

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY GURAJADA VIZIANAGARAM
I B. Tech II Semester Supplementary Examinations Dec-2025/ Jan 2026**CHEMISTRY**

(Common to CSE, IT, CSE(DS), CSE(AI), CSE(CS), CSE(AI&ML), CSE(AI&DS), AI&DS AI&ML)

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) What are the Bonding and Anti-Bonding molecular orbitals? [2]
- b) Define the bond order. [2]
- c) What is Super Capacitor? Give suitable example. [2]
- d) Write any two applications of Semiconductors. [2]
- e) What is electrochemical cell? Give an example. [2]
- f) What are redox titrations? Give one example. [2]
- g) What is functionality of monomers? [2]
- h) Mention two important applications of Conducting Polymers. [2]
- i) Write two deviations of Lamberts-Beers law. [2]
- j) Define chromatography. [2]

PART-B**(50 Marks)****Unit-1**

- 2 a) Derive Schrodinger wave equation for particle in dimensional box. [5]
- b) Draw the π -molecular orbitals of butadiene. [5]

(OR)

- 3 a) Draw the molecular orbital diagram of CO. Explain the magnetic nature and bond order. [5]
- b) Discuss Salient features of Molecular Orbital Theory. [5]

Unit-2

- 4 a) What are the important engineering applications of semi conducting materials? [5]
- b) Write properties and applications of carbon Nano tubes. [5]

(OR)

- 5 a) Discuss important applications of nanoparticles. [5]
- b) Write a note on Type-I and Type -II Superconductors. [5]

Unit-3

- 6 a) Explain the advantages of fuel cells over electrochemical cells. [5]
- b) What is primary cell? Explain construction and applications of Zinc-Air battery. [5]

(OR)

- 7 a) Write the Nernst equation for electrode potential. Discuss briefly Potentiometric sensors. [5]
- b) Explain PEMFC fuel cell with neat sketch. [5]

Unit-4

- 8 a) Distinguish between thermoplastics and thermosetting plastics. [5]
b) Explain preparation, properties and applications of PGA and PLA. [5]
(OR)
- 9 a) Write the preparation, properties and applications of Buna-S and Buna-N rubbers. [5]
b) Write a note on Conducting Polymers. [5]

Unit-5

- 10 a) Explain Electronic transitions occur in UV-Visible spectroscopy. [5]
b) Write the basic principle involved in IR Spectroscopy. [5]
(OR)
- 11 a) Discuss briefly components of an HPLC instrument. [5]
b) Write about fundamental modes of vibration in IR spectroscopy. [5]
