

B.E./B.Tech. (FULL TIME) DEGREE END SEMESTER EXAMINATIONS - NOVEMBER / DECEMBER 2012

MATERIALS SCIENCE AND ENGINEERING BRANCH

V SEMESTER - REGULATION 2008

ML 9306 – CORROSION AND SURFACE ENGINEERING

Time : 3 Hours

Max. Marks : 100

ANSWER ALL QUESTIONS

PART – A (10 X 2 = 20 Marks)

1. What is the difference between adhesive wear and abrasive wear?
2. Define Pilling-Bedworth ratio.
3. Define exchange current density.
4. Define passivity.
5. What are the differences between atmospheric corrosion and pitting corrosion?
6. What is dealloying?
7. Give two purposes of corrosion testing.
8. What are the advantages of ASTM standard for corrosion testing.
9. Define anodising.
10. What is the role of corrosion inhibitor?

PART – B (5 x 16 = 80 Marks)

11. Discuss in detail about pitting corrosion and intergranular corrosion.
- 12.a) i) Explain polarization. (4)
ii) Discuss in detail about concentration polarization and activation polarization. (12)
- (OR)
- b) i) Explain about Flade potential. (4)
ii) Discuss in detail about theories of passivity. (12)
- 13.a) Discuss in detail about atmospheric corrosion and stress corrosion cracking.
(OR)
- b) Discuss in detail about corrosion fatigue and high temperature oxidation.
- 14.a) Explain in detail about susceptibility tests for intergranular corrosion.
(OR)
- b) i) Explain about salt spray test. (6)
ii) Write a short note on ASTM standards for corrosion testing. (10)
- 15.a) i) Explain about metallic, organic and inorganic coatings. (12)
ii) Explain cathodic protection. (4)
(OR)
- b) Briefly explain about sputter coating, plasma spray process, ion implantation and chemical vapour deposition.