JEE MAIN - 2015

CHEMISTRY

ANSWER KEY AND EXPLANATIONS

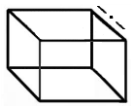
Q.31 Sol. (4)

$$2C_8H_7SO_3Na + CaCl_2 \rightarrow NaCl + (C_8H_7SO_3)Ca_2$$

$$\text{Maximum uptake of cat} = \frac{1}{2 \times 206}$$

$$= \frac{1}{412g}$$

Q.32 Sol. (1)



$$\text{In B.C.C} \rightarrow 4r = \sqrt{3}a$$

$$r = \sqrt{3} \times a$$

$$= \frac{\sqrt{3} \times 4.29}{4}$$

Q.33 Sol. (3)

$$\text{Energy of } e^- = \frac{-13.6}{n^2}$$

$$= -13.6, \frac{-13.6}{4}$$

$$= -3.4eV$$

Q.34 Sol. (2)

In ion-dipole interaction

$$F \times \frac{1}{r^3}$$

Q.35 Sol. (4)

$$\Delta 4^\circ_{rxn} = 2\Delta ca^\circ_p\left(NO_2\right) - 2\Delta^\circ_R\left(No\right)$$

$$\Delta 4^\circ_F\left(NO_2\right) = \frac{1}{2}\left[\Delta 4^\circ_{rxn} + 2\Delta 4^\circ_{cvo}\right]$$

$$\Delta 4^\circ_F\left(NO_2\right) = 0.5\left[2\times 86,600 - R\times 298 \ln\left[1.6\times 10^{12}\right]\right.$$

Since $\Delta 4_{Rn} = RT \ln k_p$

$$= R\times 2998 \ln\left(1.6\times 10^{12}\right)$$

Q.36 Sol. (2)

$$Pf = x_{acetorr} \times P_r$$

$$\frac{183}{185} = \frac{\frac{100}{58}}{\frac{100}{58} + \frac{1.2}{x}}$$

$$183\left[\left(\frac{100}{58} + \frac{1.2}{x}\right)\right] = \frac{185\times 100}{58}$$

$$315.5 + \frac{219.6}{x} = 318.9$$

$$X = 64$$

Q.37 Sol. (2)

$2A \rightleftharpoons B + C$

$[A] = \frac{1}{2}[B] = 2[C] = \frac{1}{2}$

$Q_c = \frac{[B]^1[C]^1}{[A]^2} = 2 \times \frac{\frac{1}{2}}{\left[\frac{7}{2}\right]^2}$

$= 4$

$\Delta G = 2494.2 \quad R = 8.314$

$\Delta G = RT \ln K_e$

$2494.2 = -[8.314] \times 300 \ln K_e$

$-(1) \quad = \quad \ln K_e \qquad k_e = e^{-1} = \frac{1}{e}$

$Q_c > K_c$: reaction proceed in reverse direction

Q.38 Sol. (2)

$1\,\text{Faraday} = \frac{63.5}{2}$

$2\,\text{Faraday} = 63.5$

Q.39 Sol. (1)

Reaction of higher order are rare due to very less probability of many molecules to undergo effective collision.

Q.40 Sol. (1)

$n CH_3COOH \text{ adsorbed} = (0.06 - 0.042) \times \frac{50}{1000}$

$m CH_3COOH \text{ adsorbed per gm of charcoal} = \frac{0.018 \times 50}{1000} \times \frac{60}{30}$

$= 18 mg$

Q.41 Sol. (3)

Ionic radius of

$N^{3-} = 1.71A°$

$O^{2+} \cong 1.40A°$

$F^{-} = 1.33A°$

Q.42 Sol. (1)

CO is not produced in this process

Q.43 Sol. (1)

H_2O_2 can act as reducing agent

For example :-

$$2\ MNO_{4^-} + 6H^+ + 5H_2O_2 \rightarrow 2Mn^{2+} 8H_2O + 5O_2$$

Q.44 Sol. (2)

In $BeSO_4$ hydration enthalpy is higher than lattice enthalpy because of its small size of $\left(Be^{2+}\right)$

Q.45 Sol. (4)

Inter halogen compound are highly reactive in nature.

