

FIRST TERMINAL EXAM 2022-23

SUBJECT-CHEMISTRY

CLASS-12th

TIME:2:30 hrs

MARK:50

General Instruction –The question paper is divided into four section.

(1)Section A: Q.1 contain 7 multiple choice type of question carrying one mark each .

Q.2 Contain 7 very short answer type of question carrying one mark each.

(2)SectionB:Q.3 to Q.13 contains ELEVEN short answer type of question carrying two marks each.

(3)Section C:Q.14 to Q.19 Contain EIGHT short answer type of question carrying three marks each.

(4)Section D:Q.20 to Q.23 Contain THREE long answer type of question carrying four marks each.

(5)Use of log table id allowed use of calculator is not allowed.

(6)figure to the right indicate full marks.

Section A

Q.1 Select and write the correct sentence.

07 M

i) The packing fraction for a body-centred cubic structure is -----

a.0.42 b.0.53 c. 0.68 d.0.82

ii)Partial pressure of solvent in solution of nonvolatile solute is given by equation -----

a. $P=X_2P^0$ b. $P^0 =XP$ c. $P=X_1P^0$ d. $P^0 =X_1P$

iii) Which of the following is an intensive property?

a. Entropy b. Weight c Refractive index d. volume

iv) The SI unit of molar conductivity is-----

a. $S\text{ cm}^2\text{ mol}^{-1}$ b. $S\text{ dm}^2\text{ mol}^{-1}$ c. $S\text{ m}^2$ d. $S\text{ m}^2\text{ mol}^{-1}$

v) The hybridisation of nitrogen in primary amine is -----

a. sp b.sp² c. . sp³ d. sp³d

vi) $[\text{NiCl}_4]^{2-}$ has geometry

A. Square planar b. Tetrahedral c. Square tetrahedral d. Square bipyramidal

vii) Benzaldehyde does NOT show positive test with

a. Schiff reagent b. Tollen's reagent c. Sodium bisulphite solution. d. Fehling solution

Q.2) Answer the following

07 M

i) What is crystal lattice (space lattice)?

ii) What is a hypotonic solution?

iii) State the second law of thermodynamic in terms of entropy.

iv) Calculate the cell potential using following electrodes

$\text{Sn}^{4+}/\text{Sn}^{2+}$, $E^0 = 0.15 \text{ V}$

Cr^{3+}/Cr , $E^0 = -0.74 \text{ V}$

v) Convert the following –

Propene to propan -1-ol .

vi) write name of the electrophile used in Kolbe's Reaction

vii) What are aromatic Ketones

viii) Write the orders of basicity of aliphatic alkylamine in gaseous phase.

Section-B

Q. Answer the following .attempt any EIGHT

16 M

3) What are acid and bases according to Arrhenius theory?

4) What are isotonic and hypertonic solutions?

5) What is enthalpy of atomization ? Give an example

6) Derive the relationship between standard cell potential and equilibrium constant of cell reaction.

7) Explain why phenol is more acidic than ethyl alcohol.

8) Write reaction showing the action of the following reagent on propanenitrile-

a. Dilute NaOH. b. Dilute HCl?

9) Give the reagents and conditions necessary to prepare phenol from

- a. Chlorobenzene. b. Benzene Sulfonic acid

10) Why is $\text{Ni}(\text{CO})_4$ tetrahedral?

11) Write short note on Coupling reactions.

12) Solid ice is lighter than water. Explain.

13) What is Van't Hoff factor ?

Section – C

Q. Attempt any EIGHT

12M

14) Derive the expression for the maximum work.

15) What is the application of the fuel cells?

16) Distinguish between SN 1 and SN 2 mechanism of substitution reaction?

17) State and explain i) Henry's law ii) Raoult's law

18) Give the equation of the reactions for the preparation of phenol from isopropyl benzene.

19) What are amines ? How are they classified?

20) Explain Gabriel phthalimide synthesis.

Section –D

Q. Attempt any THREE

08 M

21) Calculate the osmotic pressure of 6% sucrose ($\text{C}_{12}\text{H}_{22}\text{O}_{11}$) solution at 300 K.

($R = 8.314 \text{ J mol}^{-1} \text{ K}^{-1}$)

22) Write a note on –

- a. Cannizaro reaction. b. Stephen reaction

23) Find the number of atoms per unit cell in the following crystal structure:

(1) Number of atoms in body –centred cubic (bcc) crystal

(2) Number of atoms in face –centred cubic (fcc) crystal

24) Explain the variation of molar conductivity with concentration for strong and weak electrolytes.