Q. Code: 533317

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

B.E. / B.TECH. DEGREE EXAMINATIONS, MAY 2024

Eight Semester

MR18802– MARINE CORROSION AND PREVENTION

(Marine Engineering)

(Regulation 2018)

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

COURSE OUTCOMES	STATEMENT	RBT LEVEL
CO 1	At the end of the course the students will be able to understand the basic mechanism of corrosion, reasons for corrosion.	**2**
CO 2	At the end of the course the students will be able to Different methods employed for hull plate surface preparation.	**2**
CO 3	At the end of the course the students will be able to Distinguish different types of paints used for various Ship's structure.	**2**
CO 4	At the end of the course the students will be able to Mechanism of corrosion that occurs inside Boiler & marine diesel engine during its operation.	**2**
CO 5	At the end of the course the students will be able to Various methods of preventing the corrosion.	**2**

PART- A (10 x 2 = 20 Marks)

(Answer all Questions)

		CO	RBT LEVEL
1.	What are the factors influencing the corrosion on steel plates?	**1**	**2**
2.	Which metal is said to be very highly corrosive with respective to galvanic series?	**1**	**1**
3.	How the flame treatment helps in removal of mill scale on the plate?	**2**	**2**
4.	List a few methods involved to remove mill scale and paint coating on the hull.	**2**	**1**
5.	How the boot top paint is very helpful from corrosion attack on ship's hull?	**3**	**2**
6.	How solvents help during the manufacturing of the paints?	**3**	**2**
7.	How the salt and grease in feed water affects the boiler drums and tubes?	**4**	**2**
8.	How the corrosion protection is given to the main engine jacket water cooler?	**4**	**2**

9.	List a few design faults that influences the corrosion on the hull plates.	**5**		**2**
10.	What are sacrificial anodes and how it is mounted on the hull plates?	**5**		**2**

PART- B (5 x 14 = 70 Marks)

		Marks	CO	RBT LEVEL
11. (a)	With the help of a simple explain how the various kind of corrosion on the ferrous metals are classified.	**(14)**	**1**	**2**
	(OR)			
(b)	Briefly explain the factors that influence the corrosion on the metallic surface and discuss various methods involved to counteract the same.	**(14)**	**1**	**4**
12. (a)	Illustrate how the plate preparation is done in the shipyard and explain process involved in power wire brushing, Power disc and Air hammering technique helps to remove mill scale from the plate surface?	**(14)**	**2**	**2**
	(OR)			
(b)	Describe causes for the paint failure and explain the all the process involved to prepare the hull for painting with the help of a simple sketch.	**(14)**	**2**	**2**
13. (a)	a) Explain in detail how the alkyd paints are manufactured and discuss various elements added to create a paint.	**(10)**	**3**	**2**
	b) Discuss the advantage and disadvantages of adding solvents to the paints	**(4)**		
	(OR)			
(b)	Write a short note on the following	**(5)**	**3**	**2**
	a) Oleo-resinous paints	**(5)**		
	b) Coal tar paints	**(4)**		
	c) Boot top paints			
14. (a)	a) With help of a neat diagram explain how the hot corrosion and cold corrosion involve in the cylinder liner and discuss its major effects.	**(8)**	**4**	**4**
	b) How will you minimize the hot and cold corrosion on the cylinder liner?	**(6)**		
	(OR)			
(b)	Describe the corrosion effects on surface of large marine diesel engine - Main bearing and discuss methods involved to avoid corrosion on the same	**(14)**	**4**	**2**
15. (a)	Briefly explain with respect to all aspects, how the Impressed current cathodic protection system differs from the sacrificial anode cathodic protection differs from each other.	**(14)**	**5**	**2**
	(OR)			
(b)	Briefly explain the various types of Anodizing and Phosphating coating	**(14)**	**5**	**2**

technique used on the surface of the metallic plate with the help of a simple sketch.

PART- C (1 x 10 = 10 Marks)

(Q.No.16 is compulsory)

		Marks	CO	RBT LEVEL
16.	Considering the benefits and drawbacks for the steel hull plate, explain which technique would you recommend for removing mill scale: shot blasting, sandblasting, or high-pressure water blasting?	**(10)**	**2**	4

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