

S.E - IV Sem - Chem.

① Engineering Chemistry - II

② 28

SE/IV/CHEM/CBGS/EC-II

QP Code : 5331

(3 Hours)

[Total Marks : 80

N. B. : (1) Question no. 1 is compulsory.

(2) Attempt any three questions from the remaining questions.

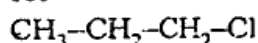
1. Answer any four of the following :-

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- Discuss the validity of the statement that 'A catalyst only hastens the approach of equilibrium in a reversible reaction but it does not alter the position of the equilibrium.'
- How will you synthesise butanone from ethyl acetate.
- Define
 - Specific conductance
 - Equivalent conductance
 - Molar conductance
- Give the principle of paper chromatography. Explain Radial paper chromatography in detail.
- Explain the origin of charge on colloidal particles.
- What is the principle of amperometric titration? Explain the curve obtained in the titration of Pb(II) ion against sulphate ions.

2. (a) 5.9 gm of common salt is passed through a cation exchange in H^+ form. Calculate the weight of HCl that will be formed. 5

(b) What is shielding and de-shielding. Explain the splitting of NMR signal for 5



(c) Explain the aromaticity of Furan or anthracene. 5

(d) Explain liquid junction potential. 5

3. (a) The distribution ratio for iodine between CS_2 and water is 450. If 100 ml of an aqueous solution containing 1.018 mg iodine is equilibrated twice with 50 cm³ portion of CS_2 . What amount of iodine will remain unextracted in water after second extraction. 5

(b) What is the principle of infrared spectroscopy Give two application in detail. 5

(c) What is acid-base catalysis. Give the mechanism for both acid and base catalysis. 5

(d) Explain why pyridine is more basic than pyrrole. 5

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4. Write a note on TLC .- 5
- (a) Explain debye-huckel theory of strong electrolytes. 5
 - (b) How would you prepare the following compound from diethyl malonate 5
 - (i) Succinic acid
 - (ii) Barbituric acid
 - (c) Using flame photometer. Estimate the amount of sodium present in the given sample. 5
 - (d) Explain emulsions with one example each. 5
5. (a) State Nernst's distribution law and explain an expression for amount of solute left unextracted after single extraction. 5
- (b) Explain the phenomenon of electrophoresis with neat labelled diagram. 5
 - (c) Explain the intermediate theory and adsorption theory of catalysis. 5
 - (d) Give the principle of HPLC and give two applications. 5
6. (a) Explain continuous solvent extraction method in detail. 5
- (b) Give the preparation of ethylacetoacetate with mechanism. 5
 - (c) Derive an expression for emf of a concentration cell without transference. 5
 - (d) Explain the principle of uv-visible spectroscopy. 5