

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

SECTION – I**2. Write short answers to any EIGHT questions.****(2 x 8 = 16)**

- Why CO₂ is gas at room temperature while SiO₂ solid?
- Give any four uses of boric acid.
- Give reaction of H₃BO₃ with C₂H₅OH.
- Convert benzene into toluene.
- Give x-ray structure of benzene.
- What are polyester resins? Give uses.
- Convert sodium benzoate into benzene.
- How protein is denatured? Give one example.
- Give hydrolysis reaction of triglycerides.
- How is oil spillage affecting the marine life?
- What is ozone hole? Give comments.
- What are primary and secondary pollutants? Give examples.

3. Write short answers to any EIGHT questions.**(2 x 8 = 16)**

- Write down the structural formulas of two possible isomers of C₄H₁₀.
- What are heterocyclic compounds? Give one example.
- Identify each lettered product of the reaction. Ethylalcohol $\xrightarrow{\text{conc. H}_2\text{SO}_4}$ A $\xrightarrow{\text{Br}_2}$ B
- Why alkenes are more reactive than alkanes?
- What is Raney nickel? How is it prepared?
- What is the effect of heat on solid N₂O₄?
- Why the elements of group VI-A other than Oxygen show more than two oxidation states?
- Complete and balance the following equations
 $\text{P} + \text{NO} \longrightarrow ?$
 $\text{HNO}_2 + \text{CO}(\text{NH}_2)_2 \longrightarrow ?$
- How will you carry out the following conversion?
 $\text{CH}_3 - \text{CH}_3 \longrightarrow (\text{CH}_3 - \text{CH}_2)_4 \text{N}^+ \text{Br}^-$
- Differentiate between nucleophile and electrophile.
- What are common bleaching agents used in paper industry?
- What are fertilizers?

4. Write short answers to any SIX questions.**(2 x 6 = 12)**

- What is co-ordination number? Give its example.
- Fe³⁺ shows maximum paramagnetic behavior. Justify it.
- Ethanol has higher boiling point than diethyl ether. Give reason.
- How is ethanol prepared from molasses?
- Write down mechanism of reaction between C₂H₅OC₂H₅ and HI.

(Turn Over)

- vi. Write down names and formulas of two ores of iron.
- vii. Write down two tests to differentiate between carbonyl and non-carbonyl compounds.
- viii. Show the dry distillation of a mixture of calcium salts of formic acid and acetic acid.
- ix. Draw structures of phthalic acid and malonic acid.

SECTION - II

Note: Attempt any **THREE (3)** questions.

- 5. (a) Define oxidation state. Write down its variation trends in modern periodic table. (4)
(b) Describe the peculiar behaviour of beryllium. (4)
- 6. (a) What happens when bleaching powder reacts with (4)
 - (i) $\text{dil. H}_2\text{SO}_4$ (ii) $\text{Conc. H}_2\text{SO}_4$
 - (iii) NH_3 (iv) HCl
(b) Write essential qualities of good fertilizer. (4)
- 7. (a) Define cracking of petroleum. Also discuss catalytic and steam cracking. (4)
(b) Write down a note on stability of benzene. (4)
- 8. (a) How does ethyne react with (4)
 - (i) Halogen acid (ii) Alkaline KMnO_4
 - (iii) Ammonical cuprous Chloride (iv) 10% H_2SO_4 in the presence of HgSO_4
(b) Define nucleophilic substitution reactions? Explain SN_1 mechanism in detail. (4)
- 9. (a) Write down a note on aldol condensation in detail. (4)
(b) Write down a note on peptides and proteins in detail. (4)

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