Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

A Constituent Institute of Manipal University, Manipal

V SEMESTER B.TECH (MECHANICAL & IP ENGG.) END SEMESTER EXAMINATIONS, NOV/DEC 2016

SUBJECT: PE-I: Corrosion Science & Engg. [MME 4015]

REVISED CREDIT SYSTEM

(05-12-2016)

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

- Answer **ALL** the questions.

1A. Discuss the effect of the following mediums on corrosion:
   a. Water
   b. Air
   c. Acids — **03**

1B. Distinguish between Corrosion Scientist and Corrosion Engineer. Who recommends the corrective measures to solve corrosion problems in organisations? Justify your answer. — **03**

1C. Discuss the various damages caused by corrosion with respect to Petrochemical industry. Write the commonly used expression for determining corrosion rate and list the requirements of a good corrosion rate expression. — **04**

2A. With examples discuss any six factors affecting corrosion in industries. — **03**

2B. Write a neat sketch of Calomel electrode and name the parts. What is the function of potassium chloride solution in the above electrode? — **03**

2C. With neat sketch of Fe-H_2O system, explain the various zones of Pourbaix diagram. List any four characteristics of Pourbaix diagram. — **04**

3A. Distinguish clearly between pitting and crevice corrosion. If you are a corrosion expert, how do you identify pitting and what measures you will recommend, to combat pitting? — **03**

3B. Can bimetallic corrosion occur on a single part? Explain the mechanism involved in it with the help of a suitable sketch. — **03**

3C. List the characteristic feature of Stress Corrosion Cracking. How it differs — **04**

from Corrosion fatigue? List the differences.

4A. What do you mean by Activation Polarization? Discuss the factors affecting Activation polarization. **03**

4B. Explain the term Polarization. Discuss its importance in Corrosion Engineering. **03**

4C. Discuss the various types of Inhibitors used to control corrosion in aqueous medium. **04**

5A. With neat sketch, explain the application of Cathodic protection of the buried pipelines used to transport fluids in industries. **03**

5B. Write a note on specimen preparation for corrosion testing. **03**

5C. What is the role played by duration in corrosion testing? Why do the corrosion personnel clean the specimen after exposure to the medium? How the specimen is cleaned after exposure? **04**