

FIRST REVISION EXAMINATION, JANUARY - 2024

Time Allowed : 3.00 Hours

CHEMISTRY

[Max. Marks : 70]

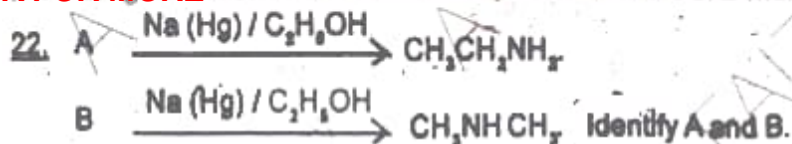
PART - A

- I. Choose the correct answer. 15x1=15**
- Zinc is obtained from ZnO by
 - Carbon reduction
 - Reduction using silver
 - Electrochemical process
 - Acid leaching
 - Duralumin is an alloy of
 - Cu, Mn
 - Cu, Al, Mg
 - Al, Mn
 - Al, Cu, Mn, Mg
 - In acid medium, potassium permanganate oxidizes oxalic acid to
 - Oxalate
 - Carbon dioxide
 - Acetate
 - Acetic acid
 - In which of the following coordination entities the magnitude of Δ_o will be maximum?
 - $[\text{Co}(\text{CN})_6]^{3-}$
 - $[\text{Co}(\text{C}_2\text{O}_4)_3]^{3-}$
 - $[\text{Co}(\text{H}_2\text{O})_6]^{3+}$
 - $[\text{Co}(\text{NH}_3)_6]^{3+}$
 - Assertion:** Pure iron when heated in dry air is converted with a layer of rust.
Reason : Rust has the composition Fe_3O_4 .
 - If both assertion and reason are true and reason is the correct explanation of assertion.
 - If both assertion and reason are true but reason is not the correct explanation of assertion.
 - Assertion is true but reason is false
 - Both assertion and reason are false.
 - If X is the amount of adsorbate and m is the amount of adsorbent, which of the following relations is not related to adsorption process?
 - $\frac{x}{m} = f(P)$ at constant T
 - $\frac{x}{m} = f(T)$ at constant P
 - $P = f(T)$ at constant $\frac{x}{m}$
 - $\frac{x}{m} = PT$
 - Which one of the following will react with phenol to give salicylaldehyde after hydrolysis
 - Dichloro methane
 - Trichloro ethane
 - Trichloro methane
 - Co_2
 - Which one of the following is most basic?
 - 2,4 - dichloro aniline
 - 2,4 - dimethyl aniline
 - 2,4 - dinitro aniline
 - 2,4 - dibromo aniline
 - Which of the following vitamins is water soluble?
 - Vitamin E
 - Vitamin K
 - Vitamin A
 - Vitamin B
 - Which of the following is a co-polymer?
 - Orlon
 - PVC
 - Teflon
 - PHBV
 - The bond angle in Ammonia is
 - 104°
 - $104^\circ 28'$
 - 107°
 - 180°
 - RBC is composed of
 - Mg^{2+}
 - Fe^{2+}
 - Fe^{3+}
 - Co^{2+}
 - Ohm's law
 - $I = VR$
 - $I = R/V$
 - $I = V/R$
 - $V = I/R$
 - Conversion of a colloid into a precipitate is known as
 - Peptisation
 - Dialysis
 - Coagulation
 - Electrophoresis
 - The test used to identify a secondary amine is
 - Iodoform test
 - Silver mirror test
 - Libermann's nitroso test
 - Carbylamine test

PART - B

- II. Answer any six questions. Question No. 24 is compulsory. 6x2=12**
- Explain Acid leaching with an example.
 - What is the hybridisation of Iodine in IF_7 ? Give its structure.
 - Give one test to differentiate $[\text{Co}(\text{NH}_3)_5\text{Cl}]\text{SO}_4$ and $[\text{Co}(\text{NH}_3)_6]\text{SO}_4\text{Cl}$.
 - Explain the effect of catalyst on reaction rate.
 - What is corrosion?

Structure and IUPAC name of metamers of 2-methoxy propane.



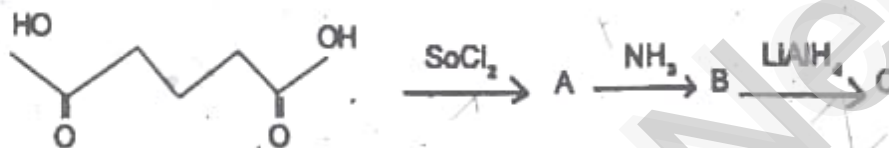
23. How do antiseptics differ from disinfectants?
 24. Write the expression for the solubility product of $\text{Ca}_3(\text{PO}_4)_2$.

PART - C

III Answer any six questions. Question No. 33 is compulsory.

6x3=18

25. How is inorganic benzene prepared?
 26. Write a note on Zeigler - Natta catalyst. Give its uses.
 27. Based on VB theory explain why $[\text{Cr}(\text{NH}_3)_6]^{3+}$ is paramagnetic. While $[\text{Ni}(\text{CN})_4]^{2-}$ is diamagnetic.
 28. Distinguish between tetrahedral and octahedral voids.
 29. Derive an expression for Henderson - Hasselbalch equation.
 30. Differentiate between chemisorption and physisorption.
 31. Explain the mechanism of Cannizzaro reaction
 32. Explain the structure of starch.
 33. Identify A, B and C



PART - D

IV Answer all the questions.

5x5=25

34. (a) i) Explain the magnetic separation process. (2)
 ii) Write a note on Zeolites. (3) (OR)
 (b) i) Give the balanced equation for the reaction between chlorine with Cold and hot NaOH. (2)
 ii) What is aquaregia. Give its uses? (3)
 35. (a) (i) Write the chromyl chloride test? (2)
 (ii) Explain the assumptions of crystal field theory? (3) (OR)
 (b) i) ZnO turns yellow on heating. Why? (2)
 ii) Explain briefly collision theory of bimolecular reactions. (3)
 36. (a) (i) Calculate the PH of 0.1 M CH_3COOH solution. Dissociation constant of acetic acid is 1.8×10^{-4} . (2)
 (ii) Mention the rules followed to write Galvanic cell notation. (3) (OR)
 (b) i) Mention the various methods of coagulation. (2)
 ii) Describe adsorption theory of catalysis? (3)
 37. (a) (i) How will you prepare the following compound from ethylene glycol?
 a) Oxirane b) CH_3CHO c) 1,4 - dioxane. (3)
 (ii) Formic acid reduces Tollen's reagent whereas acetic acid does not reduce. Give reason? (2) (OR)
 (b) i) Give any three differences between DNA and RNA. (3)
 ii) How is Neoprene prepared? Mention its use. (2)
 38. (a) i) A first order reaction is 40% complete in 50 minutes. Calculate the value of the rate constant. In what time will the reaction be 80% complete.
 ii) Identify A and B in the following sequence of reactions.



(OR)

- (b) A Compound (A) of molecular formula $\text{C}_5\text{H}_9\text{N}$ on reduction with $\text{Na (Hg)/C}_2\text{H}_5\text{OH}$ gives (B) of molecular formula $\text{C}_5\text{H}_9\text{N}$ which undergoes carbylamine test. Compound (B) on reduction with nitrous acid gives compound (C) of molecular formula $\text{C}_5\text{H}_8\text{O}$ by liberating nitrogen. Identify (A), (B) and (C) and write the reaction involved.