

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-IV • EXAMINATION – SUMMER 2013****Subject Code: 142104****Date: 17-06-2013****Subject Name: Metallurgy for Non Metallurgist****Time: 10:30am – 01:00pm****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) Draw, Sketch and label Iron-Iron carbide equilibrium diagram. Explain transformations and various phases in it. **07**
- (b) What is material science and metallurgy? Give detailed classification of materials. **07**
- Q.2** (a) Short note on rolling. **07**
- (b) What is cast iron? Write different C.I. Explain microstructure, properties and application of any two C.I. **07**
- OR**
- (b) What is corrosion? What are different types of corrosion? Explain one prevention method of corrosion. **07**
- Q.3** (a) Define hardness, toughness, specific heat. Explain allotropy of iron. **07**
- (b) Differentiate between crystalline and non crystalline materials. **03**
- 04**
- (c) **OR**
- Q.3** (a) Explain TTT diagram. **07**
- (b) Short note on effect of alloying elements on properties of steel. **03**
- 04**
- (c) **OR**
- Q.4** (a) Write different mechanical tests and non destructive tests carried out for testing of materials. Explain any one of NDT test. **07**
- (b) What are different heat treatment processes? Explain normalizing. **07**
- OR**
- Q.4** (a) Short note on case hardening and surface hardening. **07**
- Q.4** (b) Short note on Stainless steel. **07**
- Q.5** (a) Define failure. Write general practice carried out in failure analysis. **07**
- (b) Compare Brinell hardness test with Rockwell hardness test. **07**
- OR**
- Q.5** (a) What are different metal forming processes? Explain forging. **07**
- (b) Give detail classification of properties of materials. **07**

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