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CAMBRIDGE INSTITUTE OF TECHNOLOGY

K.R. PURAM, BENGALURU-560036

Department of Basic Sciences

First Internal Assessment - Even Semester 2018-19

Sub. Name: Engineering Chemistry **Sub. Code**: 18CHE22 **Semester**: II

Date: 01-04-2019 **Time**: 9:00 AM **Duration**: 90 Minutes **Max. Marks**: 30

[Instructions: Answer any two full questions as indicated below]

Sl. No	QUESTIONS	Cos	RBT Levels	Marks
1.	a) The spontaneous galvanic cell Tin/Tin ion(0.024M)/ Tin ion(0.064M) /Tin develop an emf of 0.0126 V at 25°C, What is the valency of Tin?	CO1	L1	04M
	b) Derive EMF for a concentration cell constructed by dipping two copper electrodes in 0.001M and 0.1M $CuSO_4$ and the two solutions are connected by a salt bridge. Find the value of EMF.	CO1	L2	05M
	c) Explain the application of ion selective electrode with a neat labeled diagram.	CO1	L2	06M
	OR			
2.	a) Define the following. i) Single electrode potential ii) EMF or cell potential.	CO1	L1	04M
	b) Explain the construction and working of lithium-ion battery.	CO1	L2	05M
	c) An electrochemical cell consists of metallic zinc immersed in 0.1 M Zn(NO3)2 solution and metallic copper immersed in 0.2 M CuSO4 solution. Find the emf of the cell at 25°C and change in free energy of the cell reaction, given E0cell = 1.1 V.	CO1	L2	06M
3.	a) What is the effect of following factors on the rate of corrosion: i) Nature of corrosion product, ii) area of anodic and cathodic regions.	CO2	L1	04M
	b) Explain waterline corrosion with reactions.	CO2	L2	05M
	c) Describe sacrificial anode and impressed current techniques with a neat labeled diagram.	CO2	L2	06M

	OR			
4.	a) What is anodizing process for aluminium?	CO2	L1	04M
	b) Discuss differential aeration corrosion with a neat labeled diagram.	CO2	L2	05M
	c) Illustrate why pin holes in tin-coated iron are more prone to corrosion than pin holes in zinc coated iron.	CO2	L2	06M

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