

GUJARAT TECHNOLOGICAL UNIVERSITY**B.E. Sem-IV Examination June- 2010****Subject code: 142104****Subject Name: Metallurgy for Non-Metallurgists****Date: 21 /06 /2010****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) Sketch, Label and Explain in detailed about Iron – Carbon equilibrium diagram. **07**
(b) What is rolling? Write in detailed about types of rolling mills. **07**
- Q.2** (a) What are different types of Cast Iron? Briefly write properties, applications and draw microstructure of each Cast Iron. **07**
(b) (I) Differentiate between Direct extrusion and Indirect extrusion. **03**
(II) What are effects of alloying element on properties of steel? **04**
- OR**
- (b) What is welding? Write different types of welding processes and explain SMAW process. **07**
- Q.3** (a) Describe different Heat treatment processes for Aluminium and its alloys. **07**
(b) Short note on TTT diagram. **07**
- OR**
- Q.3** (a) Explain case hardening and surface hardening. **07**
(b) Short note on stainless steel. **07**
- Q.4** (a) (I) Give detailed classification of materials. **04**
(II) Define Hardness, Malleability, and Specific heat. **03**
(b) What is corrosion? What are different types of corrosion? Explain one method of prevention of corrosion. **07**
- OR**
- Q.4** (a) What is failure? What are causes of failure? What are general practices carried out in failure analysis? **07**
(b) (I) Short note on allotropy of Iron **04**
(II) Differentiate between crystalline and non crystalline materials. **03**
- Q.5** (a) What are different Heat treatment processes? Explain main objective of each processes. **07**
(b) What are main purposes of testing of materials? Write different mechanical and NDT tests. Explain Dye Penetrant Test. **07**
- OR**
- Q.5** (a) Short note on Forging **04**
(b) Short note on Hardness Testing **05**
(c) What are Binary diagrams? Explain one of it. **05**