

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- Vth SEMESTER-EXAMINATION – MAY/JUNE - 2012****Subject code: 152105****Date: 07/06/2012****Subject Name: Industrial Corrosion & its Prevention****Time: 02:30 pm – 05:00 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) Define corrosion. What are the various corrosion damage? What is corrosion rate expression? **02+04+01**

(b) Explain electro-chemical reaction with an example? **07**

Q.2 (a) Explain galvanic corrosion. Also explain the various factors affecting it. **03+04**

(b) Explain the mechanism of pitting corrosion. **07**

OR

(b) Explain dezincification with its mechanism and prevention. **05+02**

Q.3 (a) Derive Nernst equation. **07**

(b) What is polarization and its types? Explain concentration polarization. **03+04**

OR

Q.3 (a) Explain linear polarization method for corrosion measurements. **07**

(b) Describe the below terms:
(i) Exchange current density. **04**
(ii) Tafel plot. **03**

Q.4 (a) Explain in brief cooling water system with suitable figure. **07**

(b) What are inhibitors? Write its types. Explain any one in brief. **03+01+03**

OR

Q.4 (a) Explain the mechanism of oxidation at high temperature. **07**

(b) Write about ASTM testing method for inter granular corrosion(IGC). **07**

Q.5 (a) (i) Distinguish between cathodic and anodic protection of methods. **04**

(ii) Cracks in cathodic coatings are very dangerous. Explain. **03**

(b) Write short notes on:

(i) Sulphidation. **03**

(ii) Carburization. **04**

OR

Q.5 (a) Explain the various methods of cathodic protection. **07**

(b) Write the effects of various factors on corrosion:

(i) Velocity. **03**

(ii) Temperature. **02**

(iii) Oxygen and oxidizers. **02**
