

CMR ENGINEERING COLLEGE: : HYDERABAD

UGC AUTONOMOUS

I-B.TECH-I-Semester End Examinations (Supply) -January- 2025

ENGINEERING CHEMISTRY

(Common for CSM, ECE, MECH, AI&DS, CSD)

[Time: 3 Hours]

[Max. Marks: 70]

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

Part A is compulsory which carries 20 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**(20 Marks)**

1. a) What are the specifications of potable water? [2M]
- b) Identify break point of chlorination? State its significance. [2M]
- c) Identify any four salient features of CFT. [2M]
- d) Calculate the bond order of N_2 molecule. [2M]
- e) What is electrochemical series and write its applications. [2M]
- f) Define fuel cell and write its applications. [2M]
- g) What is meant by knocking? How is related to the chemical structure of the fuel. [2M]
- h) Distinguish between HCV and LCV of a fuel. [2M]
- i) Write a short note on galvanic corrosion. [2M]
- j) Define biodegradable polymers and write its applications. [2M]

PART-B**(50 Marks)**

2. Summarize a short note on the following [10M]
 - i) Phosphate conditioning
 - ii) Caustic embrittlement
 - iii) Ozonization
- OR**
3. Explain the purification of water by ion exchange process and give its advantages, disadvantages. [10M]
4. Explain conductors and insulators on the basis of band theory and give importance of doping on conductance. [10M]
- OR**
5. Develop the molecular orbital diagram of O_2 and find out the bond order. [10M]
6. What are secondary cells? Explain the construction and working of lead acid battery. Write down the reactions taking place during charging and discharging. [10M]
- OR**
7. Explain the construction of Quinhydrone electrode and write determination of pH using Quinhydrone electrode. [10M]
8. Explain the determination of Ultimate analysis of coal and write its significance. [10M]
- OR**
9. What is cracking? Discuss the fixed bed catalytic cracking method to obtain gasoline from heavy oils. [10M]
10. Discuss the preparation, properties and applications of Bakelite and Buna-S. [10M]
- OR**
11. Define corrosion of metals. Explain the electrochemical theory of wet corrosion, giving its mechanism. [10M]
