

Code No: **R231106**

R23

SET - 1

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY GURAJADA VIZIANAGARAM
I B. Tech I Semester Supplementary Examinations June 2025

ENGINEERING CHEMISTRY

(Common to MECH, CE & AME)

Time: 3 hours

Max. Marks: 70

Question paper consists of Part A, Part B.

Part A is compulsory, Answer all questions.

In Part B, Answer any one question from each unit.

PART-A

(20 Marks)

- 1 a) Define soft water and hard water. [2]
- b) List out the drinking water standards of WHO. [2]
- c) Write the expression of Nernst equation. [2]
- d) Define electroplating. [2]
- e) Differentiate primary and secondary fuels. [2]
- f) List any four applications of PVC. [2]
- g) List any four constituents of cement.. [2]
- h) Define cloud point. [2]
- i) Define nanomaterials and give an example. [2]
- j) Distinguish the lyophilic and lyophobic colloids. [2]

PART-B

(50 Marks)

Unit-1

- 2 a) Explain about estimation of hardness by EDTA method. [5]
- b) Describe the reverse osmosis process. [5]

(OR)

- 3 a) Illustrate the ion exchange process with neat diagram. [5]
- b) Discuss caustic embrittlement in boilers. [5]

Unit-2

- 4 a) Discuss about Factors influencing corrosion. [5]
- b) Illustrate the construction of zinc-air battery with neat diagram. [5]

(OR)

- 5 a) Explain the metal oxides formed in the dry corrosion. [5]
b) Demonstrate the construction and working of H₂-O₂ fuel cell. [5]

Unit-3

- 6 a) Discuss the chain growth mechanism for polyethene. [5]
b) Explain the Ultimate analysis of a Coal in detail. [5]

(OR)

- 7 a) Discuss the differences between thermoplastic and thermosetting plastic. [5]
b) Write a note on propane and biodiesel. [5]

Unit-4

- 8 a) Discuss the classification of composites. [5]
b) Discuss the properties and any mechanism of lubricants. [5]

(OR)

- 9 a) Describe the setting and hardening of cement. [5]
b) Explain the properties of refractories. [5]

Unit-5

- 10 a) Explain the micelle formation with a neat diagram. [5]
b) Discuss the synthesis of nanomaterials by sol-gel method. [5]

(OR)

- 11 a) Discuss the Freundlich and Langmuir isotherms in detail. [5]
b) Discuss the applications of nanomaterials and colloids in different fields. [5]
