

Seat No.: \_\_\_\_\_

Enrolment No. \_\_\_\_\_

# GUJARAT TECHNOLOGICAL UNIVERSITY

B. E. Sem. – IV - Examination –June- 2011

Subject code: 142104

Subject Name: Metallurgy for Non Metallurgist

Date:13/06/2011

Time: 10.30 am – 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) 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**

- (c) Differentiate between direct extrusion and indirect extrusion. **04**

**OR**

- Q.3** (a) Explain TTT diagram. **07**
- (b) Short note on effect of alloying elements on properties of steel. **03**

- (c) Differentiate between hot rolling and cold rolling. **04**

- 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**

- (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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