

**Meghalaya Board
Class XII
Chemistry
Sample Paper 2**

Time allowed: 3 hours**Maximum Marks: 70****General Instructions:**

- (i) Write all answers in the answer script.
- (ii) Attempt all parts of a question together in one place.
- (iii) All questions are compulsory.
- (iv) Marks for each question are indicated against it.
- (v) Question No. 1 of Part --I is of Multiple-choice Type, each of $\frac{1}{2}$ mark. Choose and write the correct answer in the Answer Script from the four options given.
- (vi) Question Nos. 2 to 9 of Part --II are very Short-answer Type Questions of 1 mark each. Answer these either in *one* sentence or in *one* word each.
- (vii) Question Nos. 10 to 17 of Part--III are Short-answer Type-I Questions of 2 marks each. Answer these in about 20–30 words each.
- (viii) Question Nos. 18 to 26 of Part--IV are Short-answer Type-II Questions of 3 marks each. Answer these in about 40–50 words each.
- (ix) Question Nos. 27 to 29 of Part--V are Long-answer Type Questions of 5 marks each. Answer these in about 70–80 words each.
- (x) Use of ordinary Scientific calculators and Log Tables are allowed.
- (xi) Mobile phones and Pagers are not allowed in the examination Hall.

PART-I

1. Choose and write the correct answer in the answer script: $\frac{1}{2} \times 8 = 4$

- (a)** Shape of the receptor gets changed after attachment of $\frac{1}{2}$
- (i) Messenger
 - (ii) Receptor
 - (iii) Cell membrane
 - (iv) Binding site
- (b)** Dry ice is an example of $\frac{1}{2}$
- (i) ionic solid
 - (ii) covalent solid
 - (iii) molecular solid
 - (iv) metallic solid

- (c)** How many monomers are involved in addition polymers? 1/2
- 1
 - 2
 - 3
 - 4
- (d)** According to Henry's Law at a constant temperature the solubility of gas in a liquid is directly proportional to the 1/2
- mass of gas
 - pressure of gas
 - volume of gas
 - density of gas
- (e)** Nucleoside differs from nucleotide with the absence of 1/2
- Pentose sugar and Nitrogenous base
 - Phosphoric acid
 - Pentose sugar
 - Nitrogenous base
- (f)** In an electrochemical cell, the electrode having a lower reduction potential will act as 1/2
- anode
 - cathode
 - electrolyte
 - salt bridge
- (g)** The following is the property of benzene diazonium chloride 1/2
- coloured
 - insoluble in water
 - stable in hot water
 - gives azo dye test
- (h)** In the equation $k = PZ_{AB} e^{-E_a/RT}$, P (probability factor) takes into account the fact that during a collision, molecules must be: 1/2
- properly oriented
 - properly energized
 - spherical
 - flexible

PART-II

2. Name the chemicals responsible for the antiseptic property in dettol. **1**
3. An element exists as hexagonal close packed structure as well as cubic close packed structure. In which case the element would have higher density? **1**
4. What is molal elevation constant? What are its units? **1**
5. What are the uses of PVC? **1**
6. What is the relation between degree of ionisation and dilution of weak electrolytes? **1**
7. Name a tertiary amine with one methyl, one ethyl and one propyl group. **1**
8. Give an application of colloid formation in metallurgy. **1**
9. Convert Ethanoic acid to Ethanoic anhydride. **1**

PART-III

- 10.** Name the various steps involved in metallurgy. **2**
- 11.** Why fluorine does not show variable valency while other halogens show variable valency?
- Or**
- NH₃ is soluble in water but PH₃ is not soluble. Give reasons. **2**
- 12.** Why the d-block elements are called transition elements? **2**
- 13.** Write the structure of trimethylaluminium. **2**
- 14.** *P-Dichlorobenzene* has higher melting point and solubility than those of *ortho*- and *meta*-isomers. Discuss. **2**
- 15.** The order of reactivity of alcohols towards dehydration forming alkenes is Tertiary > Secondary > Primary alcohol. Explain? **2**
- 16.** Name two methods used to convert a carbonyl group into -CH₂ group. **2**
- 17.** How a nucleoside differs from nucleotide? **2**

PART-IV

18. What are analgesic medicines? How are they classified and when are they commonly recommended for use? **3**

19. Write the names and structures of the monomers of the following polymers:

(i) Bakelite

(ii) Nylon-6

(iii) Polythene

20. Draw open chain structure of an aldopentose and aldohexose. Predict the number of asymmetric carbon atoms present in each.

Or

Write any three differences between DNA and RNA.

21. With an example explain glass is a super cooled liquid or a pseudo solid. **3**

22. Is the vapor pressure of solution always less than the pure volatile solvent? Justify. **3**

23. How would you test whether the given electrolyte is strong or weak by the measurement of its conductivity? **3**

24. Explain how the phenomenon of absorption finds applications in each of the following processes:

i. Production of high vacuum

ii. Heterogenous catalysis

iii. Froth floatation process **3**

25. What is Saponification process? **3**

26. What is the significance of leaching in the extraction of aluminium? **3**

PART-V

27.

(a) State Kohlrausch law of independent migration of ions. Write an expression for the molar conductivity of acetic acid at infinite dilution according to Kohlrausch law.

(b) Calculate Λ_m^0 for acetic acid.

Given that Λ_m^0 (HCl) = $426 \text{ S cm}^2 \text{ mol}^{-1}$

Λ_m^0 (NaCl) = $126 \text{ S cm}^2 \text{ mol}^{-1}$

Λ_m^0 (CH_3COONa) = $91 \text{ S cm}^2 \text{ mol}^{-1}$

Or

(a) Write the anode and cathode reactions and the overall reaction occurring in a lead storage battery.

(b) A copper-silver cell is set up. The copper ion concentration is 0.10 M. The concentration of silver ion is not known. The cell potential when measured was 0.422 V. Determine the concentration of silver ions in the cell. (Given $E_{\text{Ag}^+/\text{Ag}}^0 = +0.80 \text{ V}$, $E_{\text{Cu}^{2+}/\text{Cu}}^0 = +0.34 \text{ V}$)

28. Write a note on catalytic action of enzymes.

Or

Explain drug-enzyme interaction.

29.

(a) Describe the general trends in the following properties of the first series of the transition elements:

(i) Stability of +2 oxidation state

(ii) Formation of oxometal ions

(b) Assign reason for each of the following:

(i) Transition elements exhibit variable oxidation states.

(ii) Transition metal ions are usually coloured.

Or

- (a) Write the steps involved in the preparation of:
- (i) $K_2Cr_2O_7$ from Na_2CrO_4
 - (ii) $KMnO_4$ from K_2MnO_4
 - (iii) Calomel from corrosive sublimate
- (b) What is meant by lanthanoid contraction? What effect does it have on the chemistry of the elements which follow lanthanoids?