

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-III • EXAMINATION – WINTER • 2014****Subject Code: 2132104****Date: 01-01-2015****Subject Name: Testing of Metal and Alloys****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)** Draw Stress-strain diagram for brittle and ductile material and label it properly. **07**
Define the following
1. Ductility 2. Toughness 3. Young's Modulus 4. % Elongation
- (b)** Explain Rockwell Hardness Test method and list its advantages & limitations. **07**
- Q.2 (a)** 'Testing of material is an important task for industry' - justify comment **07**
- (b)** Explain the procedure of tensile testing in brief. **07**
- OR**
- (b)** Classify material testing methods. Describe the criteria for selection of testing method. **07**
- Q.3 (a)** Explain Charpy Impact test and derive Relationship for energy absorbed by specimen. **07**
- (b)** Define Creep. Write a note on Mechanism of creep deformation in metals. **07**
- OR**
- Q.3 (a)** What is meant by fatigue failure? Write a note on fatigue Mechanisms in metals **07**
- (b)** Draw a typical creep curve and explain the various stages in creep **07**
- Q.4 (a)** List types of hardness tests? Write application of each of this test for different metals and alloys. Which tests give more accuracy and why? **07**
- (b)** Which tests is used to measure toughness? Explain any one method **07**
- OR**
- Q.4 (a)** Discuss about Vickers Hardness Test method. Enlist advantages and limitations **07**
- (b)** Draw engineering & true stress strain curves. Why are different? **07**
Normally which curve is referred to? Why?
- Q.5 (a)** What do you mean by Calibration? Why the calibration of Testing-Instruments is required? Explain by help of proper examples **07**
- (b)** Short notes on Only write formula for Brinell, Vickers, Meyers & knoop with symbol description **07**
- OR**
- Q.5 (a)** Write a note on Micro Hardness Test. Give the applications. **07**
- (b)** Explain mechanism of fatigue in metals. What are main factors affecting fatigue properties of materials. **07**
