

**Nagaland Board
Class XII
Chemistry
Sample Paper-2**

Time allowed: 3 hours

Maximum Marks: 70

General Instructions:

- i. Approximately 15 minutes is allotted to read the question paper and revise the answers.
- ii. The question paper consists of 30 questions. All questions are compulsory.
- iii. Marks are indicated against each question.
- iv. Internal choice has been provided in some questions.

N.B: Check that all pages of the question paper is complete as indicated on the top left side.

1. Shape of the receptor gets changed after attachment of [1Mark]
 - (i) Messenger
 - (ii) Receptor
 - (iii) Cell membrane
 - (iv) Binding site

2. Dry ice is an example of [1Mark]
 - (i) ionic solid
 - (ii) covalent solid
 - (iii) molecular solid
 - (iv) metallic solid

3. How many monomers are involved in addition polymers? [1Mark]
 - (i) 1
 - (ii) 2
 - (iii) 3
 - (iv) 4

4. According to Henry's Law at a constant temperature the solubility of gas in a liquid is directly proportional to the [1Mark]
 - (i) Mass of gas
 - (ii) Pressure of gas
 - (iii) Volume of gas
 - (iv) Density of gas

- 5.** Nucleoside differs from nucleotide with the absence of [1Mark]
 (i) Pentose sugar and nitrogenous base
 (ii) Phosphoric acid
 (iii) Pentose sugar
 (iv) Nitrogenous base
- 6.** Name the chemicals responsible for the antiseptic property in Dettol. [1Mark]
- 7.** An element exists as hexagonal close packed structure as well as cubic close packed structure. In which case the element would have higher density? [1Mark]
- 8.** What is molal elevation constant? What are its units? [1Mark]
- 9.** What are the uses of PVC? [1Mark]
- 10.** What is the relation between degree of ionisation and dilution of weak electrolytes? [1Mark]
- 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 [2Mark]
- 12.** Name the various steps involved in metallurgy.
Or
 Why the d-block elements are called transition elements? [2Mark]
- 13.** Write the structure of trimethylaluminium. [2Mark]
- 14.** *p*-Dichlorobenzene has higher melting point and solubility than those of *ortho*- and *meta*-isomers. Discuss. [2Mark]
- 15.** The order of reactivity of alcohols towards dehydration forming alkenes is Tertiary > Secondary > Primary alcohol. Explain? [2Mark]
- 16.** Name two methods used to convert a carbonyl group into -CH₂ group
Or [2Mark]
 How a nucleoside differs from nucleotide?
- 17.** Draw open chain structure of an aldopentose and aldohexose. Predict the number of asymmetric carbon atoms present in each.
Or [3Mark]
 Write any three differences between DNA and RNA.

- 18.** What are analgesic medicines? How are they classified and when are they commonly recommended for use? [3Mark]
- 19.** Write the names and structures of the monomers of the following polymers:
- (i) Bakelite
- (ii) Nylon-6
- (iii) Polythene [3Mark]
- 20.** With an example explain glass is a super cooled liquid or a pseudo solid
Or [3Mark]
 Is the vapor pressure of solution always less than the pure volatile solvent? Justify.
- 21.** How would you test whether the given electrolyte is strong or weak by the measurement of its conductivity? [3Mark]
- 22.** Explain how the phenomenon of absorption finds applications in each of the following processes:
- Production of high vacuum
 - Heterogenous catalysis
 - Froth floatation process
- Or**
 Describe Hall-Heroult process used for the electrolysis of pure alumina. [3Mark]
- 23.** What is Saponification process? [3Mark]
- 24.** What is the significance of leaching in the extraction of aluminium? [3Mark]
- 25.** The oxidation of iodide ion by peroxydisulphate ion is given as:
- $$3\text{I}^- + \text{S}_2\text{O}_8^{2-} \longrightarrow \text{I}_3 + 2\text{SO}_4^{2-}$$
- i) If $-\frac{\Delta[\text{S}_2\text{O}_8^{2-}]}{\Delta t} = 1.5 \times 10^{-3} \text{ mol L}^{-1}\text{s}^{-1}$ for a given interval than what is the value of $-\frac{\Delta[\text{I}^-]}{\Delta t}$ for the same interval?
- ii) Also calculate the average rate of formation of SO_4^{2-} for the same interval. [3Mark]

26. What are oral-contraceptives? Give an example. [3Mark]

27. What is Perlon? How it is prepared? [3Mark]

28.

(a) Difference between molarity and molality for a solution. How does a change in temperature influence their values?

(b) Calculate the freezing point of an aqueous solution containing

10.50 g of MgBr_2 in 200 g of water. (Molar mass of $\text{MgBr}_2 = 184$ g) (K_f for water = $1.86 \text{ K kg mol}^{-1}$)

Or

(a) Define the terms osmosis and pressure. Is the osmotic pressure of a solution a colligative property? Explain.

(b) Calculate the boiling point of a solution prepared by adding 15.00 g of NaCl to 250.0 g of water. (K_b for water = $0.512 \text{ K kg mol}^{-1}$), Molar mass of NaCl = 58.44 g. [5Mark]

29. Write a note on catalytic action of enzymes.

Or

Explain drug-enzyme interaction. [5Mark]

30.

(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?