Sample Paper – 2013
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 $[Co(NH_3)_5Cl]SO_4$ and $[Co(NH_3)_5 SO_4]Cl$ 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 diagramatically. (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 $[Cr(en)_2(ONO)Cl]Cl$.Mention the hybridization & magnetic character of this complex compound. (2)

15) Explain briefly

a) Aryl halides are less reactive than alkyl halides towards nucleophillic substitution reaction..

b) S_N^2 reaction proceed with complete inversion of configuration. (2)

(or)

Explain a) Allylic halides show high reactivity towards SN_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 $(CH_3)_3N$ ›$(CH_3)_2NH$ › $(CH_3)NH_2$› NH_3 while in the aqueous solution the order is $(CH_3)_2NH$ ›$(CH_3)NH_2$ › $(CH_3)_3N$ › 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 = 286pm ,density = 7.86g/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^0Zn^{2+}/Zn = -0.76V ; $E_0\ Sn^{2+}/Sn$ = -0.14V)

b)Represent the cell in which the following reaction takes place:

$Mg_{(s)} + 2Ag^+_{(0.0001M)} \rightarrow Mg^{2+}_{(0.130M)} + 2Ag_{(s)}$.

Calculate $E_{(cell)}$ if $E^0_{(cell)}$ = 3.17V (2+3)

(or)

a) Explain rusting in the light of electrochemistry.

b) The standard electrode potential of Daniel cell is 1.1V. Calculate $\Delta G^0$for this cell. Comment onthe 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_5some 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.

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)

30 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)