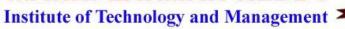
Course Code: 1910005 MLRITM R19



MARRI LAXMAN REDDY







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I B.Tech I Sem Regular Examination, December 2019 CHEMISTRY (EEE, CSE & IT)

Time: 3 Hours. Max. Marks: 70

Note: 1. This question paper contains two parts A and B.

- 2. Part- A is Compulsory. Answer all Questions which carries 20 marks.
- 3. Part B consists 5 units. Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART- A

		$(10 \times 2 \text{ Marks} = 20)$	Marks)
1.	a)	Define LCAO (Linear combination of Atomic orbital)	2 M
	b)	Explain the effect of doping on conductance.	2 M
	c)	Calculate the hardness of a sample of water having the following composition Ca(HCo ₃) ₂ =243 mg/litre, MgSo ₄ =240 mg/litre, mol.wt 162 and 120 respectively.	2 M
	d)	Illustrate the characteristics of potable water.	2 M
	e)	Define the terms Single electrode potential and Standard electrode potential.	2 M
	f)	What is galvanic and pitting corrosion?	2 M
	g)	Explain Enantiomers and Disastereomers with an example each.	2 M
	h)	Predict the products 1.CH ₃ -CH=CH ₂ + HBr→ 2.CH ₃ -CH=CH ₂ + HBr/R-O-O-R>	2 M
	i)	Write the selection rules of Vibrational rotational spectra.	2 M
	j)	What causes a chemical shift in NMR Spectroscopy?	2 M
		PART - B	
		$(5 \times 10 \text{ Marks} = 50)$	Marks)
2	a)	Explain in detail Molecular orbital energy level diagram of N ₂ molecule.	5 M
	b)	Write the sailent features of Crystal Field Theory.	5 M
		OR	
3	a)	Explain the π molecular orbital of benzene.	5 M
	b)	Write a detailed note on Band structure of solids.	5 M

4	a)	Explain the principle involved in the determination of hardness of water by complexometric method.	5 M
	b)	Describe briefly the desalination of water by Reverse Osmosis method.	5 M
		OR	
5	a)	Discuss briefly the softening of hard water by Ion exchange process.	5 M
	b)	Write a note on Calgon and Colloidal conditioning.	5 M
6	a) b)	The emf of the cell, Pt Hg,Hg ₂ Cl _{2(S)} /Cl-(sat)//H+(Unknown)/Q,QH ₂ is 0.12V at 298K. Calculate the pH value of the solution given that $E_{\rm SCE}$ is 0.2415 and $E^{\rm 0}QH_{\rm 2}$ is 0.699V What is Cathodic protection? Explain briefly about sacrificial anodic method.	5 M
		OR	
7	a)	Explain the reactions occurring during discharging and charging in Lead-acid storage battery.	5 M
	b)	Discuss the various factors affecting rate of corrosion.	5 M
8	a)	Explain the mechanism of SN^1 and SN^2 reaction with suitable examples.	10 M
		OR	
9	a)	Write the structure, synthesis and pharmaceutical applications of paracetomal	5 M
	b)	Write a note on Hydroboration of Olefins.	5 M
10	a)	Write the selection rules & applications of Vibrational rotational spectra in detail.	10 M
		OR	
11	a)	Write the applications of NMR spectroscopy.	5 M
	b)	Explain about MRI (Magnetic Resonance Imaging)	5 M

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