| Reg. No. | | | | | | | | | | |
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# Manipal Institute of Technology, Manipal

(A Constituent Institute of Manipal University)

## IV SEMESTER B.TECH (OPEN ELECTIVE - 1)

## END SEMESTER EXAMINATIONS, JUNE/JULY 2016

SUBJECT: CORROSION ENGINEERING [MME 3281]

**REVISED CREDIT SYSTEM**

Time: 3 Hours MAX. MARKS: 50

**Instructions to Candidates:**

- Answer **ALL** the questions.
- Missing data may be suitably assumed.

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| **1A.** | Discuss the use of vapour phase inhibitors, scavengers and hydrogen evolution poisons in controlling corrosion. | **3** |
| **1B.** | Explain in brief any six objectives of coatings in corrosion control. | **3** |
| **1C.** | Explain any four reasons why corrosion study is important? | **4** |
| **2A.** | How is a galvanic cell different from an electrolytic cell? | **3** |
| **2B.** | Differentiate activation polarization from concentration polarization. | **3** |
| **2C.** | Illustrate and explain the mechanism of fretting corrosion. List any eight preventive techniques. | **4** |
| **3A.** | State why corrosion rate measurement is necessary? What are the requirements for a good corrosion rate expression? | **3** |
| **3B.** | What are the guidelines to be followed while recording data during corrosion tests? | **3** |
| **3C.** | Explain Uniform corrosion, its mechanism and any four techniques that can be used to prevent it. | **4** |
| **4A.** | How anodic protection can be employed to protect a structure from corrosion? | **3** |
| **4B.** | List any six design rules that can be followed to prevent corrosion. | **3** |
| **4C.** | Discuss the construction and working of copper – copper sulfate electrode and silver-silver chloride electrode. List the requirements for a reference electrode | **4** |

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| **5A.** | Explain the mechanisms of Pitting Corrosion. | **3** |
| **5B.** | How polarization curves can be used to determine the rate of corrosion? Explain the setup with the help of a neat sketch. | **3** |
| **5C.** | Draw a Pourbaix diagram for Aluminium in an aqueous system. Explain the different zones in it. List the uses and limitations of such diagrams. | **4** |