

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**
