

Class – XII
Subject – Chemistry

GENERAL INSTRUCTIONS:

* Answer all the questions:

* Questions 1 to 8 carry one mark each. Answer them in one word or a sentence.* Questions 9 to 18 carry 2 marks each. Answer them in 20 to 30 words.* Questions 19 to 27 carry 3 marks each. Answer them in 40 to 50 words.* Questions 28 to 30 carry 5 marks each. Answer them in 70 words.* There is no overall choice. However there is internal choice in one question each of two mark and three marks questions. All 5 marks questions have internal choice.* Calculator or any other electronic items are not allowed. However logarithm book may be used for calculations.

- 1) What happens when CdCl_2 is added to AgCl ? (1)
- 2) What is meant by elementary reaction? (1)
- 3) Why is chemisorption referred to as activated adsorption? (1)
- 4) Write the role played by pine oil & cresol in froth floatation? (1)
- 5) Give the evidence to prove that $[\text{Co}(\text{NH}_3)_5\text{Cl}]\text{SO}_4$ and $[\text{Co}(\text{NH}_3)_5\text{SO}_4]\text{Cl}$ are ionization isomers. (1)
- 6) Write the structure of 4-Chloro-2,3 dimethylpentan-1-ol. (1)
- 7) For the conversion of a carboxylic acid to acid chloride, SOCl_2 is the reagent preferred over other reagents. Why? (1)
- 8) Why is vitamin C not stored in our body? (1)
- 9) Why should a solution of a non volatile solute boil at a high temperature? Draw the diagram to prove your answer. (2)
- 10) The conversion of A to B follows second order kinetics. If the concentration of A is increased to three times, how will it affect the rate of formation of B? (2)
- 11) Explain the role of catalyst in a reaction diagrammatically. (2)
- 12) Explain Hell-Heroult process in the extraction of metals briefly. (2)
- 13) Why is +2 oxidation number of Mn ($Z=25$) is more stable than its +3 oxidation number while the same is not true for Iron ($Z=26$). (2)
- 14) Write the IUPAC name of $[\text{Cr}(\text{en})_2(\text{ONO})\text{Cl}]\text{Cl}$. Mention the hybridization & magnetic character of this complex compound. (2)
- 15) Explain briefly
 - a) Aryl halides are less reactive than alkyl halides towards nucleophilic substitution reaction..
 - b) S_N^2 reaction proceed with complete inversion of configuration. (2)

(or)

 - a) Allylic halides show high reactivity towards $\text{S}_\text{N}1$ reaction
 - b) Dehydro bromination of 2-bromo pentane gives 2-butene as major product. (2)
- 16) What do you mean by ambident nucleophile? Explain this with the help of a chemical reaction taking a suitable example. (2)
- 17) The basic character of amines in the vapour phase decreases in the order $(\text{CH}_3)_3\text{N} > (\text{CH}_3)_2\text{NH} > (\text{CH}_3)\text{NH}_2 > \text{NH}_3$ while in the aqueous solution the order is $(\text{CH}_3)_2\text{NH} > (\text{CH}_3)\text{NH}_2 > (\text{CH}_3)_3\text{N} > \text{NH}_3$. Explain. (2)
- 18) Explain diazotization reaction. Write the route of getting Bromobenzene from benzene diazonium chloride. (2)
- 19) From the following data, find the type of cubic lattice formed by the iron atoms in its crystal (edge length = 286 pm, density = 7.86 g/cc, atomic mass = 56 g/mol). (3)

- 20) In a binary solution ,A-B interaction is stronger than A-A interaction or B-B interaction.
 a)What type of deviation is shown by this solution?
 b) Draw a suitable graph for this .
 C) Give an example for this type of solution. (3)
- 21) Explain
 a) Physisorption decreases with increase in temperature.
 b) Peptisation
 c) Colloid is not a substance but a state of substance .(3)
 (or)
 Explain the following terms. a)Tyndall effect b) Coagulating value c) CMC (3)
- 22) Write the balanced chemical equation for the following:
 a) Copper reacts with dil Nitric acid.
 b) Thermal decomposition of Sodiumazide.
 c) Calcium phosphide reacts with water. (3)
- 23) Explain giving reasons:
 a) Transition metals and their compounds are paramagnetic in nature.
 b) The enthalpies of atomization of Transition metals are high.
 c) The Transition metals show greater tendency to form complexes. (3)
- 24) Write the chemical reactions for the following name reactions:
 a)Lucas test b)Williamson’s synthesis c)Kolbe’s reaction (3)
- 25) Show by reactions ,how the reaction of glucose with HI ,Hydroxylamine and acetic anhydride help to elucidate the structure of glucose. (3)
- 26) How are the following polymers manufactured?
 a) PVC b)Nylon6,6 c)Buna- S (3)
- 27) a)Write the disadvantage of detergents.
 b)Why do we require artificial sweetening agents?
 c) What type of drug is equanil? (1+1+1)
- 28) a)Iron does not rust even if the zinc coating is broken in a galvanized iron pipe but rusting occurs much faster if the tin coating is broken.Explain.
 $(E^0 \text{Zn}^{2+}/\text{Zn} = -0.76\text{V} ; E_0 \text{Sn}^{2+}/\text{Sn} = -0.14\text{V})$
 b)Represent the cell in which the following reaction takes place:
 $\text{Mg (s)} + 2\text{Ag}^+_{(0.0001\text{M})} \rightarrow \text{Mg}^{2+}_{(0.130\text{M})} + 2\text{Ag (s)}$.
 Calculate $E_{(\text{cell})}$ if $E^0_{(\text{cell})} = 3.17\text{V}$ (2+3)
 (or)
 a) Explain rusting in the light of electrochemistry.
 b) The standard electrode potential of Daniel cell is 1.1V. Calculate ΔG^0 for this cell. Comment on the value of its equilibrium constant. (2+3)
- 29) a)Explain
 i) SF_6 is not easily hydrolysed whereas SF_4 is readily hydrolysed.
 ii) Flourine is stronger oxidizing agent than Chlorine.
 iii) Solid PCl_5 some times exhibits ionic character.
 b) Draw the structures of H_3PO_3 and BrF_3 . (3+2)
 (or)
 a) Explain i)Ammonia is soluble in water while Phosphine is not soluble in water.
 ii) All the noble gasses are monoatomic in nature.

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- iii) Bond enthalpy of F_2 is less than that of Cl_2 .
 - b) Draw the structure of H_2SO_4 and Chloric acid. (3+2)
 - a) Write the chemical reactions to effect the following conversions:
 - i) Butan-1-ol to Butanoic acid
 - ii) Benzoyl chloride to Benzaldehyde
 - iii) Ethanoic acid to propanone
 - b) How are the following pairs of compounds distinguished:
 - i) Phenol & benzoic acid ii) Pentan-2-one & Pentan-3-one. (3+2)(or)
 - a) Write the chemical equation for the following:
 - i) Esterification ii) Aldol condensation iii) HVZ reaction
 - b) Explain
 - i) Aldehydes are more reactive than ketones in nucleophilic addition reaction.
 - ii) Propanal is higher boiling than propanone. (3+2)

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