U.S.N.										

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

July 2023 Semester End Main Examinations

Programme: B.E. **Semester: VIII**
Branch: Institutional Elective **Duration: 3 hrs.**
Course Code: 17CY8IECSE **Max Marks: 100**
Course: Corrosion Science and Engineering **Date: 06.07.2023**

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

			UNIT - I	*CO*	*PO*	Marks
1	a)		Explain the various electrochemical reactions involved in corrosion process by taking iron as an example.	*CO1*	*PO1*	**6**
	b)		Discuss the influence of following factors on the rate of corrosion with an example for each. i) Velocity ii) Galvanic coupling	*CO2*	*PO3*	**8**
	c)		Give a brief account on Faradays Laws of electrolysis.	*CO1*	*PO1*	**6**
			UNIT - II			
2	a)		What is filiform corrosion? Explain the effect of humidity on filiform corrosion.	*CO2*	*PO3*	**6**
	b)		"Combination of two different metals in the form of impurity or alloys" leads to a corrosion of type referred to as Galvanic corrosion. Explain the principle and prevention of Galvanic corrosion.	*CO2*	*PO3*	**8**
	c)		Explain the process of dezincification.	*CO2*	*PO3*	**6**
			OR			
3	a)		Illustrate crevice corrosion with mechanism.	*CO2*	*PO3*	**6**
	b)		What is Intergranular corrosion? Explain any two methods of controlling it.	*CO2*	*PO3*	**8**
	c)		Distinguish between Galvanic series and Electrochemical series.	*CO2*	*PO3*	**6**
			UNIT - III			
4	a)		Explain the role of velocity of the environment and surface film on erosion corrosion by taking suitable examples.	*CO2*	*PO3*	**6**

		b)	What is cavitation damage? Explain its mechanism systematically. Suggest any two methods to prevent above corrosion.	*CO3*	*PO3*	**8**
		c)	Describe the factors influencing biological corrosion.	*CO2*	*PO3*	**6**
			UNIT - IV			
	5	a)	Elaborate on the conduction of pilot plant and field tests to analyze corrosion rates.	*CO2*	*PO3*	**6**
		b)	Explain any one electrochemical method of corrosion testing.	*CO3*	*PO3*	**8**
		c)	How do you measure the corrosion rate by weight loss method? Write the expression for corrosion rate and explain the terms involved in it.	*CO1*	*PO1*	**6**
			OR			
	6	a)	Calculate the corrosion rate of iron when 80 $inch^2$ of the sample is exposed to sea water over a period of 300 days if the weight loss is 830 g. Density of iron is 7.86 g/cm^3.	*CO3*	*PO3*	**6**
		b)	Describe the specimen preparation and specimen cleaning for corrosion testing.	*CO1*	*PO1*	**8**
		c)	Differentiate neutral salt spray test and CASS test.	*CO1*	*PO1*	**6**
			UNIT - V			
	7	a)	Discuss the importance of design and selection of materials in corrosion control.	*CO3*	*PO3*	**6**
		b)	What are corrosion inhibitors? Explain the different types of inhibitors used to control corrosion with examples.	*CO1*	*PO1*	**8**
		c)	Explain the electroplating of chromium. Mention its applications.	*CO2*	*PO3*	**6**

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