Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–IV (OLD) - EXAMINATION – SUMMER 2017

Subject Code: 142103 **Date: 08/06/2017**

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 Dislocation. Briefly explain Dislocation reaction and interaction.	**07**
	(b)	State the different strengthening mechanism in solid. Explain in details any one mechanism.	**07**
Q.2	**(a)**	Define Superplasticity. Explain the mechanism of Plastic deformation in polycrystalline material.	**07**
	(b)	Explain the sources of Dislocations.	**07**
		OR	
	(b)	Explain the Recovery, Recrystallization & Grain Growth in crystalline material.	**07**
Q.3	**(a)**	Explain the Importance of material Testing with different considerations.	**07**
	(b)	Explain the UTS testing with working principle, required apparatus, methodology, advantages, limitations.	**07**
		OR	
Q.3	**(a)**	Classify the various types of testing methods. Explain the selection procedure of testing method.	**07**
	(b)	Draw the stress strain curve for brittle material and ductile material. Discuss the factors affecting the tensile properties.	**07**
Q.4	**(a)**	Write a full name of BHN. Explain the testing methods used to measure BHN, with Principle, required apparatus, methodology, advantages, limitations	**07**
	(b)	Explain Izod Impact testing with Principle, required apparatus, methodology, advantages, limitations	**07**
		OR	
Q.4	**(a)**	Define DBTT. Explain the importance of DBTT and ductile to brittle behavior of metal with neat sketch.	**07**
	(b)	Explain Microhardness Testing with Principle, required apparatus, methodology, advantages, limitations	**07**
Q.5	**(a)**	Define Endurance limit. Explain the mechanism of Fatigue in Metals.	**07**
	(b)	Explain the creep testing with Principle, required apparatus, methodology, advantages, limitations	**07**
		OR	
Q.5	**(a)**	Define Creep. Explain the mechanism of creep deformation in metals.	**07**
	(b)	Explain the fatigue testing with Principle, required apparatus, methodology, advantages, limitations	**07**

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