

XII

2

CODE : A-C616123-M

I Semester Exam 2025-26

4 x 910

Std. : XII

Sub. : CHEMISTRY

Marks : 70

Date : 13/10/2025

Roll No. _____

Time : 3 hrs.

General Instructions :

The question paper is divided into 4 sections.

- 1) **Section A** - Q. No 1 contains Ten multiple choice type of questions carrying One mark each.
Q. No. 2 contains Eight very short answer type questions carrying One mark each.
- 2) **Section B** - Q. No. 3 to Q. No. 14 are Twelve short answer type questions carrying Two marks each. (Attempt any Eight).
- 3) **Section C** - Q. No. 15 to Q. No. 26 are Twelve short answer type questions carrying Three marks each. (Attempt any Eight)
- 4) **Section D** - Q. No. 27 to Q. No. 34 contain Five long answer type questions carrying Four marks each. (Attempt any Three)
- 5) Use of log table is allowed. Use of calculator is not allowed.
- 6) Figures to the right indicate full marks.
- 7) For each multiple choice type of question, it is mandatory to write the correct answer along with its alphabet. e.g. (a) / (b) / (c) / (d) No mark (s) shall be given if ONLY the correct answer or the alphabet of the correct answer is written. Only the first attempt will be considered for evaluation.

Section - A

Q. 1 Select and write the correct answer for the following multiple choice type of [10] questions.

- i) The formula used to calculate molar conductivity of an electrolyte is

$$\begin{array}{ll} \text{a) } \lambda = \frac{1000 C}{K} & \text{b) } c = \frac{1000 \cdot \lambda}{K} \\ \text{c) } \lambda = \frac{1000 K}{C} & \text{d) } k = \frac{1000}{\lambda C} \end{array}$$

- ii) Correct IUPAC name of tert-butyl alcohol is _____

- a) 2 - Methyl butan - 1 - 01
- b) 2 - Methyl butan - 2 - 01
- c) 2 - Methyl propan - 2 - 01
- d) 2 - Methyl propan - 1 - 01

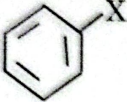
- iii) The most basic anime amongst the following is _____

- a) $\text{CH}_3 - \text{NH}_2$
- b) $(\text{CH}_3)_2 \text{NH}$
- c) $(\text{CH}_3)_3 \text{N}$
- d) $\text{C}_2\text{H}_5 - \text{NH}_2$

- iv) NH_4F is a salt of weak acid HF ($K_a = 7.2 \times 10^{-4}$) and weak base ($K_b = 1.8 \times 10^{-5}$).

The solution of NH_4F will be _____

- a) slightly acidic
- b) strongly basic
- c) slightly basic
- d) neutral

- v) If the standard enthalpy of formation of methanol is $-238.9 \text{ KJ mol}^{-1}$, then entropy change of the surroundings will be
 a) -801.7 J K^{-1} b) 0.8017 J K^{-1}
 c) 801.7 J K^{-1} d) -0.8017 J K^{-1}
- vi) Benzaldehyde does NOT show positive test with
 a) Schiff reagent
 b) Tollen's reagent
 c) Sodium bisulphite solution
 d) Fehling solution
- vii) The allylic halide among the following is
 a) $\text{R} - \underset{\substack{| \\ \text{X}}}{\text{CH}} - \text{R}$ b) $\text{CH}_2 = \text{CH} - \text{X}$
 c)  d) $\text{CH}_2 = \text{CH} - \text{CH}_2 - \text{X}$
- viii) Of the following 0.1 m aqueous solutions, which one will exhibit the largest freezing point depression?
 a) KCl b) $\text{C}_6\text{H}_{12}\text{O}_6$
 c) $\text{Al}_2(\text{SO}_4)_3$ d) K_2SO_4
- ix) Ozonolysis of 2, 3 dimethyl but - 2 - ene, followed by decomposition by Zn dust and water gives _____
 a) acetaldehyde b) Propionaldehyde & acetone
 c) acetone d) acetaldehyde and butyraldehyde
- x) Which of the following is not an intensive property?
 a) Pressure b) Density
 c) Surface tension d) volume

