

Code No.: CH102BS

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CMR ENGINEERING COLLEGE:: HYDERABAD

UGC AUTONOMOUS

I-B.TECH-I-Semester End Examinations (Supply) - January- 2022

ENGINEERING CHEMISTRY

(Common to CSM, ECE, MECH)

[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 is the disinfection of chlorination? [2M]
- b) Explain Phosphate and Calgon conditioning. [2M]
- c) Explain the rules of LCAO. [2M]
- d) How n-type of semiconductivity is produced? [2M]
- e) Write the reactions occurring at the electrodes in Daniel cell. [2M]
- f) Define fuel cells and give applications of fuel cells. [2M]
- g) Analyse the quality of coal by Proximate analysis. [2M]
- h) Distinguish HCV and LCV. [2M]
- i) Define Galvanising and Tinning. [2M]
- j) Explain Vulcanisation of Rubber. [2M]

PART-B

(50 Marks)

2. a) Explain desalination of water by Reverse Osmosis. [5M]
- b) Distinguish between Temporary and Permanent hardness. Explain various units to express hardness of water. [5M]

OR

3. Discuss ion exchange process for softening of hard water with a neat diagram. [10M]
4. a) State the postulates of Molecular Orbital Theory. [3M]
- b) Explain molecular orbital energy level diagram of O₂ molecule with a neat diagram. [7M]

OR

5. a) Write salient features of crystal field theory. [4M]
- b) Discuss crystal field splitting of d-orbitals in octahedral geometry. [6M]
6. a) Explain construction and working of Calomel electrode. [5M]
- b) Give a detailed account on the Lead-Acid cell with appropriate chemical reactions. [5M]

OR

7. a) Explain the construction and working of H₂-O₂ fuel cell. [7M]
- b) What are batteries? Differentiate between primary and secondary cells. [3M]
8. Explain the process of refining of petroleum in detail with a neat diagram. [10M]

OR

9. a) Differentiate Octane and Cetane Number. [4M]
- b) Explain Fluid bed catalytic cracking with a neat diagram. [6M]
10. a) Write the differences between Thermoplastic and Thermoset resins. [3M]
- b) What are Biodegradable polymers? Explain preparation, properties and applications of Polylactic acid. [7M]

OR

11. a) What is cathodic protection? Explain how buried pipe lines are protected by Sacrificial anodic protection. [6M]
- b) Write a note on Galvanic corrosion. [4M]
