U.S.N.										

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

Autonomous Institute Affiliated to VTU

May / June 2025 Semester End Main Examinations

Programme: B.E. **Semester: VIII**

Branch: Institutional Elective **Duration: 3 hrs.**

Course Code: 17CY8OECSE **Max Marks: 100**

Course: Corrosion Science and Engineering

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)		Illustrate the destruction of iron on the basis of Electrochemical aspects of corrosion.	CO1	*PO 1*	**7**
	b)		Discuss the influence of the following factors on the rate of corrosion i) Effect of O_2 ii) Velocity iii) Temperature	CO1	*PO1*	**8**
	c)		What is metallic corrosion? Summarize the consequences of corrosion on metals.	CO1	*PO1*	**5**
			OR			
2	a)		Explain the influence of activation and concentration polarization on the rate of corrosion.	CO1	*PO1*	**7**
	b)		State and explain Faraday law's of electrolysis.	CO1	*PO1*	**6**
	c)		Explain passivity of metals with an example.	CO1	*PO1*	**7**
			UNIT - II			
3	a)		Describe Galvanic corrosion with an example. Mention any two methods of prevention of Galvanic corrosion.	CO2	*PO2*	**7**
	b)		Localized corrosion can occur in small, stagnant areas of solution such as crevices and joints. Explain the mechanism of crevice corrosion and describe any two methods for its prevention.	CO2	*PO2*	**6**
	c)		Illustrate pitting corrosion mechanism with suitable example. Mention two methods to prevent pitting corrosion.	CO2	*PO2*	**7**
			OR			
4	a)		What is inter granular corrosion? Explain the mechanism and two methods of prevention of pitting corrosion.	CO2	*PO2*	**7**
	b)		Discuss filiform corrosion, including its mechanism, environmental effects, and methods of prevention.	CO2	*PO2*	**6**
	c)		Explain Weld decay and Knife line attack as Intergranular corrosion.	CO2	*PO2*	**7**

			UNIT - III			
	5	a)	Explain the wear-oxidation mechanism proposed for fretting corrosion.	CO2	*PO2*	**6**
		b)	What is cavitation damage? Explain its mechanism in a systematic manner. Suggest any two methods to prevent this type of corrosion.	CO2	*PO2*	**7**
		c)	Discuss any two types of hydrogen damage on metals. Mention any two methods of prevention of hydrogen damage.	CO2	*PO2*	**7**
			OR			
	6	a)	Describe Bio and Soil corrosion on metals.	CO2	*PO2*	**6**
		b)	Explain corrosion fatigue with suitable example.	CO2	*PO2*	**7**
		c)	Explain erosion corrosion with suitable example. Suggest any four methods to control the same.	CO2	*PO2*	**7**
			UNIT - IV			
	7	a)	Periodic corrosion testing of materials exposed to environmental conditions is highly essential. Appraise this statement.	CO3	*PO3*	**6**
		b)	Explain the determination of corrosion rate by weight loss method.	CO3	*PO3*	**7**
		c)	What are corrosion tests? Explain the general categories of corrosion tests.	CO3	*PO3*	**7**
			OR			
	8	a)	Periodic corrosion tests on materials exposed to environment is highly essential: Appraise the statement.	CO3	*PO3*	**7**
		b)	How do you distinguish the rate of corrosion of metal in different atmosphere, explain in detail.	CO3	*PO3*	**7**
		c)	Explain the Tafel slope method and polarization techniques used in corrosion testing.	CO3	*PO3*	**6**
			UNIT - V			
	9	a)	Proper selection and design of metals and alloys play a crucial role in corrosion control. Appraise this statement with suitable examples.	CO3	*PO3*	**6**
		b)	Explain the process of chromium electroplating and mention its applications.	CO3	*PO3*	**7**
		c)	Explain galvanization and tinning in the context of corrosion control.	CO3	*PO3*	**7**
			OR			
	10	a)	Explain the role of corrosion inhibitors in corrosion control.	CO3	*PO3*	**6**
		b)	Describe the application of anodic protection in corrosion control of iron.	CO3	*PO3*	**7**
		c)	Explain sacrificial anode and impressed current method as cathodic protection in corrosion control.	CO3	*PO3*	**7**

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