Practice Paper No 1

Q1. Give I.U.P.A..C Name of the following Organic Compound. 1

$CH_3NH\ CH\ (CH_3)_2$

Q2. What are the Physical States of Dispersed Phase and Dispersion Medium of Forth? 1

Q3. Write the balanced Chemical Equation for the reaction of Chlorine with hot and concentrated Caustic Soda? 1

Q4. Write the Structure of 2 Methyl butane – 2 ol 1

Q5. What is the formula of a crystalline Compound in which atoms A are present at all the eight corners and atom B at the centre of all side faces? 1

Q6. What is the Vant' Hoff factor of Compound $K_4(Fe(CN)_6)$ which undergoes 50% dissociation? 1

Q7. What is Copper Matte? 1

Q8. Predict the shape of BrF_3 on the basis of VSEPR Theory. 1

Q9. How many ml of 0.1 M HCL are required to react completely with one gram mixture of Na2CO3 and NaHCO3 Containing Equimolar amounts of both ? 2

Q10 The Half life for radioactive decay of C-14 is 5730 years. An archaeological artifact containing wood had only 80% of the C-14 found in a living tree. Estimate the age of the sample. 2

Q11. At a site low grades copper ores are available and Zinc and iron scraps are also available. Which of the two scraps would be more suitable for reducing the leached copper ore and why? 2

Q12. Name the Two components of starch? How do they differ from each other structurally? 2

Q13 (a) what changes Occur in the nature of egg proteins on boiling? 2

(b) Name the Type of Bonding, which stabilizes α-helix structure proteins.

Q14. Describe the mechanism of the formation of Diethyl ether from ethanol in the presence of concentrated sulphuric Acid. 2

Q15. Write the following name reaction. 2

(a) Cannizzaro reaction

(b) H.V.Z reaction

Q16. Give Chemical tests to distinguish between Compounds in each of the following pairs

(1) Ethyl amime and aniline 1

(2) Pentan-2- one and Pentan –3-one 1

Q17 Give reason for following 2

(1) Why is ortho nitro Phenol more acidic than ortho methoxy Phenol

(2) There are two $–NH_2$ group in semi Carbazide . However only one is involved in the Formation of semi Carbazones

OR

Account for the following.

(1) Aniline does not undergo Friedal –crafts reaction.

(2) Although amino group is Ortho and Para directing in aromatic electrophilic substitution reaction aniline on nitration gives a substantial amount of m- nitroaniline

Q18 . Give reasons for the following 2

(3) At higher altitudes people suffer from a disease called anoxia. In this disease they become weak and cannot think clearly.

(4) When mercuric iodide is added to an aqueous solution of KI, the freezing point is raised.

Q19 Niobium crystallizes in body centred cubic structure. If density is 8.55 gm/cm3

Calculate atomic radius of niobium using its atomic mass 93μ. 3

Q20 Write names of monomers of the following Polymers and classify them as addition or Condensation Polymers. 3

(1) Nylon 6,6 (2) Teflon (3) bakelite

Q21 Explain on the basis of Valence bond theory that $[Ni(CN)_4]^{-2}$ ion with square planar structure is dimagnetic and the $[NiCl_4]^{-2}$ ion with tetrahedral geometry is paramagnetic. 3

Q22 Explain the following observation 3

(a) An electrolyte NaCl is added to hydrated ferric oxide solution.

(b) Electric current is passed through a collidal sol.

(c) Physical adsorption is multilayered while chemisorption is monolayered.

Q23 Account for the following 3

(a) Are all the five bonds in Pcl_5 molecule equivalent? Justify your answer.

(b) H_3PO_3 is diprotic?

(c) On addition of Ozone gas to KI solution violet vapours are obtained.

Q 24 the following results have been obtained during the Kinetic studies of the reaction. 3

$$2A + B \longrightarrow C + D$$

Experiment	[A] mole/lit	[B] Mole/Lit	Initial rate of formation
I	0.1	0.1	6×10^{-3}
II	0.3	0.2	7.2×10^{-2}
III	0.3	0.4	2.88×10^{-1}
IV	0.4	0.1	2.40×10^{-2}

Determine the rate law and rate constant for the reaction.

Q 25 3

(1) Haloalkanes react with KCN to give alkyl cyanide as main product while with AgCN they form Isocyanide as main product give reason.

(2) P-Dichloro benzene has higher m. p. and solubility than those of ortho and meta Isomers.

(3) Allyl chloride is more reactive than n- Propyl chloride towards nucleophilic substitution reaction. Explain why?

