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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, MAY 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. | Explain any six consequences of corrosion. | 3 |
| 1B. | Discuss the reactions that take place at anode and cathode with examples. | 3 |
| 1C. | What are the factors that affect fretting corrosion? Explain any four. | 4 |
| 2A. | How is a corrosion engineer different from corrosion scientist? | 3 |
| 2B. | Explain the phenomenon of Polarization and its effect on corrosion? | 3 |
| 2C. | Explain the use of Planned Interval Tests in corrosion testing with a suitable example. | 4 |
| 3A. | Explain the different types of concentration cells. | 3 |
| 3B. | How material selection influences prevention of corrosion? | 3 |
| 3C. | What is Crevice corrosion? Discuss the two possible mechanisms for such corrosion. List any four preventive techniques. | 4 |
| 4A. | How significant role do "cleaning of specimen" and "temperature" play in corrosion testing? | 3 |
| 4B. | How does selective leaching affect brass? | 3 |
| 4C. | Discuss the construction and working of Hydrogen electrode and Calomel electrode. | 4 |
| 5A. | Explain the factors on which corrosion rate depends? List any four conditions that a good corrosion expression should satisfy. | 3 |

- 5B.** Cathodic protection with external power supply was used to protect an underground steel tank. A pipe in close proximity to the steel tank corroded in few months' time. Identify the possible cause for corrosion. Suggest suitable measure to overcome such problem. **3**
- 5C.** Draw a Pourbaix diagram for Fe-H₂O system. Explain the different zones in it. List the uses and limitations of such diagrams. **4**