

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- SEMESTER-VII (NEW) EXAMINATION – WINTER 2024****Subject Code:3172117****Date:30-11-2024****Subject Name: Industrial Corrosion, Testing, Prevention and Control****Time:10:30 AM TO 01:00 PM****Total Marks:70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

	MARKS
Q.1 (a) Discuss the importance of corrosion study of metals and alloys.	03
(b) Using example justify the role of design aspects in corrosion protection.	04
(c) Describe causes of erosion corrosion in centrifugal pumps. Suggest remedial measures.	07
Q.2 (a) Suggest remedial measures for corrosion in ship hull.	03
(b) Describe the mechanism of corrosion possible in ship hull.	04
(c) Corrosion fatigue failure occurs in a cast Iron marine vessel shaft coupling, used in ship's propulsion system. Describe causes and remedies.	07
OR	
(c) Failure occurs in marine component mooring. Describe causes and remedies.	07
Q.3 (a) Which type of corrosion is possible in heat exchanger system economizer tubes? Give reasons.	03
(b) Describe corrosion resistance materials, can be used in power industries.	04
(c) Write a note on corrosive environment in petrochemical industries. Suggest some candidate materials.	07
OR	
Q.3 (a) Describe the case where galvanic corrosion may occur in a petrochemical industry.	03
(b) Describe causes of corrosion in gas transportation tubes used in petrochemical industries.	04
(c) Identify corrosion related failures in power industries. Describe remedies.	07
Q.4 (a) Which type of corrosion is possible in Heat transfer boiler tubes in fertilizer industry? Give reasons.	03
(b) Suggest remedial measures of corrosion in Heat transfer boiler tubes.	04
(c) Which corrosion is possible in Hydrogen sulfide processing plant? Describe the mechanism and suggest remedial measures.	07
OR	
Q.4 (a) Suggest preventive techniques for welded 304 SS.	03
(b) Explain methods to protect underground gas pipelines against corrosion.	04
(c) Reformer tube of an ammonia plant fails. Explain investigation methodology adopted to identify causes. Describe remedial measures.	07
Q.5 (a) Suggest preventive measures for corrosion in automobile battery terminal.	03
(b) Describe mechanism of corrosion in automobile battery terminal.	04
(c) Describe role of material selection to combat corrosion in Infrastructure.	07
OR	
Q.5 (a) Identify material and environment for Engine valves.	03
(b) Discuss corrosion failures in passenger vehicle driveshaft.	04
(c) Corrosion failure occurs in car engine cooling system. Describe the possible causes and suggest remedies.	07
