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Total number of printed pages – 2

B. Tech
PCMT 4403

Seventh Semester Back Examination – 2014
CORROSION AND DEGRADATION OF MATERIALS

BRANCH : MME

QUESTION CODE : L 209

Full Marks – 70

Time : 3 Hours

*Answer Question No. 1 which is compulsory and any **five** from the rest.
The figures in the right-hand margin indicate marks.*



1. Answer the following questions : 2 × 10
- (a) What is the basic difference between EMF series and galvanic series ?
 - (b) Justify the statement “corrosion is the reverse of extraction of metals”.
 - (c) What do you mean by passivity ?
 - (d) Why yellow α Brass susceptible to season cracking ?
 - (e) What is galvanic effect ?
 - (f) Write an expression for corrosion rate.
 - (g) Justify the statement “small anode to cathode ratio, corrosion rate is high”.
 - (h) What is Pilling-Bedworthrule ?
 - (i) Why pits are growing in gravity direction ?
 - (j) What is the effect of concentration on corrosion rate ?
2. (a) What are the corrosion control methods ? Explain cathodic and anodic protection methods. 7
- (b) Explain about hydrogen embrittlement. 3
3. (a) Write the mechanism of crevice corrosion with suitable examples and mention some prevention methods. 5
- (b) What is sensitization ? Explain the mechanism of sensitization with suitable examples and mention some prevention methods. 5

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4. (a) Describe the activation polarization and concentration polarization. 7
(b) What is bimetallic corrosion ? Suggest some prevention methods. 3
5. What is stress corrosion cracking? Explain the mechanism and prevention methods with suitable examples. 10
6. (a) How do you prevent high temperature corrosion by coatings ? 5
(b) Explain 'Wagner theory of oxidation kinetics' of pure metals. 5
7. (a) Explain about weld decay and Knife-line attack. 7
(b) Write the mechanism of dezincification. 3
8. Write short notes on any **two** : 5×2
- (a) Pitting corrosion
 - (b) Prevention of erosion corrosion
 - (c) Cathodic inhibitor and anodic inhibitors
 - (d) Chemical degradation of ceramics and plastics.

