Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – I • EXAMINATION – WINTER 2012

Subject code: 710807N **Date: 16-01-2013**

Subject Name: Advanced Materials and Processes

Time: 02.30 pm – 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 smart materials with their applications.	**07**
	(b)	Explain the importance of dimensional tolerances and surface roughness in machining process.	**07**
Q.2	**(a)**	Explain Non-destructive evaluation techniques.	**07**
	(b)	Explain the galvanic corrosion and design recommendations to reduce this type of corrosion.	**07**
		OR	
	(b)	Explain general design considerations for casting.	**07**
Q.3	**(a)**	Explain the concept of creativity in design.	**07**
	(b)	Explain basic principles of designing for economical production.	**07**
		OR	
Q.3	**(a)**	Explain general design rules for manufacturability.	**07**
	(b)	Explain the concept design philosophy.	**07**
Q.4	**(a)**	Explain general design rules for machining a component.	**07**
	(b)	Explain product design rules for sand casting.	**07**
		OR	
Q.4	**(a)**	Explain performance of materials at high and low temperature applications.	**07**
Q.4	**(b)**	Explain effects of thermal stresses in weld joints.	**07**
Q.5	**(a)**	Explain design factors for forging.	**07**
	(b)	Give design guide lines for plastic components.	**07**
		OR	
Q.5	**(a)**	Give design guide lines for extruded parts.	**07**
	(b)	State difficulties in the processing of advanced materials. Give your thoughts to overcome those difficulties.	**07**

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