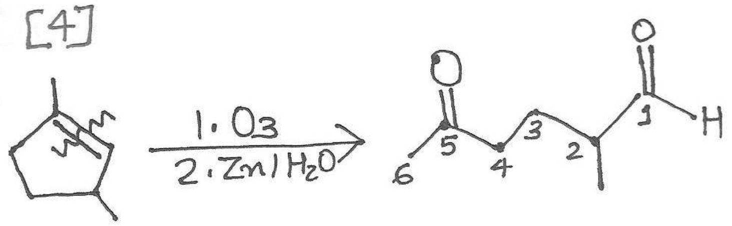
JEE (MAIN) SOLUTIONS – 2015 CODE 'D'
CHEMISTRY

61. [4]



62. [3]

B, C → Water Soluble

A, D, E, K → Fat Soluble.

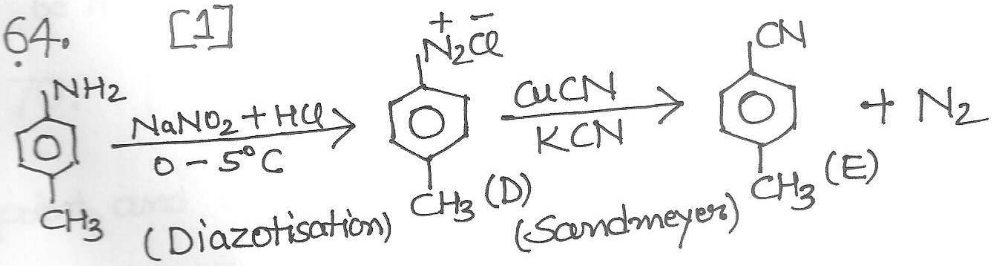
63. [4]

$BeSO_4 \longrightarrow Be^{++} + SO_4^{--}$

Be^{++} ↓ Small size; SO_4^{--} ↓ Large size.

$\therefore \Delta_{lattice}H^{\ominus} < \Delta_{hyd}H^{\ominus}$.

64. [1]



65. [3]

For bcc type lattice $4r = \sqrt{3}\,a$

$r = \frac{1.73 \times 4.29}{4}$

$r = 1.86\,\mathring{A}$

66. [3] 001

$(NH_4)_3[As(Mo_3O_{10})_4] \rightarrow$ Yellow

$BaCrO_4 \rightarrow$ Yellow

$K_3[Co(NO_2)_6] \rightarrow$ Yellow

$Zn_2[Fe(CN)_6] \rightarrow$ Bluish white.

67. [1] $E_n = \frac{-13.6}{n^2}$ eV

For $n = 2 \Rightarrow E_2 = -3.4$ eV.

68. [1]

Ramitidine, Aluminium hydroxide and Cimetidine are <u>Antacids</u> while Phenelzine is an <u>Anti-Depressant</u>.

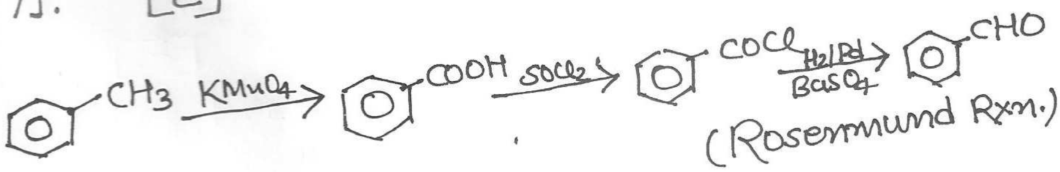
69. [1] $N^{---} > O^{--} > F^{-}$

"Higher is the charge on anion, larger will be its size."

70. [2].

Na_3AlF_6 and CaF_2 lowers the melting point and brings Electrical Conductivity.

71. [2]



(Rosenmund Rxn.)

72. [3]

Simultaneous collision among molecules is must for chemical change.

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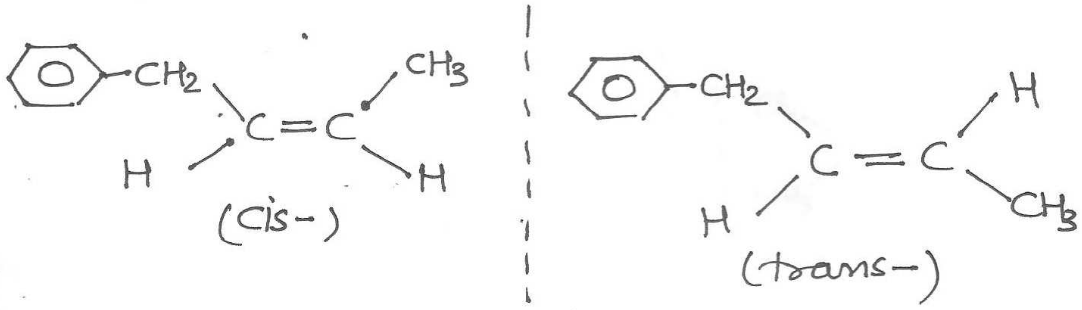
73. [3]



74. [4].

