MARRI LAXMAN REDDY
INSTITUTE OF TECHNOLOGY AND MANAGEMENT
(AN AUTONOMOUS INSTITUTION)
(Approved by AICTE, New Delhi & Affiliated to JNTUH, Hyderabad)
Accredited by NBA and NAAC with 'A' Grade & Recognized Under Section2(f) & 12(B)of the UGC act,1956

I B.Tech I Sem Supply End Examination, October 2022
Engineering Chemistry
(EEE, CSE, IT, CSI, CSM)

Time: 3 Hours.   **Max. Marks: 70**

Note: 1. Question paper consists: Part-A and Part-B.
   2. In Part – A, answer all questions which carries 20 marks.
   3. In Part – B, answer any one question from each unit.
      Each question carries 10 marks and may have a, b as sub questions.

PART- A
(10*2 Marks = 20 Marks)

1.	a)	Define Bonding and Anti-bonding molecular orbitals.	2M	CO1	L2
	b)	What is meant by doping?	2M	CO1	L1
	c)	Name the salts causes to temporary and permanent hardness?	2M	CO2	L2
	d)	What is Reverse osmosis (RO)?	2M	CO2	L1
	e)	Write Nernst equation for electrode potential and explain terms involved in it.	2M	CO3	L4
	f)	What is Sacrificial anodic protection?	2M	CO3	L6
	g)	Define Enantiomers and give example.	2M	CO4	L2
	h)	Write the chemical equations of Aldehyde reaction with $LiAlH_4$ and Ketone reaction with R-MgX.	2M	CO4	L5
	i)	Predict the following molecules whether they are IR active or not. (i) CO_2 (ii) N_2 (iii) Hcl (iv) Cl_2	2M	CO5	L6
	j)	State principle of UV-spectroscopy.	2M	CO5	L1

PART- B
(10*5 Marks = 50 Marks)

2	a)	Find the bond order of N_2 molecule with help of MOED.	5M	CO1	L3
	b)	Write the effect of doping on conductance of semi-conductors.	5M	CO1	L2

OR

3		Explain Crystal field splitting of d-orbitals of metal in square planar complex.	10M	CO1	L2

4	a)	Describe Ion-exchange method of softening of water.	5M	CO2	L2
	b)	Explain Disinfection of water by chlorination method.	5M	CO2	L1

OR

5		100 ml of given water sample consumed 50 ml of 0.01M EDTA solution before boiling and 18 ml of the same EDTA solution after boiling. Calculate the total, permanent and temporary hardness of water sample.	10M	CO2	L3
6	a)	Calculate the E_{cell} of the following Cell at 25^0C, Cd/Cd^{2+} (0.1M)// Cu^{2+} (0.01M)/Cu E^0 (Cd/Cd^{2+}) is +0.40V & E^0 (Cu^{2+} /Cu) is +0.34V	5M	CO3	L3
	b)	Explain factors affecting the rate of corrosion.	5M	CO3	L2

OR

7	What is secondary battery? Describe the construction and cell reactions of Lead acid battery.	10M	CO3	L4

8	a)	Explain the mechanism of Propene reaction with HBr.	5M	CO4	L2
	b)	Write the synthesis and pharmaceutical applications of Aspirin.	5M	CO4	L5

OR

9	Explain S_N1 & S_N2 mechanism with examples.	10M	CO4	L2

10	a)	Explain the different types of molecular vibrations in IR spectroscopy	5M	CO5	L3
	b)	Write a short note on spin-spin coupling in 1H-NMR spectroscopy?	5M	CO5	L1

OR

11	Explain different types of electronic transitions in organic molecules.	10M	CO5	L2

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BL: Blooms Taxonomy Levels