UNIVERSITY COLLEGE OF ENGINEERING (A)
Osmania University, Hyderabad-07

CLASS TEST-II

SUBJECT: ENGINEERING CHEMISTRY

Class: B.E. (ECE, EEE, CSE & AIML)
Max. Marks: 30
Semester: II
Academic Year: 2023-2024

Duration: 90 Min.
Date: 2/04/2024

Answer All Questions

	PART A (10 M)	Marks	BT	CO
1. a)	Calculate the temporary, permanent and total hardness of a water sample containing $Mg(HCO_3)_2$= 73mg/L, $Ca(HCO_3)_2$= 162mg/L, $MgCl_2$= 95mg/L, $CaSO_4$=136mg/L.	2	L2	1
b)	Distinguish between galvanizing and tinning.	2	L4	1
c)	Define Markonikovs rule with an example.	2	L1	4
d)	Highlight the applications of conducting polymers.	2	L2	4
e)	State reverse osmosis and mention its advantages.	2	L1	1
	PART B (20 M)			
2. a)	What is the principle of EDTA method? Describe the estimation of hardness of water by EDTA method.	5	L6	1
b)	Explain the mechanism of electrochemical corrosion.	5	L2	1
3. a)	Write preparation, properties and engineering applications of i) Dacron ii)Buna-S	5	L4	4
b)	Outline general Substitution reaction. Formulate the mechanism of SN1 reaction.	5	L6	4

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UNIVERSITY COLLEGE OF ENGINEERING (A)
Osmania University, Hyderabad-07
CLASS TEST-I1
SUBJECT: ENGINEERING CHEMISTRY

Class: B.E. (ECE, EEE, CSE & AIML)
Max. Marks: 30
Semester: II
Academic Year: 2023-2024

Duration: 90 Min.
Date: 28/06/2024

Answer All Questions

	PART A (10 M)	Marks	CO	BT
1. a)	State entropy & its significance.	2	L2	1
b)	Distinguish between galvanic cell and electrolytic cell.	2	L4	2
c)	Find the bond order of N_2, N_2^+ and N_2^-	2	L1	2
d)	Find the degrees of freedom for CO_2 molecule.	2	L2	1
e)	Calculate the EMF of the following cell at 25°C Zn/Zn^{+2} (0.01M) // Cu^{+2} (0.001)/Cu	2	L1	2
	PART B (20 M)			
2. a)	State Carnot's theorem. Derive an expression for calculating the efficiency of a heat engine.	5	L2	4
b)	Determine P^H of unknown solution using quinhydrone electrode.	5	L2	5
3. a)	Explain the applications of UV-Visible spectroscopy.	5	L3	5
b)	Draw MOED of O_2 and also find the magnetic behavior and bond order.	5	L3	4
4. a)	Explain Anisotropic effect with a suitable example.	5	L3	5
b)	What is Gibb's free energy? Derive an expression for variation of Gibb's free energy with T & P.	5	L2	4

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