GUJARAT TECHNOLOGICAL UNIVERSITY BE- SEMESTER-IV • EXAMINATION – WINTER 2014

Subject Code: 142103Date:31-12Subject Name: Mechanical Behavior and Testing of MaterialsTime:02:30 pm to 05:00 pmInstructions:1. Attempt all questions.2. Make suitable assumptions wherever necessary.3. Figures to the right indicate full marks.			2014 ks: 70	
Q.1	(a) (b)	Discuss Super plasticity. Define the following: (i) Ductility (ii) Resilience (iii) Toughness (iv) % Elongation	07 07	
Q.2	(a) (b)	What is dislocation? Differentiate between Edge and Screw dislocation. What is Ductile-brittle transitions behavior and its significance. ? draw Suitable diagram.	07 07	
	(b)	OR 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	
Q.3	(a) (b)	Which test is used to measure toughness? Explain any one method. What are the strengthening mechanisms in solids? With schematic diagram explain any two methods.	07 07	
Q.4	(a) (b)	Explain Brinnell Hardness Test method and list its advantages & limitations. Testing of material is an important task for industry' - justify comment.	07 07	
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) (b)	 What is Creep? Explain the creep curve & factors affecting creep strength. Define the following Terms. With suitable Diagram (Any three) 1. Dislocation climb 2. Pinning 5. Slip plane 	07 07	
05	(a)	OR Describe the creen testing procedure	07	
Q. 3	(a) (b)	Discuss about Recovery, Recrystallization and Grain growth.	07	
