

**SAMPLE QUESTION PAPER  
CLASS XII  
CHEMISTRY**

**Time: 3 hrs**

**MM: 70**

**GENERAL INSTRUCTIONS:**

1. All the questions are compulsory.
2. Q. No. 1 to 5 are very short answer type, carrying 1 mark each.
3. Q. No. 6 to 10 are short answer type, carrying 2 marks each.
4. Q. No. 11 to 22 are short answer type, carrying 3 marks each.
5. Q.No.23 is a value based question carrying 4 marks.
6. Q. No. 24 to 26 are long answer type, carrying 5 marks each.
7. Use of calculators is not allowed, use log tables wherever required.

1. Name the non stoichiometric point defect responsible for colour in alkali metal halides. (1)

2 What is meant by an elementary reaction? (1)

3 What is shape selective catalysis? (1)

4-Amongst the isomeric alkanes of molecular formula  $C_5H_{12}$ , identify the one that on Photochemical chlorination yields a single monochloride. (1)

5-What is the role of collectors in Froth Floation process? (1)

6-Will the elevation in boiling point be same if 0.1 mol of Sodium chloride or 0.1 mol of Sugar is dissolved in 1L of water? Explain. (2)

7-Define the following. (2)

i)Order of a reaction

ii)Activation energy of a reaction

(or)

List two factors on which the rate of a chemical reaction depends.

8- Name the following. (2)

(a) A transition metal which does not exhibit variation in oxidation state in its compounds.

(b) A compound where the transition metal is in the +7 oxidation state.

(c) A member of the lanthanoid series which is well known to exhibit +4 oxidation state.

(d) Ore used in the preparation of Potassium dichromate.

9-What are interstitial compounds? Why are such compounds well known for transition metals? (2)

10-Give reasons: (2)

- i) Methylamine is a stronger base than ammonia
- ii) Aniline does not undergo Friedel Crafts reaction.

11-An element occurs in the bcc structure with cell edge of 288 pm. The density of the element is  $7.2 \text{ g cm}^{-3}$ . How many atoms of the element does 208g of the element contain? (3)

12-Draw the structure of . (3)

i)  $\text{H}_3\text{PO}_4$

ii)  $\text{HClO}_3$

iii)  $\text{XeF}_4$

13-Calculate the boiling point of a 1M aqueous solution (density  $1.04 \text{ g mL}^{-1}$ ) of Potassium chloride ( $K_b$  for water =  $0.52 \text{ K kg mol}^{-1}$ , Atomic masses:  $\text{K}=39\text{u}$ ,  $\text{Cl}=39.9\text{u}$ ) Assume, Potassium chloride is completely dissociated in solution. (3)

14-Explain what is meant by. (3)

- i) a peptide linkage
- (ii) a glycosidic linkage
- iii) a nucleotide

15-A galvanic cell consists of a metallic zinc plate immersed in  $0.1\text{M Zn(NO}_3)_2$  solution and metallic plate of lead in  $0.02\text{M Pb(NO}_3)_2$  solution. Calculate the emf of the cell. Write the chemical equation for the electrode reactions and represent the cell. (3)

(Given:  $E^\circ_{\text{Zn}^{2+}/\text{Zn}} = -0.76 \text{ V}$ ;  
 $E^\circ_{\text{Pb}^{2+}/\text{Pb}} = -0.13 \text{ V}$ )

16-Write chemical equations for the reactions involved in the manufacture of potassium dichromate from iron chromite ore. (3)

17-Answer the following questions. (3)

- (a) What happens when a freshly precipitated  $\text{Fe}(\text{OH})_3$  is shaken with a little amount of dilute solution of  $\text{FeCl}_3$ ?
- (b) Why are lyophilic colloidal sols more stable than lyophobic colloidal sols?
- (c) What form Freundlich adsorption equation will take at high pressure?

