

Note: Section I is compulsory. Attempt any THREE (3) questions from Section II.

(SECTION - I)

2. Write short answers to any EIGHT questions.

(2 × 8 = 16)

- Why the values of the ionization energy decreases down the group?
- Why ZnO is regarded as amphoteric oxide?
- Why lime water turns milky with CO₂ but becomes clear with excess of CO₂?
- How boric acid is prepared on commercial scale from Colemanite?
- Why Aluminium sheets are said to be corrosion free?
- Why CO₂ is a gas at room temperature while SiO₂ is a solid?
- How an aqua regia dissolves gold?
- How orthophosphoric acid is converted into pyro and metaphosphoric acid?
- How hot concentrated H₂SO₄ reacts with Cu and Ag metals?
- Name four macronutrients and also mention per acre range of their requirement.
- Name any four parts of paper making machine.
- What is "Chemical Oxygen Demand (COD)"? How is it measured?

3. Write short answers to any EIGHT questions.

(2 × 8 = 16)

- What is "Catalytic Cracking"?
- Compounds containing double bonds are more reactive, give reason.
- Write mechanism for the addition of halogen in alkene.
- Prepare benzene from acetylene and n-hexane.
- Draw structural formulas of p-nitrotoluene and p-Dibenzylbenzene.
- Starting from suitable Grignard reagent prepare ethane and ethyl cyanide.
- Write reaction to prepare tetra ethyl lead and Nitro ethane.
- Prepare ethanol from starch.
- Convert ethanol to Iodoform.
- Write strecker synthesis to prepare amino acid.
- What is glacial acetic acid.
- Write structural formula of Lysine and Valine.

4. Write short answers to any SIX questions.

(2 × 6 = 12)

- What is an "Iodized Salt"?
- Why iodine has metallic luster? Justify.
- Name any two methods to manufacture bleaching powder. Also give reaction for this.
- Name different forms of Iron and mention which is the purest form?
- Describe Tollen's test for the identification of aldehydes.
- Write any four uses of formaldehyde.
- Define saponification number with a suitable example.
- Write two points of difference between a fat and oil.
- Differentiate with at least two points between "Amylose" and "Amylopectin".

(SECTION - II)

- Explain "Hydration Energy" as periodic property. 4
 - Point out the eight differences between Li and its group members. 4
- What is meant by "Corrosion"? Explain electrochemical theory of corrosion. 4
 - What is "Acid Rain"? Give detailed effects of acid rain on environment. 4
- Write down any four important features of organic compounds. 4
 - Draw structural formulas of following compounds: 4
 - m-chlorobenzoic acid
 - 2, 4, 6 trinitrotoluene
 - p-hydroxybenzoic acid
 - m-nitrophenol
- How is ethyne converted into following compounds? 4
 - Acetaldehyde
 - Chloroprene
 - Acrylonitrile
 - Methyl nitrile
 - Name the following compounds according to I.U.P.A.C system: 4
 - H₃C - C₂H - C₂H - O - C₃H
 - H₃C - O - C₆H₅
 - H₅C₂ - CH - OH
 - (H₃C)₃ COH
- Discuss "Aldol Condensation" with mechanism. 4
 - Using ethyl bromide as a starting material, how will you prepare the following compounds: 4
 - n-Butane
 - ethyl alcohol
 - propanoic acid
 - ethene