Seat No.: _____ *Enrolment No._____*

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – I • EXAMINATION – WINTER • 2013

Subject code: 710807N **Date: 06-01-2014**

Subject Name: Advanced Materials and Processes

Time: 10.30 am – 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 Smart material? Discuss about the engineering applications of Smart material.	**07**
	(b)	Define the term standardization design for machining. Is it necessary that standardization would always reduce the manufacturing cost? Explain.	**07**
Q.2	**(a)**	What do you mean by metal matrix composite material? Write the applications and example of metal matrix composite material.	**07**
	(b)	Write design guidelines to be followed for the machining of Rotational components.	**07**
		OR	
	(b)	Write design guidelines to be followed for the machining of Non-Rotational components.	**07**
Q.3	**(a)**	List the criteria for selecting the type of casting process.	**07**
	(b)	You have to design a connecting rod for an automobile. Suggest the manufacturing process and criterion for design for manufacturing of it.	**07**
		OR	
Q.3	**(a)**	Explain basic principles of designing for economical production.	**07**
	(b)	Critically evaluate the methods for material selection.	**07**
Q.4	**(a)**	State difficulties in the processing of advanced materials. Give your thoughts to overcome those difficulties.	**07**
	(b)	Write a short note for corrosion and its control.	**07**
		OR	
Q.4	**(a)**	Justify the use of solidification simulation in casting design.	**07**
	(b)	Explain with sketch the important of parting line for design consideration in forging.	**07**
Q.5	**(a)**	Describe the design considerations for extruded parts of plastics	**07**
	(b)	Explain the effect of High & low temperatures on Performance of materials.	**07**
		OR	
Q.5	**(a)**	Give the guideline with suitable example for each to reduce material consumption in press working.	**07**
	(b)	Discuss about the Development, Measurement and Mitigation of residual stresses in a welded component.	**07**

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