Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– III (NEW)EXAMINATION – SUMMER 2015

Subject Code: 2132104 **Date: 04/06/2015**

Subject Name: Testing of metals and Alloys

Time:02.30pm-05.00pm **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)**	What is significance of material testing? Compare DT and NDT in detail.	**07**
	(b)	What are different Mechanical tests? Give comparison of true stress-strain curve and engineering stress-strain curve.	**07**
Q.2	**(a)**	Describe the Tensile testing Procedure. What do you mean by Gauge length & Percentage elongation?	**07**
	(b)	What are different mechanical properties? Define three of them. Explain different factors affecting mechanical properties.	**07**
		OR	
	(b)	What do you mean by Calibration? Why the calibration of Testing-Instruments is required? Explain by help of proper examples.	**07**
Q.3	**(a)**	What are different Hardness tests? Compare Rockwell Hardness test & Brinell Hardness test.	**07**
	(b)	What is Ductile to brittle transitions behavior and its significance? Draw suitable diagram.	**07**
		OR	
Q.3	**(a)**	What is the formula for calculating Brinell Hardness Number? A mild steel specimen was tested for brinell hardness. The force applied was 787.5 KgF by 2.5mm diameter steel ball indenter and the diameter of indentation observed was 1.1 mm. Calculate the brinell hardness number of mild steel.	**07**
	(b)	What are different types of Impact test? Briefly explain advantages and disadvantages of each test.	**07**
Q.4	**(a)**	Write a note on Micro Hardness Test. Give the applications.	**07**
	(b)	What is Tensile test? What are main factors affecting the tensile properties of material?	**07**
		OR	
Q.4	**(a)**	Write Vickers Hardness test with merits & demerits.	**07**
	(b)	What do you mean by S-N curve? Differentiate between ferrous alloys and non ferrous alloys with reference to their respective S-N curves.	**07**
Q.5	**(a)**	Define creep. Draw a typical creep curve and explain the various stages in creep.	**07**
	(b)	What is toughness? How it is measured? Explain any one technique in detail.	**07**
		OR	
Q.5	**(a)**	Define Fatigue. Explain mechanism of fatigue in metals. What are main factors affecting fatigue properties of materials.	**07**
	(b)	Define Creep. Write a note on Mechanism of creep deformation in metals.	**07**

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