

Seat No.	
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F.Y.B.Tech. (Part - I) (Semester - I) (CBCS)

Examination, June-2025

ENGINEERING CHEMISTRY

Sub. Code : 71817/72507

Day and Date : Monday, 09/06/2025

Total Marks : 70

Time : 10:30 a.m. to 01:00 p.m.

- Instructions :**
- 1) Attempt any three questions from each section.
 - 2) Figures to the right indicate full marks.
 - 3) Draw neat labeled diagrams wherever necessary.
 - 4) Use of non-programmable calculator is allowed.

SECTION-I

- Q1) A)** A sample of water on analysis was found to contain the following impurities; **[6]**

	Wt. mg/lit	Mol. wt.
Ca(HCO ₃) ₂	65	162
Mg(HCO ₃) ₂	75	146
CaSO ₄	84	136
Mg(NO ₃) ₂	37	148

Calculate temporary, permanent and total hardness of water in degree Clark.

- B) Define hardness of water. Explain temporary and permanent hardness. **[6]**
- Q2) A)** With a neat labeled diagram, explain the construction and working of GLC. **[6]**
- B) State Beer-Lamberts Law and derive expression for it. **[5]**

- Q3)** A) Give the preparation properties and application of Urea formaldehyde plastic. [6]
B) Explain condensation polymerization reaction with suitable example. [5]

Q4) Attempt Any Three. [12]

- A) Write a note on Chloride content of water.
B) Write note on ill effects of sludge and scale formation in boiler.
C) Write any four applications of Conducting polymers.
D) Distinguish between Thermosoftening and Thermosetting plastic.
E) Give composition, properties and applications of GRP.

SECTION-II

- Q5)** A) Following results were recorded in Bomb calorimeter experiment. [6]
Calculate the gross and net calorific value of the fuel contains 5.6 hydrogen and latent heat of condensation of steam as 587cal/gm.

Weight of coal burnt = 0.21 gm

Mass of water in calorimeter = 2500gm

Water equivalent of calorimeter = 571gm

Observed rise in temperature = 2.28°C

Cooling correction = 0.026°C

Fuse wire correction = 15.5Cal

Acid Correction = 40Cal

- B) Explain Boy's calorimeter with neat labeled diagram. [6]

- Q6)** A) Define electrochemical corrosion. Discuss hydrogen evolution mechanism with example. [6]

- B) Discuss the protection of metal from corrosion by proper design and material selection. [5]

- Q7)** A) Give composition, properties and applications of plain carbon steels. [6]
B) Write composition, properties and applications of Duralumin and Alnico. [5]

Q8) Attempt Any Three. [12]

- A) Discuss any four characteristics of a good fuel.
B) Enlist any four principles of Green Chemistry.
C) Discuss any four factors influencing the rate of corrosion.
D) Write composition, properties and applications of Brass.
E) What is hot dipping process? Write a note on tinning.
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