

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 the second value of electron affinity of an element is usually shown with a positive sign?
- Lanthanide contraction controls the atomic sizes of elements of 6th and 7th periods. Give reason briefly.
- KO₂ is used in breathing equipments for mountaineers and in space crafts, why?
- Aqueous solution of Na₂CO₃ is alkaline in nature. How it can be justified?
- What is the structure of CO₂ and SiO₂ and why they differ from each other?
- How boric acid is prepared on commercial scale from colemanite?
- How moderately dilute and conc. HNO₃ reacts with zinc?
- Why is SO₃ dissolved in H₂SO₄ and not in water?
- What is chromyl chloride test?
- What is sacrificial corrosion?
- How digestion process is carried out in paper industry?
- What reactions take place in the setting of cement from 01 to 07 days?

3. Write short answers to any EIGHT questions.

(2 x 8 = 16)

- What is Teflon? Write down its formula and uses.
- Bleaching powder acts as an oxidizing agent. Explain.
- Define metamerism. Give an example.
- What are heterocyclic compounds? Give two examples.
- How methane and ethane can be prepared from sodium acetate?
- Write down any two uses of ethyne.
- State and explain Markownikov's rule with an example.
- What is Grignard's reagent? How it can be prepared?
- Define nucleophile by giving its two examples.
- How is polystyrene prepared? Give its two uses.
- What is meant by denaturation of proteins?
- Write down names of nitrogenous bases present in DNA.

4. Write short answers to any SIX questions.

(2 x 6 = 12)

- How can you prepare m-chloronitrobenzene from benzene?
- Draw the structure of anthracene and phenanthrene.
- What is Dow's method?
- What do you mean by denaturing of alcohol?

(Turn Over)

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- Write down four uses of formaldehyde.
- What are essential and non-essential amino acids?
- Why the boiling points of carboxylic acids are relatively high?
- How is oil spillage affecting the marine life?
- What is biological oxygen demand (BOD)?

(SECTION – II)

Note: Attempt any THREE (3) questions from Section II

- (a) Explain periodic trends in the following physical properties: (4)
i) Ionization energy ii) Metallic character
(b) Discuss the importance of oxides of lead in paints. (4)
- (a) Write down names and formulas of four minerals of sodium. 1x4 (4)
(b) Give systematic names to following complexes. 1x4 (4)
i) Na₃[CoF₆] ii) K₂[PtCl₆]
iii) [Cr(OH)₃(H₂O)₃] iv) [Co(NH₃)₆]Cl₃
- (a) Define hybridization. Explain SP hybridization with the formation of ethyne. (4)
(b) Compare S_N1 reactions with S_N2 reactions by four points. (4)
- (a) Give the mechanism of the following reactions: 2+2 (4)
i) Ethene with Br₂ ii) Ethene with ozone
(b) What are condensation reactions? Explain the mechanism of Aldol condensation. 1+3 (4)
- (a) Write down four methods of preparation of benzene. (4)
(b) Write down reactions of phenol in which benzene ring is used. (4)

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