Sub code: R25BS005		R25

AVANTHI INSTITUTE OF ENGINEERING AND TECHNOLOGY
(UGC - Autonomous)

(Approved by AICTE, Recg. by Govt. of T.G & Affiliated to JNTU, Hyderabad) NAAC "A" Accredited Institute

B. Tech I Year I Semester Regular Examinations, December 2025.

ENGINEERING CHEMISTRY
(Common CSE)

Time: 3 hours | **Max. Marks: 60**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 10 marks. Answer all questions in Part A.
Part B consists of ten questions from 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART-A

(10 Marks)

			BT Level	Marks
1.	a	Discuss the principle involved in the estimation of hardness of water by EDTA method.	CO 1	2M
	b	Summarize water line corrosion?	CO 2	2M
	c	What is a Direct Methanol Fuel Cell (DMFC)?	CO 3	2M
	d	Give any Two application of PLA.	CO 4	2M
	e	Define a biosensor.	CO 5	2M

PART-B

(50 Marks)

2.		A sample of water is found to contain the following dissolving salts in milligrams per liter $Mg(HCO_3)_2$ = 146 mg, $CaCl_2$ = 222 mg, $Ca(HCO_3)_2$ = 162 mg, $MgSO_4$ = 80 mg, $MgCl_2$ = 190 mg, $CaCO_3$ = 100 mg and NaCl=72 mg. Calculate the Temporary, Permanent and total hardness of water from the given sample.	CO1	10M
		OR		
3.		Explain the external treatment of Boiler feeding water by Ion-Exchange process.	CO1	10M
4.		Describe construction and working principle of SHE with proper diagram.	CO2	10M
		OR		
5.		List out and explain the Factors effecting on the rate of corrosion.	CO2	10M
6.		Explain the Fischer–Tropsch process for the production of synthetic fuels with reactions and applications.	CO3	10M
		OR		
7.		Write detailed notes on Hythane – its production, composition, advantages, and applications.	CO3	10M
8.		Define plastics, elastomers, and fibers. Explain the properties and applications of PVC, Buna-S, and Nylon-6,6.	CO4	10M
		OR		
9.		Discuss the properties and applications of conducting polymers in modern technology.	CO4	10M
10.		Explain the principle and working of a Pollution Under Control (PUC) CO sensor with Passive Infrared detection.	CO5	10M

		OR		
11.		Define biosensors. Describe the construction, working, principle, and applications of an amperometric glucose-monitor sensor.	CO5	10M