Code No.: R22CH102BS	R22	H.T.No.			8	R						

CMR ENGINEERING COLLEGE: : HYDERABAD
UGC AUTONOMOUS
I–B.TECH–I–Semester End Examinations (Supply) - December- 2025
ENGINEERING CHEMISTRY
(Common for ECE, CSE & IT)

[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 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART-A **(10 Marks)**

1.	a)	What are the salts responsible for the temporary and permanent hardness of water?	[1M]
	b)	Distinguish scale and sludge.	[1M]
	c)	Summarize Octane number of petrol.	[1M]
	d)	Why are gaseous fuels more advantageous than solid fuels?	[1M]
	e)	Define reduction potential.	[1M]
	f)	Identify the advantages of glass electrode.	[1M]
	g)	What is galvanic corrosion?	[1M]
	h)	The rate of metallic corrosion increases with increases in temperature. Discuss the reason.	[1M]
	i)	What is natural rubber? Explain.	[1M]
	j)	Identify classification of conducting polymers.	[1M]

PART-B **(50 Marks)**

2.		Examine the estimation of hardness of water by EDTA method.	[10M]
		OR	
3.		Discuss the ion-exchange process for water softening.	[10M]
4.		Explain proximate analysis of coal with its significance. How is it carried out?	[10M]
		OR	
5.		What are the advantages of catalytic cracking process? Construct and describe moving bed catalytic process.	[10M]
6.	a)	Derive Nernst's equation for the calculation of cell emf.	[4M]
	b)	Summarize the construction of lead-acid battery with the reactions occurring during discharge.	[6M]
		OR	
7.		Define fuel cell. Explain the construction and working of H_2-O_2 fuel cell. What are the advantages and limitations of fuel cell?	[10M]
8.		Discuss Electrochemical corrosion. Explain its mechanism.	[10M]
		OR	
9.	a)	Mention various factors influencing the rate of corrosion.	[4M]
	b)	Explain sacrificial anodic protection method of controlling corrosion.	[6M]
10.		Develop the free radical polymerization mechanism of PVC.	[10M]
		OR	
11.		Outline why natural rubber needs vulcanization. How is it carried out?	[10M]

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