Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME – SEMESTER I (NEW) – • EXAMINATION – SUMMER 2016

Subject Code: 2712806 **Date:18/05/2016**

Subject Name: Advance Material Technology

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)**	Explain Griffith theory of fracture of materials.	**07**
	(b)	Describe the effect of temperature, strain and strain rate on plastic behavior of materials.	**07**
Q.2	**(a)**	List various strengthening mechanisms. Explain work hardening.	**07**
	(b)	Explain criteria for material selection in various engineering applications.	**07**
		OR	
	(b)	Explain any one case study for material selection in automobile industry.	**07**
Q.3	**(a)**	Define smart materials. Explain its characteristics and applications of smart materials in engineering.	**07**
	(b)	Describe crack initiation and propagation mechanism in the material. Explain Paris law.	**07**
		OR	
Q.3	**(a)**	Which are various toughening mechanisms to resist fracture? Explain them.	**07**
	(b)	Explain the properties and applications of any two plastics.	**07**
Q.4	**(a)**	Write the properties, composition and applications of high strength low alloy steel.	**07**
	(b)	Explain in brief about the classification of ceramics and its applications.	**07**
		OR	
Q.4	**(a)**	Explain characteristics and applications of engineering polymers.	**07**
	(b)	Define bio materials. Explain its applications.	**07**
Q.5	**(a)**	Define reinforced fibers. Explain production of fibers.	**07**
	(b)	Explain manufacturing of metal matrix composites.	**07**
		OR	
Q.5	**(a)**	Define composite materials. Explain its engineering applications and advantages.	**07**
	(b)	Enlist various testing of composite materials. Explain any one.	**07**

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