INTERNAL ASSESSMENT TEST - 1

Dept: FY	Sem / Div: I-E/F/G/H	Sub: Engg.Chemistry	S. Code:15CHE12
Date:20/08/15	Time:3:00pm-4:30pm	Max. Marks: 40	Elective:N

Note: Answer any 2 full questions.

QN		Questions	Bloom's Level	Marks
1	a	Derive Nernst equation for electrode potential.	L2	6
	b	In a galvanic cell,what happens to its EMF,if 1.E^{o}_{cell} increases 2.Temperature decreases 3.Cell quotient increases	L3	3
	c	Derive an expression for the potential of a glass electrode and hence explain how pH of a solution is determined using glass electrode.	L2	7
	d	A concentration cell is constructed by dipping copper rods in 0.001M and 0.1M $CuSO_4$ solutions. Calculate the emf of the cell at 298K.	L2	4
2	a	Explain the construction and working of calomel electrode	L2	7
	b	You are given 2 concentration cells. $Ag(s)\|Ag^+$ (0.01M)$\|\|Ag^+$ (0.5M)$\|Ag$ $Cu\|CuSO_4$ (0.01M)$\|\|CuSO_4$ (0.032 M)$\|Cu$ In which cell, work done is more?	L4	5
	c	The spontaneous galvanic cell tin|tin ion || tin ion(0.064M)|tin develops a potential of 0.0126Vat 25°C. Calculate the valency of tin.	L3	3
	d	Whether EMF arises or not when 2 electrodes of the same metal in contact with solution containing its own ions are coupled? Why? Draw a cell diagram. How are such cells represented? Derive an expression for EMF of such cells.	L3	5
3	a	You are given an electrode. Explain a method for the determination of its potential using a secondary reference electrode.	L2	6
	b	In a battery,the overall cell reaction is,MH+NiOOH------->M+$Ni(OH)_2$.With a neat diagram,explain its construction and working.	L3	7
	c	Explain the following battery characteristics:1.Cycle life 2. Cell potential	L2	3
	d	The emf of the cell $Ag\|AgNO_3$(0.0083M) || $AgNO_3$('x' M) |Ag was found to be 0.074V at 298 K. Calculate the value of 'x' and write the cell reaction.	L3	4

Prepared by: 17/08/15 Checked by: 17/08/15 HOD 17/08/15