Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VIII • EXAMINATION – SUMMER 2014

Subject Code: 182102 **Date: 31-05-2014**

Subject Name: Selection of Materials and Failure Analysis

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.**

Q.1	**(a)**	Explain the role of material engineer for selection of materials in Design synthesis.	**07**
	(b)	Which are different mechanical properties used for selection of material in engineering use. Explain briefly about Strength.	**07**
Q.2	**(a)**	Short note on factor affecting on cost of basic materials.	**07**
	(b)	Explain Creep mechanism. On which factors Creep resistance of material depends? Describe various materials used for Creep resistance.	**07**
		OR	
	(b)	Explain relationship between material selection and material processing.	**07**
Q.3	**(a)**	Short note on Bearing materials	**07**
	(b)	Define Toughness. How toughness plays important role in material selection.	**07**
		OR	
Q.3	**(a)**	Discuss briefly on Material selection for wear resistance.	**07**
	(b)	Discuss about gear materials.	**07**
Q.4	**(a)**	Discuss about General practice in Failure analysis	**07**
	(b)	Explain macro and micro features of Ductile fracture.	**07**
		OR	
Q.4	**(a)**	Short note on Brittle failure.	**07**
Q.4	**(b)**	Explain the mechanism of stress corrosion cracking in alloys. Mention the most prominent combination of metals and environments which can lead to stress corrosion cracking.	**07**
Q.5	**(a)**	How material Engineers can do procedure for failed component	**07**
	(b)	Explain three stages of fatigue failure. Differentiate between strations and beach marks.	**07**
		OR	
Q.5	**(a)**	Short note on corrosion fatigue and contact fatigue.	**07**
	(b)	Discuss briefly about in process failure.	**07**

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