**Seat No.: _____** **Enrolment No._____**

# GUJARAT TECHNOLOGICAL UNIVERSITY

**BE - SEMESTER–V (OLD) - EXAMINATION – SUMMER 2017**

**Subject Code: 152105** **Date: 15/05/2017**

**Subject Name: Industrial Corrosion & its Prevention**

**Time: 02:30 PM to 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.**

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|---|---|---|---|
| **Q.1** | **(a)** | Discuss about high temperature corrosion and mention the Protection methods. | **07** |
| | **(b)** | What is selective leaching? Discuss its causes and possible remedial measures. | **07** |
| **Q.2** | **(a)** | Explain electrochemical theory of wet corrosion with suitable example. | **07** |
| | **(b)** | Discuss about galvanic series. Give limitations. | **07** |
| | | **OR** | |
| | **(b)** | Derive Nernst equation for electrode potential. Mention applications. | **07** |
| **Q.3** | **(a)** | Explain tafel extrapolation method for corrosion rate measurement. | **07** |
| | **(b)** | Describe the ASTM G 48 test for pitting corrosion testing. | **07** |
| | | **OR** | |
| **Q.3** | **(a)** | Differentiate between concentration polarization and activation polarization. | **07** |
| | **(b)** | Explain Wet loss method for corrosion rate measurement. | **07** |
| **Q.4** | **(a)** | Discuss causes, mechanism and way of prevention of crevice corrosion. | **07** |
| | **(b)** | Discuss effect of water quality on corrosion rate in thermal power plants. | **07** |
| | | **OR** | |
| **Q.4** | **(a)** | Discuss causes, mechanism and way of prevention of Inter granular corrosion. | **07** |
| | **(b)** | Explain about cooling water system. | **07** |
| **Q.5** | **(a)** | What is electroplating? Describe important steps involved in electroplating. | **07** |
| | **(b)** | Compare cathodic protection method with anodic protection method to combat corrosion. | **07** |
| | | **OR** | |
| **Q.5** | **(a)** | Explain the difference between corrosion protection by noble coating and active coating with suitable examples. | **07** |
| | **(b)** | With the help of suitable examples explain how the proper material selection is helpful in corrosion control. | **07** |

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