

Code No.: R22CH102BS

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CMR ENGINEERING COLLEGE: : HYDERABAD  
UGC AUTONOMOUS

I-B.TECH-I-Semester End Examinations (Regular) - February- 2024

ENGINEERING CHEMISTRY  
(Common for ECE, CSE & IT)

[Time: 3 Hours]

[Max. Marks: 60]

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 10 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART-A

(10 Marks)

1. a) What are the salts responsible for the Temporary and Permanent Hardness of water? [1M]
- b) Distinguish Scale and Sludge. [1M]
- c) Summarize Octane Number of petrol. [1M]
- d) Why are Gaseous fuels more advantageous than Solid fuels? [1M]
- e) Define Reduction Potential. [1M]
- f) Identify the advantages of Glass Electrode. [1M]
- g) What is Galvanic Corrosion? [1M]
- h) The rate of metallic corrosion increases with increases in temperature. Discuss the reason. [1M]
- i) Define Polymer. [1M]
- j) Identify classification of conducting polymers. [1M]

PART-B

(50 Marks)

2. Examine the estimation of Hardness of Water by EDTA method. [10M]  
OR
3. Discuss the Ion-Exchange process for water softening. [10M]
4. Explain Proximate Analysis of coal with its significance. How is it carried out? [10M]  
OR
5. What are the advantages of Catalytic Cracking Process? Construct and describe Moving Bed Catalytic Process. [10M]
6. a) Derive Nernst's Equation for the calculation of cell emf. [4M]
- b) Summarize the construction of Lead-Acid battery with the reactions occurring during discharge. [6M]  
OR
7. Define fuel cell. Explain the construction and working of  $H_2-O_2$  fuel cell. What are the advantages and limitations of fuel cell? [10M]
8. a) Discuss Electrochemical Corrosion. Explain its mechanism. [4M]
- b) Explain the process of Galvanization of iron. [6M]  
OR
9. a) Mention various factors influencing the rate of Corrosion. [4M]
- b) Explain Sacrificial Anodic Protection method of controlling corrosion. [6M]
10. Develop the Free Radical Additional Polymerization mechanism. [10M]  
OR
11. Outline why Natural Rubber needs vulcanization. How is it carried out? [10M]

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