Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI • EXAMINATION – SUMMER 2013

Subject Code: 162105 **Date: 30-05-2013**

Subject Name: Electrometallurgy and Corrosion

Time: 10.30 am - 01.00 pm **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Discuss the importance of corrosion study. Explain factors affecting corrosion.	**07**
	(b)	What is galvanic series? Describe its role in corrosion studies and limitations. Compare it with e.m.f. series.	**07**
Q.2	**(a)**	Describe the Pourbaix diagram for Fe-H_2O system and explain how it is useful in corrosion study.	**07**
	(b)	Derive Nernst equation for electrode potential. Mention applications of Nernstôs equation in corrosion study.	**07**
		OR	
	(b)	What is high temperature corrosion? Write Piling-Bedworth ratio and discuss its applications.	**07**
Q.3	**(a)**	Describe causes, mechanism and way of prevention of galvanic corrosion.	**07**
	(b)	What is selective leaching? Explain with suitable examples? Mention its causes and possible remedial measures.	**07**
		OR	
Q.3	**(a)**	ñPitting is most dengerous form of corrosionò Discuss. Describe the factors increase pitting.	**07**
	(b)	Define erosion corrosion. Discuss causes, mechanism and way of prevention for erosion corrosion.	**07**
Q.4	**(a)**	Write Faradaysô laws of electrolysis. Explain their role in corrosion study.	**07**
	(b)	Enlist different methods of corrosion prevention. With the help of suitable examples explain how the proper material selection is helpful in corrosion control.	**07**
		OR	
Q.4	**(a)**	Define corrosion. Explain electrochemical theory of wet corrosion.	**07**
	(b)	With the help of proper examples explain how the inhibitors are helpful to control corrosion.	**07**
Q.5	**(a)**	What is cathodic protection? Differentiate between sacrificial anode cathodic protection method and impressed current cathodic protection method.	**07**
	(b)	With neat sketch of setup used, explain the Electroplating process.	**07**
		OR	
Q.5	**(a)**	What is Tafel plot? Describe its use in corrosion rate measurement.	**07**
	(b)	Explain Galvanizing Process. Give its advantage and application.	**07**

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