

Sample Paper
Class – XII
Subject – Chemistry

General Instruction:

1. All questions are compulsory.
2. Marks of each question are indicated against it.
3. Questions number 1 to 8 are very short answer questions and carry 1 mark each.
4. Questions numbers 9 to 18 are short answer questions and carry 2 marks each.
5. Question numbers 19 to 27 are also short answer questions and carry three marks each.
6. Question numbers 28 to 30 is long answer questions and carry five marks each.
7. Use log tables if necessary. Use of Calculators is not allowed.

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- Which amongst the following is strongest oxidizing agent ClO_4^- , BrO_4^- , IO_4^-
 - p-Dichlorobenzene has higher m.p and solubility than ortho and meta isomer why?
 - Sulphur in vapor state exhibits Para magnetism, why?
 - Although thermodynamically feasible, in practice, Mg metal is not used for the reduction of alumina in the metallurgy of Al why?
 - What happen when a freshly prepared ferric hydroxide is shaken with ferric chloride solution? Name the process
 - Identify X: $\text{X} + \text{H}_2 \xrightarrow{\text{Pd-BaSO}_4} \text{C}_6\text{H}_5(\text{CH}_2\text{CHO})$
 - Two liquids A and B boil at 135°C and 185°C respectively. Which of them has higher vapour pressure at 80°C ?
 - when a crystal of NaCl is heated in Na vapour it acquires a yellow Colour. This is due to which defect?
 - How will you distinguish between the following:
(i) Propane-2-ol and benzyl alcohol (ii) Ethanol and 2-Butanol
 - Write the IUPAC names of (i) $\text{HOCH}=\text{CH}-\text{CH}_2-\text{CH}_2\text{OH}$
(ii) $\text{CH}_3-\text{O}-\text{CH}(\text{CH}_3)-\text{CH}_2-\text{CH}_3$
 - Explain about Chromatography
 - Write the diseases caused by the deficiency of Vitamin A,C,D & E
 - Define (i) Peptide bond (ii) Denaturation as related to proteins
 - $\text{C}_6\text{H}_5\text{NO}_2 \xrightarrow{\text{Fe/HCl}} \text{A} \xrightarrow{\text{NaNO}_2+\text{HCl}} \text{B} \xrightarrow{\text{H}_2\text{O}/\text{H}^+} \text{C}$ Identify A,B,C
 - (i) Primary amines have higher boiling point than tertiary amines. Why?
(ii) Ammonolysis of alkyl halide doesnot give a corresponding pure amine. Explain
 - Molarity or molality, which is the best method to express concentration of a solution? Why?
- Or

State Henry's Law and mention some applications of Henry's constant

17. Assuming complete dissociation, calculate the freezing point of a solution prepared by dissolving 6 g of Glauber's salt ($\text{Na}_2\text{SO}_4 \cdot 10\text{H}_2\text{O}$) in 0.100 kg of water. ($k_f = 1.86 \text{ K kg mol}^{-1}$)
18. A reaction is carried out at two different initial concentrations of reactant. The initial concentrations are 1 mol L^{-1} and 2 mol L^{-1} . The half-life values obtained were 20 min and 40 min respectively. What is the order of the reaction?
19. Identify the following substances:
- It is about 550 times as sweet as cane sugar and excreted from body in urine unchanged.
 - It is 100 times as sweet as cane sugar and its use is limited to cold food and soft drinks as it is unstable at cooking temperature.
 - It is trichloro derivative of Sucrose and it is stable at room temperature.
20. How Nylon 6,6 and Buna-S are prepared?
21. Write the reaction involved in the preparation of aryl halide from aniline
22. Identify complexes with different geometries depending up on type of hybridization mention about colour and magnetic properties. (a) $[\text{Co}(\text{NH}_3)_6]^{3+}$ (b) $[\text{Co}(\text{CN})_6]^{3-}$
23. Niobium Crystallises like CsCl. If density is 8.55 g cm^{-3} calculate the atomic radius of niobium using its atomic mass 93 u.
24. Write the reactions involved in the manufacture of H_2SO_4 by contact process.
25. Give reasons for the following
- Only higher members of the group 18 of the periodic table are expected to form compounds.
 - SF_6 is used as gaseous electrical insulator
 - The electron gain enthalpy value of F_2 is less negative than Cl_2
26. Explain what is observed (i) When a beam of light is passed through a colloidal sol (ii) an electrolyte is added to the sol (iii) electric current is passed through the colloidal solution
- Or
- Why is alum added to water for purification?
 - Explain why deltas are formed where river and sea water meet.

c) Describe the preparation of a colloidal solution of arsenous sulphide in water.

27. For a certain chemical reaction variation in the concentration in [R] vs time (S) plot is given below

- (i) What is the order of the reaction?
- (ii) What are the units of rate constant k?
- (iii) draw the plot $\log [R]_0/[R]$ vs time

28. a. How will you convert the following

(i) Toluene into benzoic acid (ii) propanone into propene

b. Describe the following (i) Aldol condensation (ii) Cannizzaro reaction (iii) Friedel-Crafts reaction Write reactions only

Or

a) An organic compound with the molecular formula $C_9H_{10}O$ forms 2,4-DNP derivative, reduces Tollen's reagent and undergoes Cannizzaro reaction. On vigorous oxidation, it gives 1,2-benzene dicarboxylic acid. Identify the compound.

b) Write the steps and conditions involved in the following conversions:

i) Acetophenone to 2-phenyl-2-butanol. ii) Propene to acetone.

29. a. Indicate the steps in the preparation of potassium dichromate from chromite ore.

b. Account the following

(i) The lowest oxide of transition metal is basic, the highest is amphoteric /acidic

(ii) Transition metals have high enthalpy of atomization

Or

A blackish brown colored solid A when fused with alkali metal hydroxides in presence of air, produces a dark green coloured compound B, which on electrolytic oxidation in alkaline medium gives a dark purple coloured compound C. Identify A, B, C and write the reactions involved.

30. What happens when an acidic solution of the green compound (B) is allowed to stand for some time? Give the equation involved. What is the type of reaction called?

The resistance of a conductivity cell containing 0.001 M KCl solution at 298K is 1500 Ohms. What is the cell constant if conductivity of 0.001 M KCl solution at 298K is $0.146 \times 10^{-3} \text{ S cm}^{-1}$.

b. Write a short note on Fuel cell.

Or

How much electricity in terms of Faraday is required to produce 40 g of Al from molten Al_2O_3

Calculate the emf of the following cell at 298 K $Mg(s)/Mg^{2+}(0.0001 M)/Cu(s)$

$E^0_{Mg/Mg^{2+}} = -2.37 \text{ V}$ $E^0_{Cu/Cu^{2+}} = 0.37 \text{ V}$

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