Paper-3

1] (i) c)
(ii) a
(iii) d
(iv) c

2] (i) A
(ii) C
(iii) A
(iv) D → 1st Question

3] c) → 1st Question

4] c) → 1st Question

5] b)

6] a)

7] c) → 2nd Question

8] b)

9] b) → 1st Question

10] b)

11] b)

12] c

13] a

14] ~~d~~ a

14] d → 1st Question

15] d

31] $a^3 = \frac{M \times Z}{d \times N \times (10^{-30})}$

$a^3 = \frac{93 \times 2}{8.55 \times 6.022 \times 10^{22} \times 10^{-30}}$

93
2
186

$a^3 = \frac{186 \times 10^7}{8.55 \times 6.022}$

$a^3 = 3.61 \times 10^7$

$= 36100000$

$a = 330.4 \text{ pm}$

$r = \frac{\sqrt{3}a}{4}$

$= 0.433 \times 330.4$

$= 143.1$

41] 2 Applications

-> To calculate limiting molar conductivity for any electrolyte

-> Dissociation constant

(ii) $l = 50\,cm$

Elec resistance = ~~0.05 mol/L~~ 5.55×10^3 ohm

$r = \frac{0.1}{2}$ cm

0.05 mol/L

$A = \pi r^2$

$= 3.14 \times 0.5 \times 0.5$

$= 0.785\,cm^2$

Resistivity

$R = \frac{\rho l}{A}$

$\rho = \frac{A \cdot R}{l}$

$= \frac{5.55 \times 10^3 \times 0.785}{50}$

$= 87.135$ ohm cm

$K = 1/\rho = \frac{1}{87.135}$

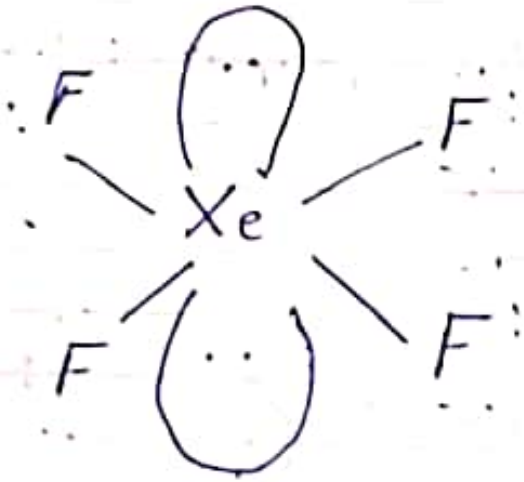
$= 0.01148$ S/cm

$\Lambda m = K \times \frac{1000}{C}$

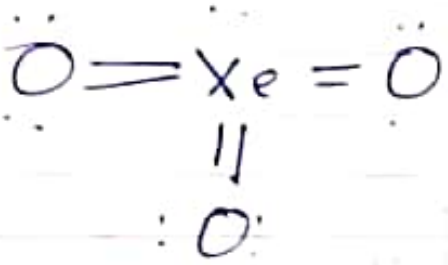
$= 0.01148 \times \frac{1000}{0.05} = 229.6$ ~~S cm²~~

32] (i) Structures

XeF_4



XeO_3



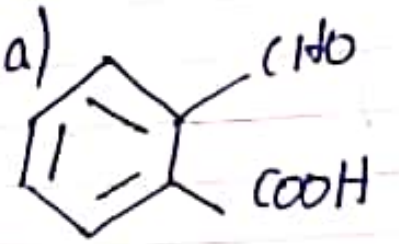
(ii) a) $Ba(N_3)_2 \xrightarrow{\text{Heat}} Ba + 3N_2$

