

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-IV • EXAMINATION – WINTER 2013****Subject Code: 142104****Date: 30-12-2013****Subject Name: Metallurgy for Non Metallurgist****Time: 02:30 pm to 05:00 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) Define and explain: 1. Hardness, 2. Ductility, 3 Toughness **07**
(b) Draw and explain the Iron–Iron Carbide phase diagram. **07**

- Q.2** (a) Define corrosion. List different types and discuss any one method of corrosion prevention. **07**
(b) Write a brief note on Aluminum alloys as a candidate material for automobile sector. **07**

OR

- (b) What is crystal structure? Compare crystalline and noncrystalline materials. **07**

- Q.3** (a) Write note on importance of Stainless steels as an engineering material. **07**
(b) With the help of neat diagram explain TTT Curve. **07**

OR

- Q.3** (a) Explain effect of Carbon, Chromium and Nickel as alloying elements on the properties of steel. **07**
(b) Define heat treatment. List various heat treatment processes and discuss any one. **07**

- Q.4** (a) What is cast iron? Give the properties, applications and microstructure of nodular cast iron. **07**
(b) Differentiate in detail between Cold and Hot working processes. **07**

OR

- Q.4** (a) Define casting. Describe Sand casting method. **07**
Q.4 (b) What is rolling? Write in detailed about types of rolling mills. **07**

- Q.5** (a) What is Welding? Write different types of welding processes and explain Submerged Arc Welding. **07**
(b) Enlist various NDT methods and discuss Dye-penetrant testing. **07**

OR

- Q.5** (a) Explain different types of gas welding flames. **07**
(b) Describe the principle and working of Ultrasonic testing. **07**
