

SAMPLE QUESTION PAPER
CHEMISTRY (043)
CLASS- XII - (2012-13)

Time Allowed : 3 Hrs

Maximum Marks : 70

General Instructions :

1. All questions are compulsory.
2. Question No. 1-8 are very short answer questions and carry 1 mark each.
3. Question No. 9-18 are short answer questions and carry 2 marks each.
4. Question No. 19-27 are also short answer questions and carry 3 marks each.
5. Question No. 28-30 are long answer questions and carry 5 marks each.
6. Use log tables if necessary, use of calculators is not allowed.

1. Give the IUPAC name of the following compound
(CH₃)₃C CH₂ COOH
2. Why does PCl₅ fume in moisture.
3. What happens when D Glucose is treated with HNO₃
4. A hydroxide ion is a weaker base than an alkoxide ion. Justify.
5. Gelatin which is a peptide is added in ice creams. What can be its role.
6. Write the formula for the coordination compound Tetra ammine diaqua cobalt (III) chloride.
7. On passing H₂S through an aqueous solution of SO₂ a yellow turbidity is formed. Why?
8. Why is red phosphorous less reactive than white phosphorus.
9. A reaction is second order with respect to a reactant. How is the rate of the reaction affected if the concentration of the reactant is
 - i) doubled
 - ii) reduced to ½OR,
A first order reaction is 15% complete in 20 minutes. How long it take to be 60% complete.
10. (a) What is the relationship between standard free energy change and equilibrium constant.
(b) The standard emf of the cell
$$\text{Zn(s)} + \text{Cu}^{2+}(\text{aq}) \longrightarrow \text{Zn}^{2+}(\text{aq}) + \text{Cu(s)}$$
 is 1.10v.
Calculate the standard free energy change.
11. Explain how (Pt Cl₂ (NH₃)₂) and (Pt (NH₃)₆] Cl₄ differ in their electrical conductances.
12. Do the following conversions.
 - (i) Benzyl alcohol to 2 phenyl ethanoic Acid
 - (ii) Ethyl Chloride to propanoic Acid
13. Calculate the packing efficiency in bcc structure.
14. Determine the type of cubic lattice to which a given crystal belongs if it has edge length of 290 pm and density is 7.80 g cm⁻³ (molecular mass= 56 g mol⁻¹).
15. How will you distinguish between the following pairs of compounds
 - (i) C₂H₅Br and C₂H₅Cl
 - (ii) Phenol and chlorobenzene
16. Write the following name reaction.
 - (i) Sand mayers reaction
 - (ii) Gabriel's Phthalimide synthesis.

17. The decomposition of NH_3 on platinum surface is zero order reaction. What are the rates of production of N_2 and H_2 if $K = 2.5 \times 10^{-4} \text{ mol}^{-1}\text{LS}^{-1}$
18. Give reasons for the following :-
 (i) Ethylamine is soluble in water whereas. Aniline is insoluble in water.
 (ii) Primary amines have higher boiling points than tertiary amines.
19. Write balanced chemical equations for the following reactions.
 (i) XeF_6 undergoes hydrolysis.
 (ii) Phosphorus is treated with concentrated nitric acid.
 (iii) Orthophosphorous acid is heated.
20. Account for the following
 (i) A delta is formed at the point where the river water enters the sea.
 (ii) Direct current is passed through a colloidal solution.
 (iii) Ferric hydroxide sol is positively charged.
21. **Santosh and his mother went to a shop to purchase a battery for their inverter. Shop keeper showed them two types of batteries one with Cadmium plates and other with lead plates. The battery with cadmium plates was more expensive than the lead battery. Santosh's mother wanted to purchase lead battery as it was cheaper. After reading above passage answer the following questions.**
 (a) **As a students of chemistry, why would you suggest to santosh's mother to buy the expensive cadmium plate battery. Give two reasons.**
 (b) **What are the values associated with the above decision.**
22. (a) Copper can be extracted by hydro metallurgy but not zinc. Explain.
 (b) What is the role of cryolite in the metallurgy of aluminum?
- OR
- (a) What is the role of depressant in froth floatation process.
 (b) Describe a method or refining of nickel.
23. (a) Name one substance which can act as both
 (i) Analgesis and antipyretic
 (ii) Antiseptic and disinfectant
 (b) Write the composition of Dettol.
24. Write the mechanism for preparation of diethyl ether from ethanol.
25. (i) Draw the structure of phosphinic acid (H_3PO_2).
 (ii) Write a chemical reaction for its use as reducing agent.
 (iii) Suggest a quantitative method for estimation of the gas which protect us from UV rays of the sun.
26. (a) Differentiate between Keratin and insulin.
 (ii) Give one example each for essential and non essential amino acids.
 (iii) Give one reaction of D Glucose which can not be explained by its open chain structure.
27. (a) Write the structures of the monomers of Dacron.
 (b) Give one example of a synthetic rubber.
 (c) Arrange the following polymers in the increasing order of tensile strength Nylon 6, Buna – S, Polythene.
28. Account for the following.
 (a) Silver is a transition metal but zinc is not.
 (b) the transition metals form a large number of complex compounds.
 (c) MnO is basic white Mn_2O_7 is acidic in nature.
 (d) Actinides show more number of oxidation states than lanthanides.
 (e) Transition metals have high enthalpies of atomization.

OR

- (I) Write chemical equations for the following reactions.

- (a) Disproportionation of manganese (VI) in acidic solution.
(b) Acidification of potassium chromate solutions.
(c) Oxidation of nitrite ion by MnO_4^- in acidic medium.
- (II) (i) Which is stronger reducing agent Cr^{2+} or Fe^{2+} and why.
(ii) Explain why Cu^+ ion is not stable in aqueous solution.
29. (a) State Henry's law and mention its two applications.
(b) Which of the following has higher boiling point and why.
0.1M NaCl or 0.1 M Glucose
(c) On dissolving 19.5 g of CH_2FCOOH in 500 g of water a depression of 1°C in freezing point of water is observed. Calculate the Vant Hoff factor. Given $K_f = 1.86 \text{ K Kg mol}^{-1}$.

OR

- (a) State Raoult's law for the solutions containing nonvolatile solute. Give its mathematical expression also.
(b) A solution containing 0.5 g of KCl dissolved in 100 gm of water freezes at -0.24°C . Calculate the degree of dissociation of the salt (K for water = 1.86°C).
30. (a) Describe the following reactions.
(i) Cannizzaro's reaction.
(ii) Cross aldol condensation.
(c) How will you convert
(i) Methyl cyanide to acetamide
(ii) Acetaldehyde to but 2 enal.
(iii) Ethyl benzene to benzoic acid .

OR

- (a) A compound A on oxidation gives B ($\text{C}_2\text{H}_4\text{O}_2$). A reacts with Dil NaOH and on subsequent heating forms C. C on catalytic hydrogenation gives D. Identify A, B, C and D and write down the reaction involved.
(b) Write short notes on .
(i) Clemmenson reaction.
(ii) Hell – Volhard – Zelinsky reaction.