18-An organic compound A having molecular formula  $\text{C}_6\text{H}_6\text{O}$  gives a violet colour with neutral  $\text{FeCl}_3$  solution. A on treatment with  $\text{CO}_2$  and  $\text{NaOH}$  at 400 K under pressure gives B which on acidification gives a compound C. The compound C reacts with acetyl chloride to give D which is a popular pain killer. Deduce the structure of A, B, C and D. (3)

19-(i) Describe the type of hybridisation for the complex ion  $[\text{Fe}(\text{H}_2\text{O})_6]^{2+}$ .  
(ii) Write the IUPAC name of the ionisation isomer of the coordination compound  $[\text{Co}(\text{NH}_3)_5\text{Br}]\text{SO}_4$ . Give one chemical test to distinguish between the two Compounds. (3)

20-What are biodegradable polymers? Give two examples. (3)

21-A colloidal solution of  $\text{AgI}$  is prepared by two different methods that is. (3)  
i) By adding  $\text{AgNO}_3$  to  $\text{KI}$  solution(excess)  
ii) By adding  $\text{KI}$  to  $\text{AgNO}_3$  solution(excess).  
What is the charge acquired by the colloid formed in both the cases. Explain your answer.

22-(a) Pick out the odd one from among the following on the basis of their medicinal properties mentioning the reason: Luminal, Seconal, Phenacetin, Equanil. (3)  
(b) Give an example of a substance that can act as a disinfectant as well as antiseptic depending upon its concentration. (Specify concentration)  
(c) Name any two macromolecules chosen as drug targets.

23-Study the given passage carefully and answer the questions that follow. (4)

Shalini studied a chapter on Polymers in school and came across the following Paragraph

The durability, strength, low cost, water and chemicals resistance, welding properties, lesser energy, fewer atmosphere emissions and light weight are advantages of plastic bags.

Shalini is confused as she has been reading in the newspaper about the ban on the usage of plastic substances.

She further finds that despite the durability, the use of these materials has presented mankind with serious waste disposal problem as these materials do not disintegrate by themselves. In view of this, certain polymers are being developed which are broken down rapidly by microorganisms. Shalini feels relaxed that such kinds of biomaterials are being developed.

- a) Name the class of these useful polymers which do not harm the environment.
- (b) Give any one example of these polymers and name its monomers.
- (c) Comment on the qualities of Shalini

24-(a) Give a plausible explanation for each one of the following: (5)

- (i) Although phenoxide ion has more number of resonating structures than carboxylate ion, carboxylic acid is a stronger acid than phenol.
- (ii) There are two  $\text{-NH}_2$  groups in semicarbazide. However, only one is involved in the formation of semicarbazones.
- (b) Carry out the following conversions in not more than two steps:
  - (i) Phenyl magnesium bromide to benzoic acid.
  - (ii) Acetaldehyde to But-2-enal.
  - (iii) Benzene to m-Nitroacetophenone

25-(a) Write the rate law for a first order reaction. Justify the statement that half life for a first order reaction is independent of the initial concentration of the reactant. (5)

- (b) For a first order reaction, show that the time required for 99% completion of a first order reaction is twice the time required for the completion of 90%.

OR

- (a) For the reaction  $\text{A} \rightarrow \text{B}$ , the rate of reaction becomes twenty seven times when the concentration of A is increased three times. What is the order of the reaction?
- (b) The activation energy of a reaction is  $75.2 \text{ kJmol}^{-1}$  in the absence of a catalyst and it lowers to  $50.14 \text{ kJmol}^{-1}$  with a catalyst. How many times will the rate of reaction grow in the presence of a catalyst if the reaction proceeds at  $25^\circ\text{C}$ ?

26-Account for the following. (5)

- i) Fluorine does not show variable oxidation states while other members of the halogen family exhibit variable oxidation states.
- ii) Iodine is more soluble in KI solution than in water.
- iii) Why do boiling points of noble gases increase down the group?
- iv) Why ammonia is a good complexing agent?
- v) Nitric oxide (NO) is a colourless gas becomes brown when released in air