Seat No.: _____ *Enrolment No._____*

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- VIth SEMESTER–EXAMINATION – MAY- 2012

Subject code: 162105 **Date: 19/05/2012**

Subject Name: Electrometallurgy & 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 EMF series and galvanic series with their limitations.	**07**
	(b)	What is corrosion? Why corrosion should be prevented?	**07**
Q.2	**(a)**	Explain the following: 1. Faraday's laws 2. Anode 3. Cathode 4. Current Density	**07**
	(b)	Comment on effects of temperature and velocity on corrosion.	**07**
		OR	
	(b)	What do you mean by polarisation? Give details of different type of polarisation.	**07**
Q.3	**(a)**	Write note on pilling bedworth ratio.	**07**
	(b)	Compare crevice corrosion with pitting corrosion.	**07**
		OR	
Q.3	**(a)**	Discuss the Pourbaix diagram and its importance.	**07**
	(b)	List conditions causing galvanic corrosion and explain its mechanism, prevention and beneficial effect.	**07**
Q.4	**(a)**	What is selective leaching? Explain its mechanism using suitable example.	**07**
	(b)	When intergranular corrosion occurs? Explain its mechanism and ways of prevention.	**07**
		OR	
Q.4	**(a)**	Explain erosion corrosion causes, mechanism and preventive ways.	**07**
	(b)	List causes of stress cracking corrosion. Discuss its mechanism and ways of prevention.	**07**
Q.5	**(a)**	Discuss how proper material selection and design can help to protect corrosion.	**07**
	(b)	What are inhibitors? Discuss different types of inhibitors with suitable example and their ways of functioning.	**07**
		OR	
Q.5	**(a)**	What is the principle of anodic and cathodic protection? Compare both techniques.	**07**
	(b)	What is the principle of anodizing? Discuss the process of anodizing and its applications.	**07**

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