Q26 Give reasons for the following. 3

(1) ICl is more reactive than I_2.

(2) Why does NO_2 dimerise?

(3) H_2S is less acidic than H_2 Te why?

OR

(1) Which form of sulphur shows paramagnetic behaviour?

(2) Halogens have maximum negative electron gain Enthalpy in the respective periods of the periodic table. Why?

(3) Noble gases have very low boiling points. Why?

Q 27 Account for the following. 3

(1) Detergents are non-biodegradable while soaps are biodegradable.

(2) Aspirin drug helps in the prevention of heart attack.

(3) Diabetic patients are advised to take artificial sweeteners instead of natural sweeteners.

Q 28 5

(1) An organic compound 'A' with molecular formula $C_5H_8O_2$ is reduced to n-pentane on treatment with Zn-Hg/HCl/. 'A' forms adioxime with hydroxylamine and gives a positive iodo form test and Tollen's Test. Identify the compound 'A' and deduce its structure.

(2) Write the chemical equations for the following conversions.

a. Ethyl benzene to benzene.

b. Acetaldehyde to butane –1, 3 diol.

c. Acetone to Propene.

OR

(1) An organic compound A with molecular formula C_8 H_8 O gives positive DNP and iodoform tests .It does not reduce Tollen's or Fehling's reagent and does not decolourise bromine water also. On oxidation with chromic acid (H_2Cr0_4), it gives a carboxylic acid B With molecular formula $C_7H_6O_2$. Deduce the structure of A and B.

(2) Complete the following reaction by identifying A ,B and C

(i) $A + H_2\,(g) \xrightarrow{Pd/BaSO_4} (CH_3)_2\,CH - CHO$

(ii) $CH3 - \underset{\underset{CH_3}{|}}{\overset{CH_3}{|}}{C} + \underset{\underset{O}{||}}{C} - CH_3 + NaOI \longrightarrow B + C$

Q 29 5

(1) Calculate the equilibrium constant for the reaction

$Cd^{+2}\,(aq) + Zn(S) \longrightarrow Zn^{+2}(aq) + cd(s)$

If $E^0\ cd^{+2}/cd = -0.403$ v, $E^0\ Zn^{+2}/Zn = -0.763$ V

(2) When a current of 0.75 A is passed through a $CuSo_4$ Solution for 25 min, 0.369 gm of copper is deposited at the cathode. Calculate the atomic mass of copper.

(3) Tarnished silver contains Ag_2S. Can this tarnish be removed by placing tarnished silver ware in aluminum pan containing an inert electrolytic solution such as NaCl. The standard electrode potential for half reaction:

$Ag_2S(S) + 2e^- \longrightarrow 2\ Ag(S) + S^{-2}$ is –0.71 V and for

$Al^{+3} + 3e^- \longrightarrow Al(S)$ is –1.66 V

OR

(1) Calculate the standered free energy change for the following reaction at 25^0 C.

$Au(S) + Ca^{+2}\ (aq./M) \longrightarrow Au^{+3}\ (aq/H) + Ca(S)$

$E0\ Au^{+3} \mid Au = +1.50$ V

$E0\ Ca^{+2} \mid Ca = -2.87$ V

Predict whether the reaction will be spontaneous or not at 25^0C. Which of the above two half cells will act as an oxidizing agent and which one will be a reducing agent?

(2) The conductivity of 0.001M acetic acid is 4×10^{-5} s/cm. Calculate the dissociation constant of acetic acid if $\Lambda^0 m$ for acetic acid is 390.5 S cm^2/mole.

Q 30 5

1. A blackish brown coloured solid 'A' when fused with alkali metal hydroxide in presence of air, produces a dark green coloured compound 'B' which on electrolytic oxidation in alkaline medium gives a dark purple coloured compound 'C'. Identify 'A', 'B' and 'C' and the reaction involved.
2. What happen when an acidic solution of the green compound B is allowed to stand for some time? Give the equation involved. What is this type of reaction called?

OR

Give reason for the following.

1. Transition metals have high enthalpies of atomization.
2. Among the lanthanides ce(III) is easily oxidized to ce(IV).
3. Fe^{+3}/Fe^{+2} redox couple has less positive electrode potential than Mn^{+3}/Mn^{+2} couple.
4. Copper (I) has d^{10} configuration while copper (II) has d^9 configuration, still copper II us more stable in aqueous. Solution than copper (I)
5. The second and third transition series elements have almost similar atomic radii.