Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME - SEMESTER– II(New course) • EXAMINATION (Remedial) – WINTER- 2015

Subject Code: 2720816 **Date: 11/12/2015**

Subject Name: Design for manufacturing and assembly

Time:2:30 pm to 5:00 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 DFMA? State its tangible and intangible benefits. Also write DFMA principles.	**07**
	(b)	Write five steps to be followed in design for manufacture (DFM). Draw a flow chart for DFM process.	**07**
Q.2	**(a)**	Draw a neat sketch for following tolerance types: i) Size ii) Form iii) Location iv) Orientation Explain also a feature control frame with an example.	**07**
	(b)	Explain step by step procedure for worst case tolerance analysis with an example.	**07**
		OR	
	(b)	What is a tolerance stack up? Why is required to perform a tolerance stack up?	**07**
Q.3	**(a)**	How is weight influence form design? State all the factors which contribute to success in the field of lightweight construction.	**07**
	(b)	Define ñAssembly efficiencyò. Explain effect of part symmetry, part thickness and size on handling time.	**07**
		OR	
Q.3	**(a)**	Explain general design guidelines for manual assembly.	**07**
	(b)	What is lean? List any five lean principles. State the benefits of using lean manufacturing.	**07**
Q.4	**(a)**	Write rules and methodologies used to design components for automatic and flexible assembly.	**07**
	(b)	Explain the following: (1) Simplification by separation (2) Simplification by amalgamation	**07**
		OR	
Q.4	**(a)**	Explain three DFMA criteria for retaining components for redesign of a product.	**07**
	(b)	Explain redesign of castings based on parting line considerations, minimizing core requirements.	**07**
Q.5	**(a)**	Mention guidelines for completing environmental responsible product design. Explain basic design for environment methods.	**07**
	(b)	What do you mean by Poka Yoke? Write seven steps to be followed for Poka Yoke attainment.	**07**
		OR	
Q.5	**(a)**	Explain weighted sum assessment method.	**07**
	(b)	State any five basic approaches to reduce environmental impact. Explain design for disassembly in detail.	**07**

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