

- N.B: Please check whether you have got the right question paper.
1. Q. No. 1 is compulsory.
  2. Answer any three questions form remaining five questions.
  3. Figures to the right indicate full marks.

1. Attempt any four the following -

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- What are colloids? Explain the Donnan membrane equilibrium phenomenon.
  - What are the catalyst? Explain with example how-
    - a catalyst remains unchanged chemically at the end of reaction.
    - a catalytic poison paralyses the activity of catalyst.
  - Explain the advantage and limitations of Conouctometric titrations.
  - Explain the role of complexing agents in solvent extraction.
  - Write a note on flame ionization detector.
  - Explain the hyperfine structure in the ESR spectrum of methyl radical and para benzo semiquinone radical anion.
  - Explain the NMR signal splitting of P-Xylene and Ethoxy acetic acid
- 2.
- What are the applications of ion exchange chromatography? 5
  - Write note on transport number. 5
  - Explain the mechanism of micelle formation. 5
  - Write a note on enzyme catalysis. 5
- 3.
- State the principle and explain any one application of IR Spectroscopy. 5
  - Explain the theory and industry process for separation of lanthanides. 5
  - Define partition coefficient. 96% of solute is removed form 100 ml of aqueous solution by extraction twice with 50 ml portions of organic solvent. What is the distribution ratio of the solute in favour of organic solvent? 5
  - Define the aromaticity and explain the aromaticity of Naphthalene. 5
- 4.
- Explain the electrophilic substitution reactions of thiophene. 5
  - Describe principle and working of flame photometer. 5
  - Write note on precipitation titration. 5
  - Give the preparation of tile following compounds from malonic ester 5
    - Adipic acid
    - Crotonic acid
- 5.
- Explain the terms autocatalysis and negative catalysis with suitable examples? 5
  - Discuss the electrophilic and nucleophilic substitution reactions of pyridine. 5
  - What are the surfactants? Explain the applications of surfactants in food industry. 5
  - What are the advantages of TLC over paper chromatography? 5

80

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6. a) The distribution ratio of the solute in solvent extraction in favour of the organic solvent is 25. Calculate the percentage extraction if a single extraction is carried out using volume ratio
- i)  $v_o/v_w = 0.5$  and
  - ii)  $v_o/v_w = 8$
- b) How would you prepare acetyl acetone and 4 methyl uracil from Aceto Acetic ester? 5
- c) Explain the criteria for aromaticity with suitable examples. 5
- d) Write a note on intermediate compound theory? 5

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