

SE. Sem - IV (chem.) R.

19/5/14 (1)

Engg. Chemistry  
Chemical - Sem IV (CBGS)

EC II

(3 Hours)

QP Code : NP-19694

31

[ Total Marks : 80

- N.B. : (1) Q. No 1 is compulsory.  
(2) Attempt any three questions from remaining five questions.  
(3) Figures to the right indicate full marks.

1. Answer any four of the following :-

20

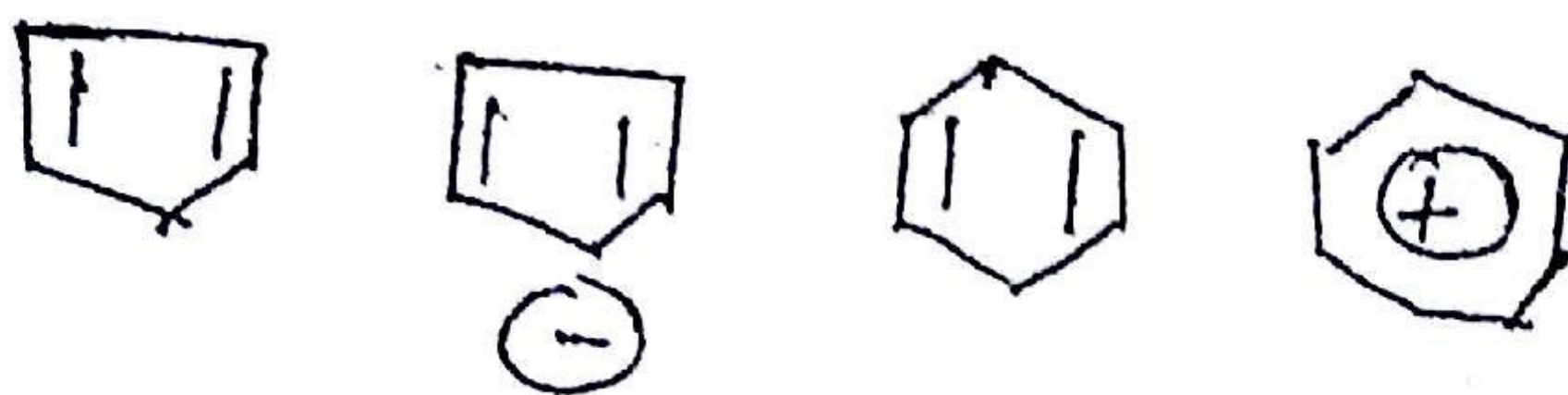
- (a) Distinguish between lyophobic and lyophilic colloids.  
(b) Explain the following terms :  
(i) Specific conductance  
(ii) Equivalent conductance  
(iii) Molar conductance.  
(c) How will you titrate strong acid with strong base without using any indicator. Explain the method in detail.  
(d) Explain continuous extraction technique for solvent heavier than water.  
(e) Give preparation of following compounds starting from acetoacetic ester.  
(a) Glutaric acid (b) Ethyl methyl ketone.  
(f) Explain the splitting of NMR signal in Isopropanol and 1, 1 dichloro ethane.  
(g) Define catalyst. Discuss any four characteristics of catalyst.
2. (a) Give the principle and explain any two applications of IR spectroscopy. 5  
(b) State Nernst distribution law and explain an expression for amount of solute left unextracted after single extraction. 5  
(c) What are colloids. Explain the phenomenon of electrophoresis. 5  
(d) Explain aromaticity of pyrrole. Mention any two reactions of it. 5
3. (a) Explain Debye - Huckel theory of strong electrolytes. 5  
(b) Write informative note on 5  
(i) Ascending (ii) Radial paper chromatography  
(c) What are surfactants. Give application of surfactants in pesticide formulation & in detergents. 5  
(d) What are catalyst poisons? Explain types of poisons with suitable example and mechanism. 5
4. (a) How the solubility product of sparingly soluble salt is determined using emf measurement. 5  
(b) What is the principle of Gas chromatography. From the given sample (A + B) how would you confirm the presence of known compound A & unknown compound B. 5  
(c) The distribution ratio of Iodine between water and chloroform is 0.015 in favour of water. 50ml of aqueous solution (0.001M) of Iodine was equilibrated with 50ml of chloroform. calculate amount of  $I_2$  left after single and double extraction. Also calculate percent extraction. 5

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TURN OVER



- (d) What is aromaticity? State whether following compounds are aromatic or non-aromatic. 5



5. (a) What are ion exchange resins? 4.2gm of common salt is passed through cation exchanger in  $H^+$  form. Calculate the weight of HCl that will be formed. 5
- (b) Describe principle and working of flame photometer. 5
- (c) Derive an expression for e.m.f. of a concentration cell without transference. 5
- (d) Explain why pyridine is more basic than pyrrole. 5
6. (a) Explain amperometric titration of Pb (II) ion against sulfuric acid. 5
- (b) What are emulsions? Mention its types. Give any two methods of identification. 5
- (c) Write a note on 'Auto catalysis & induce catalysis'. 5
- (d) Explain the concept of shielding and deshielding effect with examples. 5