

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

B.E. Sem-IV Remedial Examination Nov/ Dec. 2010

Subject code: 142104

Subject Name: Metallurgy for Non Metallurgist

Date: 08 / 12/ 2010

Time: 03.00 pm – 05.30 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) Sketch and label Fe - Fe₃C equilibrium diagram. Explain various phases and transformations. **07**
- (b) i) Give detailed classification of material. **05**
ii) Describe properties of metallic materials. **02**
- Q.2** (a) What are different metal forming processes? Explain about rolling and different rolling mills. **07**
- (b) What are different Binary diagrams? Explain one of it. **07**
- (b) What is Welding? Write different types of welding processes and explain one of it. **07**
- Q.3** (a) What is failure? What are causes of failure? What are general practices carried out in failure analysis? **07**
- (b) What are different heat treatment processes? Explain about annealing. **07**
- OR**
- Q.3** (a) Short note on TTT diagram. **07**
- (b) Short note on Hardness testing **07**
- Q.4** (a) i)What are effects of alloying elements on properties of steels? **04**
ii)Define the terms: **03**
1. Hardness 2. Toughness 3. Malleability
- (b) What is Corrosion? What are different types of corrosion? Explain one prevention method. **07**
- OR**
- Q.4** (a) What are different tests carried out for testing of materials? Explain one NDT test in detailed. **07**
- Q.4** (b) 1. Short note on allotropy of iron. **05**
2. Differentiate between crystalline and non crystalline material. **02**
- Q.5** (a) What is Cast iron? Briefly explain properties and applications of any three cast irons. **07**
- (b) 1. Short note on forging. **04**
2. Differentiate between cold rolling and hot rolling. **03**
- OR**
- Q.5** (a) Explain case hardening and surface hardening. **07**
- (b) i) Differentiate between direct extrusion and indirect extrusion. **05**
ii) What is Material science and Metallurgy? **02**
