



V SEMESTER B.TECH (MECHANICAL / I & P ENGG.)

END SEMESTER MAKE UP EXAMINATIONS, DEC 2016/JAN 2017

SUBJECT: PE-I: CORROSION SCIENCE & ENGG. [MME 4015]

REVISED CREDIT SYSTEM

(07/01/2017)

Time: 3 Hours

MAX. MARKS: 50

Instructions to Candidates:

❖ Answer **ALL** the questions.

- 1A. Define corrosion. List the various corrosive environments. What are the consequences of corrosion? 03
- 1B. Which are the functions that are impaired due to corrosion in the plant and equipment? Explain. 03
- 1C. What are the factors to be considered from corrosion point of view in the selection of the material? With some examples, explain oxidation and reduction in a electrochemical cell. 04
- 2A. Explain clearly the following factors that affect corrosion of materials:
 - a. Nature of metal
 - b. Cathodic to anodic area ratio
 - c. Nature of corrosion product formed 03
 - d. Temperature
 - e. Effect of oxygen
 - f. Surface roughness
- 2B. Explain briefly the various components of a corrosion cell with the help a figure. 03
- 2C. Distinguish between a Galvanic cell and Electrolytic cell. Why do we use a Reference electrode. With a neat sketch, explain any one Reference electrode used in corrosion study. 04
- 3A. List the characteristic features and the various preventive measures used for corrosion Fatigue. 03
- 3B. What do you mean by Dealloying? Why it is considered as a type of 03

corrosion? Distinguish between Hydrogen Blistering and Hydrogen Embrittlement.

- 3C.** What are the causes of Intergranular corrosion? Explain the mechanism involved in it. List the Preventive measures used. **04**
- 4A.** List the Design rules that are employed to provide best corrosion resistance to the system. **03**
- 4B.** What are the objectives of Coatings used for corrosion protection? Distinguish between organic and inorganic coatings. **03**
- 4C.** What do you mean by Concentration Polarization? Discuss the factors affecting Concentration Polarization. **04**
- 5A.** With a neat sketch, explain how Anodic protection is used to control corrosion in industries. **03**
- 5B.** How are the Corrosion tests classified into? List the purpose of corrosion testing. **03**
- 5C.** Explain briefly the Electrochemical techniques used for corrosion testing. **04**