Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER–IV • EXAMINATION – WINTER 2014

Subject Code: 142103 Date:31-12-2014

Subject Name: Mechanical Behavior and Testing of Materials

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)**	Discuss Super plasticity.	**07**
	(b)	Define the following: (i) Ductility (ii) Resilience (iii) Toughness (iv) % Elongation	**07**
Q.2	**(a)**	What is dislocation? Differentiate between Edge and Screw dislocation.	**07**
	(b)	What is Ductile-brittle transitions behavior and its significance. ? draw Suitable diagram.	**07**
		OR	
	(b)	Explain with diagram the Mechanisms of fatigue failure in metals.	**07**
Q.3	**(a)**	Classify types of testing methods. State criteria for selection of testing method giving examples for selection of the method.	**07**
	(b)	Differentiate between plastic deformation by slip and twinning.	**07**
		OR	
Q.3	**(a)**	Which test is used to measure toughness? Explain any one method.	**07**
	(b)	What are the strengthening mechanisms in solids? With schematic diagram explain any two methods.	**07**
Q.4	**(a)**	Explain Brinnell Hardness Test method and list its advantages & limitations.	**07**
	(b)	Testing of material is an important task for industry' - justify comment.	**07**
		OR	
Q.4	**(a)**	List types of hardness tests. Write application of each of this test for different metals and alloys. Which test gives more accuracy? Why?	**07**
	(b)	Describe the Tensile testing Procedure. Define: Gauge length & Percentage elongation?	**07**
Q.5	**(a)**	What is Creep? Explain the creep curve & factors affecting creep strength.	**07**
	(b)	Define the following Terms. With suitable Diagram (Any three) 1. Dislocation climb 2. Pinning 5. Slip plane	**07**
		OR	
Q.5	**(a)**	Describe the creep testing procedure.	**07**
	(b)	Discuss about Recovery, Recrystallization and Grain growth.	**07**

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