

CONTINUOUS INTERNAL EVALUATION- 1

Dept: FY (Chemistry)	Sem / Div: II/A, B, C	Sub: Engineering Chemistry	S Code: 18CHE22
Date: 24/06/2021	Time: 3:00-4:30 pm	Max Marks: 50	Elective: N
Note: Answer any 2 full questions, choosing one full question from each part.			

Q N	Questions	Marks	RBT	COs
PART A				
1	a) Explain the construction and working of Li-ion battery with applications b) Explain the classification of batteries with examples	10	L1, L2	CO1
	b) Write the construction and working of calomel electrode and also obtain an expression for the potential of calomel electrode.	8	L1, L2	CO1
	c) An electrochemical cell consists of zinc electrode dipped in 0.5M ZnSO ₄ and nickel electrode in 0.05 M NiSO ₄ . Write the cell representation, cell reaction and calculate the emf of the cell at 298K. (The standard reduction potentials of zinc and nickel are -0.76V and -0.25V respectively).	7	L1, L3	CO1
OR				
2	a) Define ion selective electrode. Write the construction and working of glass electrode, derive an expression for emf of glass electrode and explain the procedure for the determination of pH of a solution using glass electrode.	10	L1, L2	CO1
	b) Define single electrode potential. Derive Nernst Equation	8	L1, L2	CO1
	c) Define concentration cells. A concentration cell was constructed by immersing 2 silver electrodes in 0.05M and x M AgNO ₃ solution (x > 0.05 M). Write the cell representation, cell reactions and calculate x if the emf of the cell is 0.0768V.	7	L1, L3	CO1
PART B				
3	a) Define corrosion. Explain the electrochemical theory of corrosion taking iron as an example with relevant reactions and block diagram.	10	L1, L2	CO2
	b) Define inorganic coating. Explain the corrosion control of Anodizing Aluminium with relevant reactions.	8	L1, L2	CO2
	c) Explain the effect of following factors on rate of corrosion (a) Ratio of anodic area and cathodic area (b) pH	7	L2	CO2
OR				
4	a) What is Cathodic protection of metals? Explain sacrificial anode and impressed current method of protecting metals. List the advantages and disadvantages.	10	L1, L2	CO2
	b) Explain Differential aeration corrosion taking the example of water line and pitting corrosion.	8	L1	CO2
	c) Define metallic coating. Explain the same by taking the example of Galvanization.	7	L1, L2	CO2