

CBCS SCHEME

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17MR834

Eighth Semester B.E. Degree Examination, July/August 2021 Marine Corrosion and Prevention

Time: 3.hrs.

Max. Marks: 100

Note: Answer any FIVE full questions.

- 1 a. What is corrosion? Explain the various types of corrosion. (10 Marks)
b. Sketch and explain Eh-pH diagrams for Fe-H₂O system and copper. (10 Marks)
- 2 a. Explain the principle of Electrochemical cell with a neat sketch. (08 Marks)
b. Explain the following forms of corrosion :
(i) Stress corrosion cracking. (ii) Galvanic corrosion.
(iii) Uniform corrosion. (iv) Selective leaching. (12 Marks)
- 3 Explain the following corrosion phenomena:
(i) Oxidation
(ii) Passivity
(iii) Stress corrosion cracking
(iv) Weld decay. (20 Marks)
- 4 a. Explain the degradation problems associated with polymers and ceramics. (10 Marks)
b. Briefly explain the material degradation problems in Marine environments and petrochemical industry. (10 Marks)
- 5 a. Explain the following with their characteristic features and remedial measures:
(i) MIC (ii) Biofilms (iii) SRB corrosion. (15 Marks)
b. Explain bacterial transport and affected materials in MIC. (05 Marks)
- 6 a. List and explain the preventive and controlling measures in MIC. (10 Marks)
b. What is biological corrosion? Explain the role of aerobic and anaerobic microorganisms with examples. (10 Marks)
- 7 a. Explain the plate preparation process with three methods to remove corrosion mill scale. (12 Marks)
b. List and explain the reasons and remedies to prevent corrosive wear of cylinder liners. (08 Marks)
- 8 a. What is boiler corrosion? Explain the effect of corrosion while boiler not in service, with preservation methods to avoid corrosion. (10 Marks)
b. List the causes of paint failure. Explain any two methods for shipboard preparations for painting. (10 Marks)
- 9 a. Explain the physical vapour deposition technique with a neat sketch. List its advantages and disadvantages. (10 Marks)
b. What is electrochemical corrosion? Explain cathodic protection with any two methods. (10 Marks)
- 10 a. With a neat sketch explain various steps in Galvanization process. List its applications. (10 Marks)
b. Write a short note on: (i) Anodizing (ii) Coating defects. (10 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.