REG.No.												

SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)

COIMBATORE-641 035

B.E/B.Tech- INTERNAL ASSESSMENT –I

Department of Chemistry

Academic year 2023-24 (ODD)/FIRST SEMESTER

23CHT101 – Engineering Chemistry

(Common to CSE, ECE, IT & AIML)

(REGULATION 2023)

A

TIME:1.5 HOURS **MAXIMUM MARKS:50**

ANSWER ALL QUESTIONS

PART A— (5 x 2 = 10 Marks)

		CO	BL	
1.	Complete the following 1. $H_2 \rightarrow \ldots\ldots + 2e^-$ 2. $Fe + \ldots\ldots \rightleftharpoons FeSO_4 + Cu$ 3. ,,,,,,,,, $+ Cu^{2+} \rightarrow . Zn^{2+} + Cu$ 4. $Ag + H_2SO_4 \rightarrow$	**CO1**	**App**	**2**
2.	Draw a neat and well labelled diagram of Standard Hydrogen Electrode and write its one application	**CO1**	**Un**	**2**
3.	Find the EMF for Mg^{2+}/Mg // Cu^{2+}/Cu the cell (E^O of Mg^{2+}/Mg = - 2.37 V and Cu^{2+}/ Cu = +0.34V)	**CO1**	**App**	**2**
4.	How are electrochemical cells related to batteries?, what are the important characteristics of a battery.	**CO2**	**Un**	**2**
5.	Differentiate the chargeable and rechargeable batteries. Give an example for each	**CO2**	**Un**	**2**

PART B —(13 + 13 +14= 40 Marks)

6.	**(a)**		The standard oxidation potential of the electrode in the following reaction is +2.37 V at room temperature, $Mg \rightarrow Mg^{2+} + 2e$, and the concentration of Mg^{2+} ions is 0.02 M.Derive the Nernst equation of the above reaction and calculate its Electrode potential.	**CO1**	**App**	**13**
			(OR)			
	(b)		Construct the glass electrode and mention its advantages, disadvantages and Applications. How pH is found using a glass electrode by combining with Calomel electrode with proper labeled diagram?	**CO1**	**App**	**13**

7.	**(a)**		What type of cell is lead-acid battery? Construct a Lead acid battery with Neat and labeled digram, explain it working with discharging and charging chemical reactions and Mention its few applications	**CO2**	**Un**	**13**
			(OR)			
	(b)		Classify the types of Batteries with examples and explain in detail about the construction and working of a Primary battery and mention its few advantages and applications	**CO2**	**Un**	**13**
8.	**(a)**	**(i)**	What do you understand by electrochemical series,how does it help to determine the equilibrium constant (K) of the reaction , in Measuring the spontaneity of the reaction and Predicting the Liberation of Hydrogen gas from acids by metals	**CO2**	**App**	**7**
		(ii)	Define EMF of a cell and determine the electromotive force of electrochemical cell by applying the principle of poggendroff's compensation technique.	**CO2**	**App**	**7**
			(OR)			
	(b)	**(i)**	Construct the calomel electrode and describe its working and determine the electrode potential of Zn by using calomel electrode	**CO3**	**App**	**7**
		(ii)	Construct the Daniel cell, Write its cell reaction, cell representation and represent the salt bridge in it and its functions and calculate the cell potential of the Daniel cell.	**CO3**	**App**	**7**

Blooms Taxonomy Abbreviations: Rem-Remembrance, Und-Understanding, App- Apply, Ana-Analyze, Eva-Evaluate, Cre-Create

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Prepared by **Teaching Coordinator** **HOD**