...STITUTE OF TECHNOLOGY, NITTE

Off-Campus Centre of Nitte (Deemed to be University)

I Sem B.Tech. (CBCS) Mid Semester Examinations - I, September 2022

CY1001-1 – ENGINEERING CHEMISTRY

Duration: 1 Hour

Max. Marks:

*Note: Answer any **One** full question from **each Unit**.*

			Marks	BT*	CO*	P
		Unit – I				
1.	a)	Derive the Nernst equation for the following equilibrium reaction at 298K. $Mg^{2+} + 2e^- \rightleftharpoons Mg$	3	L*2	1	
	b)	Explain the experimental method of determination of pH of a solution using glass electrode.	3	L2	1	
	c)	Describe the construction, working of Lithium-ion battery.	4	L2	1	
2.	a)	Calculate the potential of Ag-Zn cell at 298K if the concentration of Ag^+ and Zn^{2+} are 6.4×10^{-6} M and 2.1×10^{-3} M respectively. E^0 of the cell at 298K is 1.56V.	3	L3	1	
	b)	Explain the construction and working of Calomel electrode.	3	L2	1	
	c)	Describe the construction and working of CH_3OH-O_2 fuel cell.	4	L2	1	
		Unit – II				
3.	a)	Explain the electrochemical theory of corrosion taking iron as an example.	5	L1	1	
	b)	What is anodic metal coating? Give the steps involved in tinning and mention any two applications.	5	L1	1	
4.	a)	Discuss the following factors affecting the rate of corrosion (i) pH (ii) Nature of the corrosion product.	4	L2	1	
	b)	Iron corrodes faster when it is in contact with copper than with tin. Justify.	1	L3	1	
	c)	What is Cathodic protection? Explain the corrosion prevention methods by cathodic protection.	5	L2	1	

BT* Bloom's Taxonomy, L* Level; CO* Course Outcome; PO* Program Outcome

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