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

GUJARAT TECHNOLOGICAL UNIVERSITY

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

Subject Code: 172104 **Date: 15/05/2017**

Subject Name: Alloy Design

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)**	What is composite material? Using suitable example explain ceramic matrix composites.	**07**
	(b)	Discuss effect of second phase size, shape and distribution on mechanical properties of alloys.	**07**
Q.2	**(a)**	Explain the effect of recovery, recrystallization and grain growth on mechanical properties with neat sketch.	**07**
	(b)	Draw and explain the variation in cooling behavior of pure metal, solid solution and eutectic alloys.	**07**
		OR	
	(b)	Explain wear with tribological and design parameters.	**07**
Q.3	**(a)**	What is creep? Explain mechanism of creep using creep curve.	**07**
	(b)	What is dual phase steels? Write short note on it.	**07**
		OR	
Q.3	**(a)**	What is fatigue? Write detailed note with emphasis on requirements for fatigue resistance.	**07**
	(b)	Compare Metal Matrix composite and Polymer Matrix composite materials with their advantages.	**07**
Q.4	**(a)**	What are the activities involved in engineering design? Explain them.	**07**
	(b)	What are the objectives of design of experiment? Explain the basic terms related to it.	**07**
		OR	
Q.4	**(a)**	What is lubricant? Discuss effects of lubricant on wear behavior of material.	**07**
	(b)	Discuss the effect of elements on various types of super alloys.	**07**
Q.5	**(a)**	Discuss the points to be taken into account while selecting materials for static structure.	**07**
	(b)	Give classification of high speed steels & briefly discuss different high speed steels.	**07**
		OR	
Q.5	**(a)**	With diagrams explain continuous and discontinuous fiber alignment stating their effects on properties.	**07**
	(b)	Briefly explain single, dual and multi-phase materials with suitable examples.	**07**

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