

ECHE101

B. Tech. Ist SEMESTER EXAMINATION, 2025-26

Bachelor of Technology

(ECE & IT)

Engineering Chemistry

Time : Three Hours]

[Maximum Marks : 75

Note: There are **three** sections (A, B and C) and candidate has to attempt questions from all sections. Marks are indicated against each section.

Section-A

1. Attempt all parts of the following : $5 \times 3 = 15$
- (a) Define the thermoplastic and thermoset polymer with suitable examples.
 - (b) Explain 'n type' of semiconductor with suitable diagram.
 - (c) What is the metal excess defect in a crystal ?
 - (d) Define the term 'setting of cement'.
 - (e) Distinguish between gross and net calorific value of a fuel.

Section-B

Note: Attempt any four questions of the following : 4×5=20

1. What is galvanic cell ? Describe a Daniell cell.
2. Discuss the preparation, properties and uses of Nylon 6,6 and NBR.
3. With a neat sketch of molecular orbital diagram, calculate the bond order and explain the magnetic behaviour of nitrogen and oxygen molecule.
4. Discuss the structure, properties and application of fullerenes.
5. Explain the different electronic transitions in UV-visible spectroscopy with suitable diagram.
6. Write short note on 'Biodegradable Polymer'.

Section-C

Note: Attempt all parts of any two questions : 2×20=40

8. (a) Describe the construction of lead acid battery with the reaction during charge and discharge.
(b) What are Organometallic compounds ? Write their classification, preparation of Grignard reagent and application.

9. (a) With a neat sketch describe the phase diagram of water system and explain all the curves, equilibrium and point in the diagram.
(b) Briefly discuss the type of liquid crystals and their important application.
10. (a) Explain the process for determination of calorific value of fuels by bomb calorimeter with suitable diagram.
(b) Describe the lime soda process of water softening with suitable diagram and reactions.

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