

SECOND YEAR HIGHER SECONDARY EXAMINATION-MARCH 2023

SECTION A (1 MARK)

1. The temperature dependant concentration term is----- (Molarity, Molality, Mole fraction)
2. The unit for 'k' for second order reaction is -----
3. The reaction in which amide is converted to primary amine by the action of Br₂ and alcoholic NaOH is known as-----
4. The scientific name of Vitamin C is -----
5. ----- is known as animal starch.

SECTION B (2 MARK)

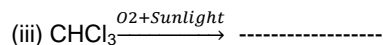
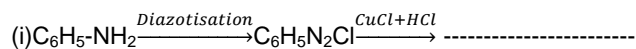
6. Name the four colligative properties ?
7. State Raoult's Law for solutions containing volatile component
8. $\text{CH}_3\text{Cl} + 2\text{Na} + \text{Cl} - \text{C}_6\text{H}_5 \xrightarrow{\text{Dry Ether}}$ A, Identify A and give the name of the reaction ?
9. Differentiate between SN1 & SN2 reaction .
10. Phenol is less reactive to nucleophilic substitution than alcohol. Give reason ?
11. Write the fermentation reaction for the conversion of cane sugar to ethanol ?
12. Explain Williamson's synthesis for the preparation of ether ?
13. What is aspirin ? How will you prepare it?
14. The rate constant triples when temperature increases from 25° C to 40° C. Calculate the energy of activation ?
15. Write Nernst Equation to calculate the electrode potential. Explain the terms .

SECTION C (3 MARKS)

16. (a) Define osmotic pressure of a solution (1)
(b) 200 cm³ of aqueous solution of a protein contains 1.26g of protein. The osmotic pressure of the solution at 300K is found to be 8.3×10^2 bar. Calculate molar mass of protein (R=0.0821 L Bar/K/mol)
17. Explain H₂-O₂ fuel cell with reactions .
18. Derive the integrated rate equation for first order reaction.
19. Differentiate between order and molecularity.
20. Describe the steps involved in the preparation of K₂Cr₂O₇ from chromite ore.
21. Give reason for the following
 - (a) Transition elements form coloured compounds.
 - (b) They show variable oxidation state.
 - (c) Zr and Hf have similar atomic size.
22. [Co(H₂O)₆]³⁺ is paramagnetic. Explain using Valence Bond Theory of Coordination compounds.
23. Write the IUPAC name of
 - (i) [Cr(NH₃)Cl]Br₂
 - (ii) K[BF₄]
 - (iii) [Pt(NH₃)₄][PtCl₄]

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24. Complete the reactions



25. How you distinguish between aldehyde and ketone

26. Write any three difference between RNA and DNA

SECTION D (4 marks)

27. (i) What is the relation between Λ_m and Concentration (1)

(ii) Draw the graph which show the variation of Λ_m and concentration (1)

(iii) Calculate the Λ_m° of NH_4OH . The Λ_m° values of NH_4Cl , $NaOH$ & $NaCl$ are 127.8, 148.6 and 153.1 Sm^2/mol respectively. (2)

28. (i) Write the ionization and hydrate isomers possible for the co-ordination compound $[Fe(H_2O)_5Br]SO_4$ (2)

(ii) Give any two applications of Co-ordination compounds? (2)

29. Explain aldol condensation reaction and Cannizaro reaction with suitable example. (4)

30. (i) How will you convert

(a) $CH_3COCH_3 \rightarrow \text{Propane}$ (1)

(b) $CH_3COCH_3 \rightarrow \text{tertiary butyl alcohol}$ (1)

(ii) Explain (a) HVZ Reaction (b) Rosenmund reduction (2)

31. (i) What is Hinsberg Reagent (1)

(ii) How will you distinguish between primary, secondary and tertiary amines? (3)

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