

SECTION D			
Q. No.	Answer any FOUR questions. (4 x 8 = 32 marks)	CO	KL
26.	(a) Consider the half reactions $\text{Zn}^{2+}(\text{aq}) + 2\text{e}^{-} \rightarrow \text{Zn}(\text{s}) \quad E_0 = -0.763 \text{ V}$ $\text{Pb}^{2+}(\text{aq}) + 2\text{e}^{-} \rightarrow \text{Pb}(\text{s}) \quad E_0 = -0.126 \text{ V}$ (i) Combine the two to form an electrochemical cell such that reaction is spontaneous and give the reaction. (ii) Represent the cell. (iii) Calculate E_{cell} for the given electrochemical cell. (iv) Calculate free energy change for the reaction.	4	4
27.	Corrosion is considered as an Economic loss. Justify the statement. Discuss the Social and environmental issues due to corrosion.	4	4
28.	Classify the polarization of electrodes.	4	4
29.	Examine the Proper Designing Principles which help in preventing corrosion.	4	4
30.	How is corrosion managed by impressed current cathodic protection? Explain with the help of a diagram and example.	4	4
SECTION E			
Q. No.	Answer the following questions. (2 x 12 = 24 marks)	CO	KL
31.	(a) What is mixed potential theory? Discuss its hypothesis. (b) Enumerate the five different methods used to combat corrosion.	5	5
32.	(OR) a) Discuss any five factors that increase the rate of corrosion. b) Plot over potential vs Log i and explain the graph.		
33.	a) What are the five types of inhibitors? Give their mode of action and an example. b) Boiling salt water is less corrosive than hot salt water.	5	5
34.	(OR) Draw and explain the Pourbaix diagram of Fe-H ₂ O-O ₂ system.		