Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–IV EXAMINATION – SUMMER 2016

Subject Code:142103 Date:06/06/2016

Subject Name:Mechanical Behaviour And Testing Of Materials

Time:10:30 AM to 01:00 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)**	Define: (1) Dislocation (2) Hardness (3) Impact Strength (4) Creep (5) Plastic deformation (6) Endurance limit (7) Superplasticity	**07**
	(b)	Define Dislocation. Explain in details the Sources of Dislocation.	**07**
Q.2	**(a)**	Explain Charpy Impact test and derive equation for energy absorbed by specimen.	**07**
	(b)	"Testing of metal is a important task in industries prior to production" justify the statement and classify the various testing method.	**07**
		OR	
	(b)	Briefly explain the stages of Fatigue process.	**07**
Q.3	**(a)**	Discuss strengthening mechanisms in solid.	**07**
	(b)	Derive formula for the critical resolved shear stress and explain its importance in plastic deformation.	**07**
		OR	
Q.3	**(a)**	Write a short note on Recovery, Recrystallization and Grain growth.	**07**
	(b)	Define the S-N Curve. Differentiate the ferrous alloy and non ferrous alloy with reference to S-N- Curve.	**07**
Q.4	**(a)**	Define Toughness, Yield Strength. And Show comparison of Stress- strain curves for high and low toughness material.	**04**
	(b)	Explain briefly the Factors affecting the Tensile properties.	**03**
	(C)	A 13 mm diameter tensile specimen has a 50 mm gage length. The load corresponding to the 02 % offset is 6800 kg and the maximum load is 8400 kg. Fracture occurs at 7300 kg. The diameter after fracture is 8 mm and the gage length at fracture is 65 mm. Calculate the Standard Properties of The Material from the Tensile test.	**07**
		OR	
Q.4	**(a)**	State the list of the properties find out by Tensile strength. Explain the Universal Testing Machine with neat sketch, Construction & Working, Specifications, and Limitation	**07**
	(b)	Explain in details Creep Curve.	**07**
Q.5	**(a)**	State the different types of Hardness test and Explain the Brinell Hardness test.	**07**
	(b)	What are the Precautions to be considered in Rockwell Hardness Testing?	**07**
		OR	
Q.5	**(a)**	Explain Vicker Hardness testing.	**07**
	(b)	Explain the Ductile – Brittle Transition behaviour with its importance.	**07**

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