

191. From the following bond energies:

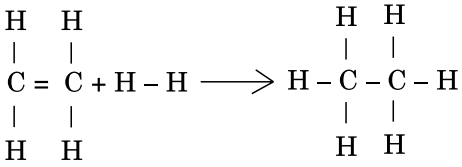
H – H bond energy: 431.37 kJ mol^{-1}

C = C bond energy: 606.10 kJ mol^{-1}

C – C bond energy: 336.49 kJ mol^{-1}

C – H bond energy: 410.50 kJ mol^{-1}

Enthalpy for the reaction,



will be:

(1) – 243.6 kJ mol^{-1} **(2)** – 120.0 kJ mol^{-1}

(3) 553.0 kJ mol^{-1} **(4)** 1523.6 kJ mol^{-1}

Sol: $[(4 \times 410.5) + 606.1 + 431.3)] - [(6 \times 410.5) + 336.49)] = -120.0$ kJ mol^{-1}

∴ **Correct choice : (2)**

192. 10 g of hdyrogen and 64 g of oxygen were filled in a steel vessel and exploded. Amount of water produced in this reaction will be:

(1) 3 mol **(2)** 4 mol **(3)** 1 mol **(4)** 2 mol

Sol: $H_2 + \frac{1}{2}O_2 \longrightarrow H_2O$

$\frac{10}{2}$ $\frac{64}{32}$

= 5 mol = 2 mol

Oxygen is the limiting agent. Hence 4 mole of water formed

∴ **Correct choice : (2)**

193. Among the following which is the strongest oxidising agent?

(1) Br_2 **(2)** I_2 **(3)** Cl_2 **(4)** F_2

∴ **Correct choice : (4)**

194. In which of the following molecules / ions BF_3, NO_2^-, NH_2^- and H_2O, the central atom is sp^2 hybridized?

(1) NH_2^- and H_2O **(2)** NO_2^- and H_2O

(3) BF_3 and NO_2^- **(4)** NO_2^- and NH_2^-

∴ **Correct choice : (3)**

195. Nitrobenzene can be prepared from benzene by using a mixture of conc. HNO_3 and conc. H_2SO_4 in the mixture, nitric acid acts as a/an:

(1) acid **(2)** base **(3)** catalyst **(4)** reducing agent

Sol: $HO\,NO_2 + H_2SO_4 \longrightarrow NO_2^+ + H_2O + HSO_4^-$

Nitric acid acts as a base by accepting a proton.

∴ **Correct choice : (2)**

196. Which of the following complex ions is expected to absorb visible light?

(1) $[Ti\,(en)_2(NH_3)_2]^{4+}$ **(2)** $[Cr\,(NH_3)_6]^{3+}$

(3) $[Zn\,(NH_3)_6]^{2+}$ **(4)** $[Sc\,(H_2O)_3\,(NH_3)_3]^{3+}$

(At. no. Zn = 30, Sc = 21, Ti = 22, Cr = 24)

Sol: Cr^{3+} in the complex has unpaired electrons in the d orbital

∴ **Correct choice : (2)**

197. What is the $[OH^-]$ in the final solution prepared by mixing 20.0 mL of 0.050 M HCl with 30.0 mL of 0.10 M $Ba(OH)_2$?

(1) 0.40 M **(2)** 0.0050 M **(3)** 0.12 M **(4)** 0.10 M

Sol: No. of m. equivalent of HCl = $20 \times 0.05 = 1.0$

No. of m. equivalent of $Br\,(OH)_2 = 30 \times 0.1 \times 2 = 6.0$

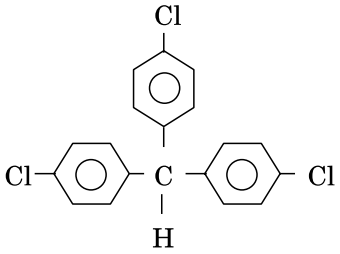
After neutralization, no. of milli equivalents in 50 ml. of solution = $(6 - 1) = 5$

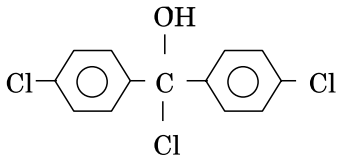
No. of m. equivalent of OH^- is 5 in 50 ml

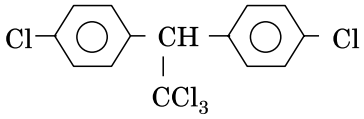
$$[OH^-] = \frac{5 \times 100}{50} \times 10^{-3} \text{ (i.e.,)} = 0.1 \text{ M}$$

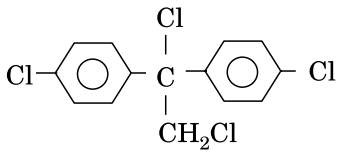
∴ **Correct choice : (4)**

198. Trichloroacetaldehyde, CCl_3CHO reacts with chlorobenzene in presence of sulphuric acid and produces:

(1) 

(2) 

(3) 

(4) 

∴ **Correct choice : (3)**

199. For the reaction A + B $\longrightarrow$ products, it is observed that:

(a) on doubling the initial concentration of A only, the rate of reaction is also doubled and

(b) on doubling the initial concentrations of both A and B, there is a change by a factor of 8 in the rate of the reaction.

The rate of this reaction is given by:

(1) rate = $k [A] [B]^2$ **(2)** rate = $k [A]^2 [B]^2$

(3) rate = $k [A] [B]$ **(4)** rate = $k [A]^2 [B]$

Sol: When concentration A is doubled, rate is doubled. Hence order with respect to A is one.

When concentrations of both A and B are doubled, rate increases by 8 times hence total order is 3

$\therefore$ rate = $k [A]^1 [B]^2$

order = 1 + 2 = 3

∴ **Correct choice : (1)**

200. Which of the following hormones contains iodine?

(1) testosterone **(2)** adrenaline **(3)** thyroxine **(4)** insulin

∴ **Correct choice : (3)**