b) $8NH_3$ (excess) $+ 3Cl_2 \Rightarrow 6NH_4Cl + N_2$

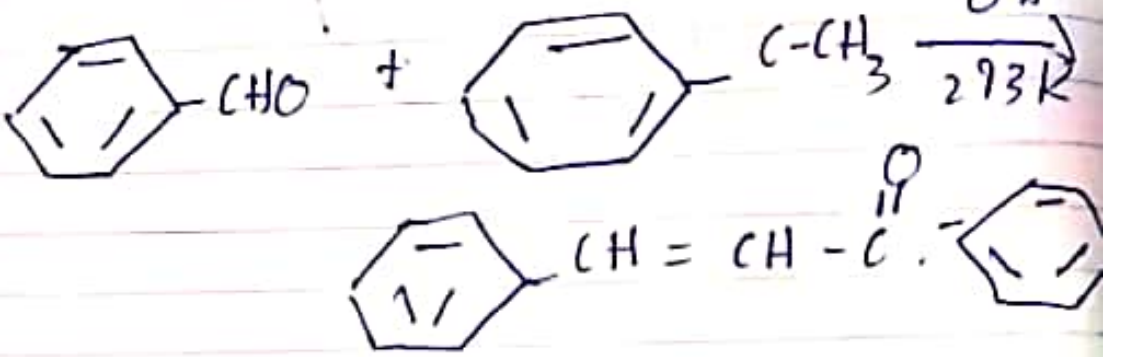
c) $4Zn + 10HNO_3$ (dil) $\Rightarrow 4Zn(NO_3)_2 + 5H_2O + N_2O$

33] Question -2

(ii) a)



b)



(iii) Rosenmund reaction

$$C_6H_5COCl \xrightarrow[BaSO_4]{H_2/Pd} C_6H_5CHO$$

17] (i) SO_2 decolourises Potassium permanganate solution

(ii) The reaction that takes place is

$$Fe + 2HCl \Rightarrow FeCl_2 + H_2$$

↳ Liberation of H_2 prevents formation of ferric chloride

18] (i) First order

(ii) $K = \frac{0.693}{t_{1/2}}$

(iii) s^{-1}

(iv) $-K$

19] $m = K_H \times p$

$p = 1$

$m = 6.56 \times 10^{-2}$

$6.56 \times 10^{-2} = K_H \times 1$

$\therefore \boxed{K_H = 6.56 \times 10^{-2}}$

Now $5.00 \times 10^{-2} = 6.56 \times 10^{-2} \times p$

$p = \frac{5.00 \times 10^{-2}}{6.56 \times 10^{-2}}$

$= 0.762$ bar

656 × 7 = 4592

656 × 6 = 3936

656) 5000 (0.762
4592
4080
3936
1440

20] (iii) Half life:-

22] (i) Zn oxide exhibits enhanced electrical conductivity on heating because:
Zn^{2+} ions are entrapped in interstitial sites while electrons in the neighbouring interstitial sites, e^- enhance the electrical conductivity

(ii)

B

23] (i) $[Cr(H_2O)_5Cl]Cl_2 \cdot H_2O$

(ii) pentaaquachloridochromium (III) chloridemonohydrate.

24] (i) 1-chloro-4-(2-Methylpropyl) benze

(ii) 4-Bromo-3-Methylpent-2-ene.

25] A) Neopentane

B) 1) Retention
2) Inversion

~~28~~

30] (i) This is because copper shows positive E° values

(ii) ~~[illegible]~~

$n = 5$

Magnetic moment –

$$\sqrt{n(n+2)}$$

$$= \sqrt{5(5+2)}$$

$$= \sqrt{35}$$

$$= 5.92 \text{ BM}$$

5 | 35
25

(iii) Mn^{2+} has $[Ar]\ 3d^5$ conf. ~~4s~~ is more stable as

28]

29] 2nd Question

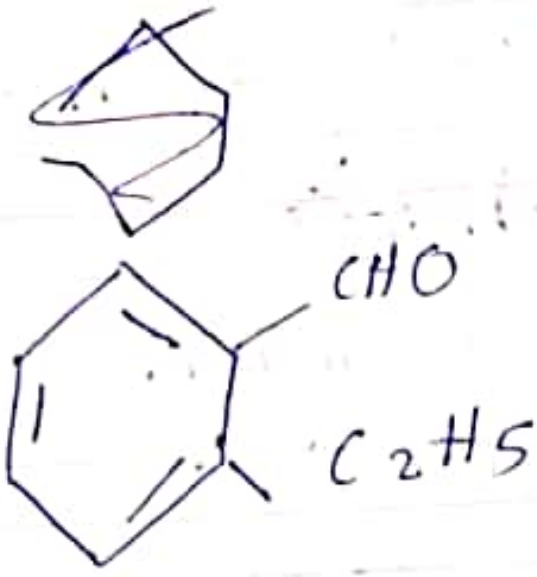
(i) Methyl amine being more basic than water, it accepts a proton from water liberating OH^- ions.

