

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-IV • EXAMINATION – SUMMER • 2014****Subject Code: 142104****Date: 25-06-2014****Subject Name: Metallurgy for Non Metallurgist****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 the Iron–Iron Carbide phase diagram. Explain all important reactions. **07**

(b) Explain the FCC and HCP structure. Calculate atomic packing factor of both. **07**

Q.2 (a) What is carburizing? Discuss the pack carburizing process. **07**

(b) Write a note on Heat treatment processes of Aluminum alloys. **07**

OR

(b) Define heat treatment. List various heat treatment processes and discuss any one. **07**

Q.3 (a) Define steel. Describe the properties and applications of stainless steel. **07**

(b) Define and explain: 1. Creep 2. Tensile Strength 3 Toughness **07**

OR

Q.3 (a) Define Welding. Explain GTAW welding process. **07**

(b) Define Hardenability. Explain Jominy end quench test for hardenability measurement. **07**

Q.4 (a) Define Cast iron. Write properties and applications of white cast iron. **07**

(b) List different metal forming processes. Describe the Extrusion method. **07**

OR

Q.4 (a) Define casting. Explain the Investment casting method. **07**

(b) Differentiate in detail between Cold and Hot working processes. **07**

Q.5 (a) What do you mean by metals failure during service? Write a note on Failure due to Fatigue. **07**

(b) What are TTT diagrams? Describe the effect of alloying elements on TTT diagram. **07**

OR

Q.5 (a) Define corrosion. List different types of corrosion. Explain any one method of corrosion prevention. **07**

(b) List NDT methods. Explain any one NDT method. **07**
