**Q. Code: 631416**

**Reg. No.** | | | | | | | | | | | | | | |

**B.E / B.TECH. DEGREE EXAMINATION, MAY 2022**

Eighth Semester

**MR18802 – MARINE CORROSION AND PREVENTION**

*(Marine Engineering)*

***(Regulation 2018)***

**TIME: 3 HOURS** **MAX. MARKS: 100**

**CO 1** At the end of the course the students will be able to understand the basic mechanism of corrosion, reasons for corrosion.

**CO 2** At the end of the course the students will be able to understand different methods employed for hull plate surface preparation

**CO 3** At the end of the course the students will be able to understand distinguish different types of paints used for various Ship's structure

**CO 4** At the end of the course the students will be able to understand mechanism of corrosion that occurs inside Boiler & marine diesel engine during its operation

**CO 5** At the end of the course the students will be able to understand various methods of preventing the corrosion

**PART- A (10 x 2 = 20 Marks)**

(Answer all Questions)

| | | CO | RBT LEVEL |
|---|---|---|---|
| 1 | What do you understand by the term pitting corrosion? | **1** | **2** |
| 2 | Mention the conditions for electrochemical corrosion to occur. | **1** | **2** |
| 3 | State the reasons for preparation of plates in shipbuilding. | **2** | **2** |
| 4 | What is meant by "Acid pickling"? | **2** | **2** |
| 5 | What is the role of pigments in a paint? | **3** | **2** |
| 6 | Brief the requirements of superstructure paints on board ships. | **3** | **2** |
| 7 | What are the effects of salts in boiler water? | **4** | **2** |
| 8 | List the factors contributing to corrosion in cylinder liner of marine diesel engines. | **4** | **2** |
| 9 | What is anodizing process? | **5** | **2** |
| 10 | Brief the role of sacrificial anode. | **5** | **2** |

**PART- B (5 x 14 = 70 Marks)**

| | | Marks | CO | RBT LEVEL |
|---|---|---|---|---|
| **11(a)** | Explain the mechanism of galvanic corrosion with neat sketches and also explain the prevention techniques. | **(14)** | **1** | **3** |

**(OR)**

| | | | | |
|---|---|---|---|---|
| **11(b)** | Explain various factors influencing corrosion and its preventive measures. | **(14)** | **1** | **3** |
| **12(a)** | Explain in details various methods used for mill scale removal along with their advantages and limitations. | **(14)** | **2** | **3** |

**(OR)**

| | | | | |
|---|---|---|---|---|
| **12(b)** | Explain in detail high pressure water blasting process and mention its advantages and disadvantages. | **(14)** | **2** | **3** |
| **13(a)** | Discuss in detail various paint additives and their role in paints. | **(14)** | **3** | **4** |

**(OR)**

| | | | | |
|---|---|---|---|---|
| **13(b)** | Discuss various types of ship's super structure paints and their service requirements for protection against corrosion. | **(14)** | **3** | **4** |
| **14(a)** | Discuss the causes corrosion in cylinder liner of marine diesel engine and corrective action to be taken for its prevention. | **(14)** | **4** | **3** |

**(OR)**

| | | | | |
|---|---|---|---|---|
| **14(b)** | Explain in details various measures to prevent corrosion in marine boiler. | **(14)** | **4** | **3** |
| **15(a)** | Discuss in detail the functioning of Impressed Current Cathodic Protection corrosion prevention system used on board ship with a neat sketch. | **(14)** | **5** | **3** |

**(OR)**

| | | | | |
|---|---|---|---|---|
| **15(b)** | Explain in detail the anodic corrosion prevention also compare it with cathodic protection system. | **(14)** | **5** | **3** |

## PART- C (1 x 10 = 10 Marks)

(Q.No.16 is compulsory)

| | | Marks | CO | RBT LEVEL |
|---|---|---|---|---|
| **16** | Evaluate the special care to be taken with respect to "Boot top anti-corrosive paints" in order to prevent environmental protection. | **(10)** | **3** | **5** |

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