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Seventh Semester B.E./B.Tech. Degree Examination, Dec.2024/Jan.2025 Marine Corrosion and Prevention

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Define corrosion and explain the different types of corrosion with examples. (08 Marks)
- b. What are Eh-PH diagrams? Explain the construction of Eh-PH diagram in understanding corrosion with suitable example. (12 Marks)

OR

- 2 a. Describe the role of Electrochemical cells and concentration cells in the corrosion process. (10 Marks)
- b. List the different forms of corrosion. Describe uniform, pitting, selective leaching and crevice corrosion highlighting their characteristics feature. (10 Marks)

Module-2

- 3 a. Discuss the concept of oxidation and passivity in understanding corrosion phenomena. (12 Marks)
- b. Describe the environmental factor effecting metal degradation in marine environment. (08 Marks)

OR

- 4 a. How does stress corrosion cracking and weld decay occur? Suggest methods to prevent it. (12 Marks)
- b. What are the effects of corrosion on ceramics and polymers? Discuss briefly. (08 Marks)

Module-3

- 5 a. Describe the biological aspects of corrosion and its industrial impact. (08 Marks)
- b. What is microbial, influenced corrosion (MIC)? How can it be controlled and prevented? (12 Marks)

OR

- 6 a. Discuss the role of aerobic and anaerobic microorganisms in corrosion. (08 Marks)
- b. Write a short on biofilm formation and SRB corrosion models. (12 Marks)

Module-4

- 7 a. Discuss the causes and remedies for corrosion wear of cylinder liners. (10 Marks)
- b. Describe the causes and prevention methods to point failure on ship boards. (10 Marks)

OR

- 8 a. What are the techniques used for removing atmospheric mile scale? Discuss their effectiveness. (10 Marks)
- b. Explain the effects of corrosion on Boiler when they are not in service also discuss the methods of preservation used to prevent corrosion. (10 Marks)

Module-5

- 9 a. Explain the Mechanism of Anodic and cathodic protection against corrosion. (10 Marks)
b. What is Galvanizing? Explain the process and discuss its uses in corrosion prevention. (10 Marks)

OR

- 10 a. With a neat sketch, explain aspects of PVD. List its advantages and limitations. (10 Marks)
b. Explain the process of Anodizing and phosphating and its advantages over other coating methods. (10 Marks)

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