$TiCl_3 \rightarrow$ Condensation Polymerization.

$PdCl_2 \rightarrow$ Wacker Process ($CH_2{=}CH_2 \rightarrow CH_3CHO$)

$CuCl_2 \rightarrow$ Deacon Process (Production of Cl_2)

$V_2O_5 \rightarrow$ Contact Process (Production of H_2SO_4)

75. [4]

For stationary polar molecules $\propto \frac{1}{r^3}$

For rotating polar molecules $\propto \frac{1}{r^6}$.

76. [2].

$2C_8H_7SO_3Na + Ca^{++} \rightarrow Ca(C_8H_7SO_3)_2 + 2Na^+$

2×206 gm $\sim$ 1 mol Ca^{++}

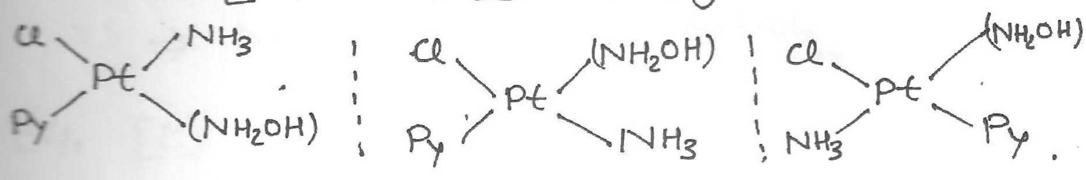
1 " $\sim \frac{1}{412}$ mol per gram.

77. [4] $Cu^{++} + 2e^- \rightarrow Cu(s)$. 003

2F Electricity $\Rightarrow$ 1 mol Cu $\Rightarrow$ 63.5 gm.

78. [4].

[MABXY] type ⇒ 3 geometrical isomers.



79. [3].

$$Br\% = \frac{80}{188} \times \frac{141}{250} \times 100 \sim 24\%.$$

80. [1].

L → M charge transfer transition.
(Ligand) (Metal).

81. [2]. $R-X \xrightarrow[\text{Fluoride}]{\text{Metal}} R-F$ (Halogen Exchange

82. [3].

For acetic acid n-factor = 1.

∴ Amount adsorbed

$= .06 \times 50 \times 10^{-3} \times 60$

$\quad - .042 \times 50 \times 10^{-3} \times 60$

$= 54 \times 10^{-3}$ gm $= 54$ mg.

∴ Amount adsorbed per gm.

$= \frac{54}{3} = 18$ mg.

83. [4].

$$\frac{P^0 - P}{P^0} = \frac{W_2 \times MM_1}{MM_2 \times W_1}$$

004

$$\frac{185-183}{183} = \frac{1.2 \times 58}{100 \times MM_2}$$

$$\Rightarrow MM_2 = 63.68 \simeq \underline{64.00\ gm\ mol^{-1}}$$

84. [2].

ICl is an interhalogen compound which is more reactive due to larger I–Cl bond length.

85. [4].

$$\Delta G^\circ = -RT \ln K_c$$

$$\ln K_c = \frac{\Delta G^\circ}{-RT} = \frac{-2494.2}{8.314 \times 300} = -1$$

$$K_c = e^{-1} = \frac{1}{e} = \frac{1}{2.718} = 0.36$$

$$Q_c = \frac{[B][C]}{[A]^2} = \frac{2 \times \frac{1}{2}}{(\frac{1}{2})^2} = 4$$

$\therefore Q_c > K_c \Rightarrow$ Reverse Direction.

86. [4]. Nitrogen ($N \equiv N$) is having very high $\Delta_{bond} H^\ominus$, so unreactive at room temperature.

87. [2].

↓ the Group, Molar mass ↑, so the Vander walls forces ↑ ⇒ Boiling Point ↑.

88. [4].   005

Glyptal → Manufacturing of paints/lacquers.

89. [2].

$\Delta G^\circ_{Reaction} = 2\Delta_f G^\circ(NO_2) - 2\Delta_f G^\ominus(NO) - \Delta_f G^\ominus(O_2)$

At equilibrium $\Delta G = 0$

$\therefore \Delta G^\circ = -RT \log_e K_c$.

Also $\Delta_{for} G^\ominus(O_2) = 0$

$\therefore \Delta_{for} G^\ominus(NO_2)$

$= \frac{1}{2}[2 \times 86,600 - R(298)\log_e(1.6 \times 10^{12})]$

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

90. [3].

H_2O_2 acts as an Oxidising as well as Reducing agent in both Acidic and Alkaline mediums.

DEEPAK PATHAK
"CHEMISTRY SOLUTIONS".
04th April 2015

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