Q. 2

Answer the following questions : (8 marks)

[8]

- i) Write the structure of the product formed when chlorobenzene is treated with sodium metal in the presence of dry ether.
- ii) State whether the given reaction is exothermic or endothermic.

$$\text{H}_2\text{O}_{(g)} \longrightarrow \text{H}_2\text{O}_{(l)}$$
- iii) Write the name of the product formed by the action of LiAlH_4 / ether on acetamide.
- iv) Electrodes with standard electrode potential are given below :
 State the strongest reducing agent among the following :
 $\text{K} (-2.93 \text{ V})$, $\text{Mg} (-2.36 \text{ V})$, $\text{Ce}^{+3} (1.61 \text{ V})$, $\text{Ag}^+ (0.8 \text{ V})$
- v) Write the name of reaction during conversion of phenol to salicylic acid.
- vi) What is SI unit of Henry's constant?
- vii) The dissociation of H_2S is suppressed in the presence of HCl . Name the phenomenon.

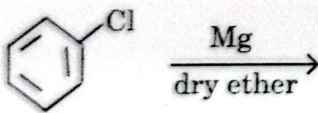
- Q. 20** Convert the following :
- Ethyl alcohol into ethyl acetate
 - Phenol into benzene
 - Diethyl ether into ethyl chloride
- Q. 21** If 20.0 cm^3 of $0.050 \text{ M Ba(NO}_3)_2$ are mixed with 20.0 cm^3 of 0.020 M NaF , will BaF_2 precipitate ?
[K_{sp} of BaF_2 is 1.7×10^{-6} at 298 K]
- Q. 22** Explain SN^2 reaction mechanism for alkaline hydrolysis of bromomethane.
- Q. 23** a) Write the first law of thermodynamics in isochoric process.
b) Define : i) Enthalpy of atomization
 ii) Bond enthalpy
- Q. 24** What is electrochemical series. Write two applications of electrochemical series.
- Q. 25** What is the action of following reagent on toluene ?
- Alkaline KMnO_4 dil HCl and heat
 - CrO_2Cl_2 in CS_2
 - Acetyl Chloride in presence of anhydrous AlCl_3 .
- Q. 26** Define : Degree of dissociation. Derive Ostwald's dilution law for weak acid.

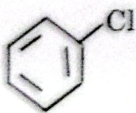
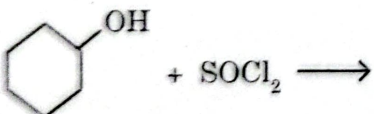
Section - D

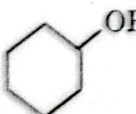
Attempt any Three of the following questions.

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[12]

- Q. 27** a) Derive expression for maximum workdone.
b) Write conditions for zero workdone. (any two)
- Q. 28** Complete the following reaction giving major product.
- $\text{CH}_3 - \text{CH} = \text{CH}_2 \xrightarrow{\text{H Br}} \text{A} \xrightarrow{\text{alc. KOH}} \text{B}$
 - 

b)  $\xrightarrow[\text{dry ether}]{\text{Mg}}$
 - 

c)  + $\text{SOCl}_2 \longrightarrow$
- Q. 29** Draw the diagram of $\text{H}_2 - \text{O}_2$ fuel cell.
Write electrode reactions and net cell reaction taking place in the fuel cell.
- Q. 30** a) What is elevation in boiling point ?
b) The normal boiling point of ethyl acetate is 77.06°C . A solution of 50 g of a non-volatile solute in 150 g of ethyl acetate boils at 84.27°C . Evaluate the molar mass of solute if K_b for ethyl acetate is $2.77^\circ\text{C kg mol}^{-1}$.
- Q. 31** i) Write reactions to bring about the following conversions.
a) Aniline into P-nitroaniline
b) Aniline into Sulphanilic acid
ii) Write any two environmental effect of DDT.
iii) Define Enantiomers.