

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-VIII • EXAMINATION – SUMMER 2013

Subject Code: 182102**Date: 13/05/2013****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) Short note on materials for high strength to weight ratio. **07**
- OR**
- Q.3** (a) Discuss briefly on Material selection for wear resistance. **07**
(b) Discuss about gear materials. **07**
- Q.4** (a) 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 striations 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**
