

Code No.: CH102BS

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CMR ENGINEERING COLLEGE: : HYDERABAD  
UGC AUTONOMOUS

I-B.TECH-I-Semester End Examinations (Supply) - March- 2023

ENGINEERING CHEMISTRY

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

[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) Define break point chlorination and State its significance. [2M]
- c) Identify any four salient features of CFT. [2M]
- d) How to 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 it 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 polymer 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 the 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 by giving its mechanism. [10M]

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