Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

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

Subject Code: 710807N **Date:21/05/2016**

Subject Name: Advanced Materials and Processes

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)**	Give justification for developments of advanced materials.How advanced ceramic materials are processed?	**07**
	(b)	Explain general design considerations for casting parts.	**07**
Q.2	**(a)**	Explain general rules for design for manufacturability.	**07**
	(b)	As a design engineer you have to design a plastic chair. Give your thoughts on various design rules to be followed.	**07**
		OR	
	(b)	Explain different smart materials with their applications.	**07**
Q.3	**(a)**	Explain the performance of materials at high and low temperature applications.	**07**
	(b)	Explain effects of thermal stresses on weld joints.	**07**
		OR	
Q.3	**(a)**	Explain design factors for forging parts.	**07**
	(b)	Give design guidelines for extruded parts.	**07**
Q.4	**(a)**	Explain non destructive evaluation techniques.	**07**
	(b)	Explain Ashby's chart for material selection.	**07**
		OR	
Q.4	**(a)**	Explain the importance of dimensional tolerances and surface roughness in machining process.	**07**
	(b)	Explain different types of corrosions in brief.	**07**
Q.5	**(a)**	State difficulties in the processing of advanced materials. How one can overcome these difficulties.	**07**
	(b)	Explain the term standardization in the context of manufacturing.	**07**
		OR	
Q.5	**(a)**	Explain the concept of creativity in design.	**07**
	(b)	Explain the concept of design philosophy.	**07**

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