Q.46 Sol. (2)

$Tid_3 \rightarrow$ used is Ziegler – Natta polymerization

$pdcl_2 \rightarrow$ weaker process

$Cucl_2 \rightarrow$ Deocon's process

$V_2O_5L \rightarrow$ contact process

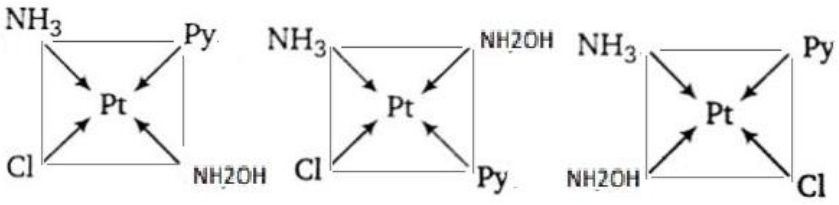
Q.47 Sol. (4)

B.P. increases down the group

Hence Xenon will have highest *B.P.*

Q.48 Sol. (2)

$\left[Pt(a)(py)(NH_3)\right](NH_2OH)+$ will have 3i somes



Q.49 Sol. (3)

Its not $d-d$ transition because there is no e^- in d orbital of Mn^{7+}

Its $L \rightarrow M$ charge transfer transition.

Q.50 Sol. (1)

Both assertion & reason are correct as N so do not combine easily.

Q.51 Sol. (1)

$$\%\text{halogen} = \frac{\text{At.wt.of halogen}}{\text{Mol.lvt of Ag Br}} \times \frac{\text{Mass of Ag Br}}{\text{Mass of Orgainl comp}}$$

$$= \frac{80}{188} \times \frac{141}{250} \times 100$$

$$= 24\%.$$

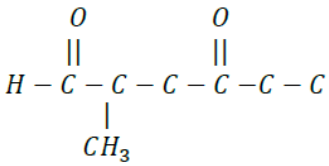
Q.52 Sol. (1)

$$\begin{array}{l} C-C=C-C \\ | \\ Ph \end{array}$$

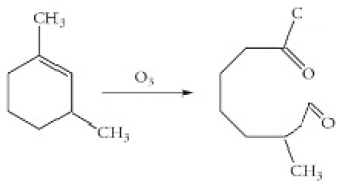
Both the side chains of $C=C$ are different so it will shout geometrical isomerism.

Q.53 Sol. (2)

We have to forms $5-\text{keto}-2\,\text{methyle}$



Near out of the options it use check herand

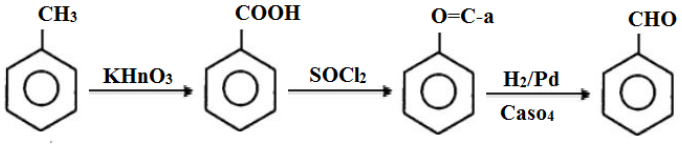


$\Rightarrow (2)$ is correct answer

Q.54 Sol. (4)

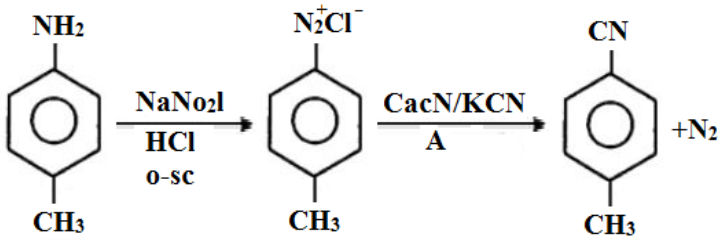
Swarts Reaction includes fluorination by AgF, Hg_2F_2, CoF_2 & SbF_3

Q.55 Sol. (4)



So C_6M_5Cho is answer

Q.56 Sol. (3)



Q.57 Sol. (2)

Glyptal is used in manufacture of paints & lacquers.

Q.58 Sol. (1)

Fat Soluble Vitamins $\rightarrow$ VitA, D, C & K

Water Soluble vitamins $\rightarrow$ Vit C

Q.59 Sol. (3)

Phenelgine is tranquilizer others are antacid.

Q.60 Sol. (1)

$Zn_2\left[Fe(CN)_6\right]$ is not yellow

All others are yellow in color.