Seat No.: _____ Enrolment No._____

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. Define the following 1. Ductility 2. Toughness 3. Young's Modulus 4. % Elongation	**07**
	(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? Normally which curve is referred to? Why?	**07**
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**

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