

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2023****Subject Code:3172117****Date:08-12-2023****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) What is stabilized SS? Give example.	03
(b) Can stabilized SS undergo inter granular corrosion (IGC)? Explain your answer.	04
(c) Explain effect of grain size, secondary precipitation and cold working on IGC.	07
Q.2 (a) What is galvanic type of corrosion? Give example.	03
(b) Suggest preventive measures for galvanic corrosion.	04
(c) Explain cavitation damage and its mechanism with neat sketch.	07
OR	
(c) List corrosion rate measurement methods and explain any one.	07
Q.3 (a) What is inhibitor?	03
(b) What are different types of inhibitors?	04
(c) With example explain mechanism of inhibitor action.	07
OR	
Q.3 (a) Explain sensitization of 18-8 SS.	03
(b) If welding of ASS 304 used for fabrication of chemical tank is done with conventional fusion welding and solid state welding process. Predict comparative corrosion behavior of welds prepared with both process. For weld getting corroded, predict form.	04
(c) Discuss mechanism and preventive measures for corrosion for 3(b) above.	07
Q.4 (a) State condition leading to pit formation.	03
(b) With neat sketch show different geometry of pits.	04
(c) Explain pitting corrosion mechanism and discuss preventive measure for pitting corrosion.	07
OR	
Q.4 (a) In leaching plant solid suspended slurry of high temperature passes through the pipe having 90° bend at very high velocity. Predict corrosion that can occur.	03
(b) Discuss factors affecting predicted corrosive form in above Question 4(a).	04
(c) Suggest preventive measures for above question 4(a).	07
Q.5 (a) If two parts which are normally loaded and undergoes vibration in presence of corrosive environment, predict possible form of corrosion.	03
(b) Explain mechanism of fretting corrosion mechanism with neat sketch.	04
(c) Write note on hydrogen cracking/damage.	07

OR

- Q.5 (a)** Give anodic and cathodic reaction for **03**
1. Piece of zinc is dipped in hydrochloric acid
 2. Standard half cell of copper and hydrogen are connected.
- (b)** Write note on impressed current cathodic protection methods. **04**
- (c)** What is stress corrosion cracking? Discuss preventive measures for stress cracking corrosion. **07**
