

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE SEM-III Examination May 2012

Subject code: 133403

Subject Name: Engineering Materials & Metallurgy

Date: 10/05/2012

Time: 02.30 pm – 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) Explain how Hardenability is measured by using Jominy end quench test with the neat sketch. 07
(b) Write short notes about carburizing and nitriding. 07

- Q.2 (a) Write the principle, methods and advantages of flame hardening. 07
(b) Define Gibb's Phase rule. Discuss in brief about the constitution of various alloy materials? 07

OR

- (b) Sketch the Iron – Carbon Equilibrium diagram and explain how the transformation takes place? 07

- Q.3 (a) Discuss in brief about effect of Si & Ti alloy addition on Steel. 07
(b) Write the properties and application of copper and Aluminium & its alloys. 07

OR

- Q.3 (a) Discuss in brief about effect of Mo & Mn alloy addition on Steel. 07
(b) Write the properties and application of Magnesium and Titanium & its alloys 07

- Q.4 (a) Write short notes about bio degradable plastics with examples. 07
(b) Write short notes about Commodity Plastics with applications. 07

OR

- Q.4 (a) Explain in brief about composites and its applications. 07
(b) Write short notes about properties of ceramics materials. 07

- Q.5 (a) Write the objectives of creep testing method. Draw the creep testing equipment and explain its working principle. 07
(b) Write the procedure for hardness testing. Explain how the Brinell Hardness Number is calculated? 07

OR

- Q.5 (a) Explain the working principle of impact testing method with neat sketch. 07
(b) Explain about the fatigue testing machine is working principle; write the procedure with neat sketch. 07
