

I B. Tech I Semester Supplementary Examinations, July/August-2023**ENGINEERING CHEMISTRY**

(Common to Auto E, Min Eng, Pet Eng)

Time: 3 hours

Max. Marks: 70

*Answer any five Questions one Question from Each Unit**All Questions Carry Equal Marks***UNIT-I**

1. a) Write preparation, properties and applications of Bakelite. [7M]
 b) What are conducting polymers? Discuss the mechanism of p-doping and n-doping of conducting polymers. [7M]

(OR)

2. a) How polyurethane can be prepared and discuss the properties and applications of it. [7M]
 b) Discuss the different types of polymerizations methods. [7M]

UNIT-II

3. a) Explain Methanol-O₂ fuel cell with cell reactions and diagram. Write applications of this cell. [7M]
 b) What is galvanic corrosion? How it can be prevented? [7M]

(OR)

4. a) Explain the principle involved in the cathodic protection of corrosion and what are the various types of cathodic protection? [7M]
 b) How does Li ion battery work? Write the principle and related electrochemical equations and its applications. [7M]

UNIT-III

5. a) What are the different types of carbon Nano tubes? How Carbon nanotubes can be prepared and give their applications. [7M]
 b) Explain the clinker formation characterization parameters: Lime saturation factor (LSF) and Silica ratio (SR) [7M]

(OR)

6. a) Explain differential thermal analysis (DTA) technique's principle, instrumentation and applications. [7M]
 b) What is meant by refractoriness under load? Explain how this can be improved. [7M]

UNIT-IV

7. a) Discuss the proximate and ultimate analysis of coal sample with example, schematic diagram and calculation. [7M]
 b) Write short note on alternative fuels with example. [7M]

(OR)

8. a) What is Octane number, Cetane number, Cracking of petrol and anti cracking agents? Explain with examples. [7M]
 b) Explain Fischer Tropsch and Bergius process of synthetic petrol with equations. [7M]

UNIT-V

9. a) How the scales are formed? What are the remedies to avoid the scale formation? [7M]
 b) Explain reverse osmosis and electro dialysis processes of purification of water. [7M]

(OR)

10. a) What is meant by caustic embrittlement? Write cell equation of the reaction involved in that and explain how it can be avoided. [7M]
 b) What are types of hardness? Give examples of each. How the hardness can be determined using EDTA method explain with example. [7M]