(ii) A – CH_3COOH

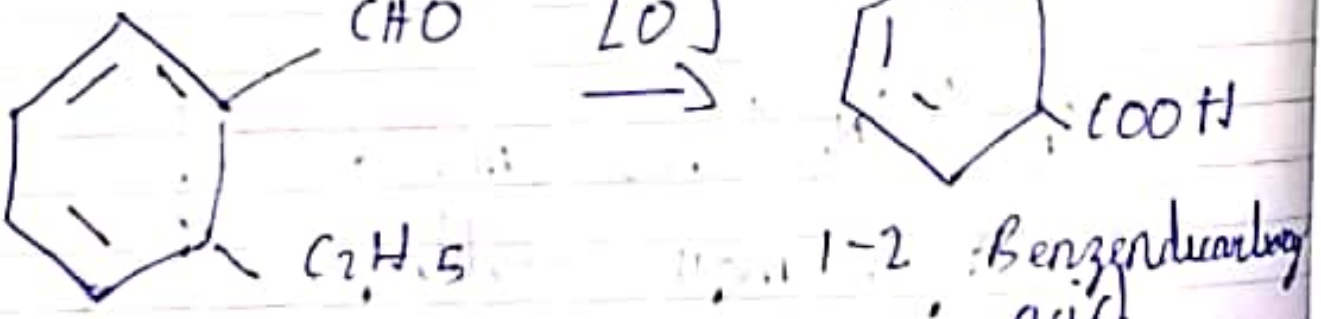
B – CH_3CONH_2

(iii) $(C_2H_5)_2NH$, $(C_2H_5)_3N$, $C_2H_5NH_2$, NH_3

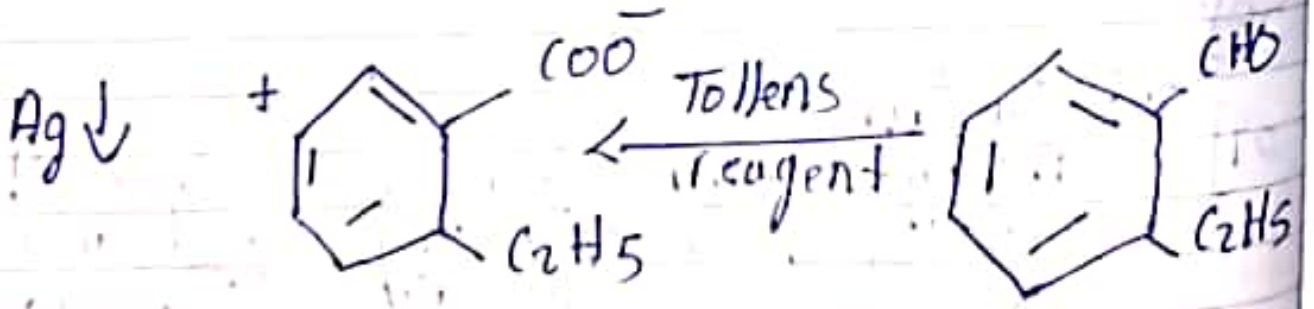
27] 2 - Ethylbenzaldehyde



Reactions :-



1-2 Benzenedicarboxylic acid



2. Ethylbenzaldehyde

28] (ii) Chlorine water produces nascent oxygen which is responsible for bleaching action and oxidation

(i) —

(iii) On going down the group size of element increases length of E-H bond increases strength decreases and E-H bond break easily to evolve H_2 gas.