Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME – SEMESTER II– EXAMINATION – WINTER - 2016

Subject Code: 2720816 **Date: 21/11/ 2016**

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)**	Explain Basic hole and basic shaft systems. How many grades of standard tolerances are available? Which grades of tolerances are used for gauges? What do you mean by 45 g7?	**07**
	(b)	What is design for manufacture and assembly? Write three main activities of DFMA. What are the advantages of applying DFMA during product design?	**07**
Q.2	**(a)**	Which factors determine the choice of material? Explain any two in brief.	**07**
	(b)	How can correct designing eliminate the risk of wrong assembly? Also draw a neat sketch showing design for ease of an assembly.	**07**
		OR	
	(b)	State design rules for redesign of castings based on parting line considerations. Also mention the effects of location of parting line plane.	**07**
Q.3	**(a)**	What does the designer have to bear in mind in form design? How space factor influences form design?	**07**
	(b)	Explain design for clampability using near sketch.	**07**
		OR	
Q.3	**(a)**	Enlist the factors to be considered in the form design of a hand forging.	**07**
	(b)	What are the machining considerations for design of an assembly?	**07**
Q.4	**(a)**	Write general rules for design a component and methodologies used for automatic assembly.	**07**
	(b)	Explain DFMA as the tool for concurrent engineering.	**07**
		OR	
Q.4	**(a)**	Write general design guidelines for a component for manual assembly. Also provide guidelines for part handling, insertion and fastening during manual assembly process.	**07**
	(b)	Write three DFMA criteria for retaining components for redesign of a product.	**07**
Q.5	**(a)**	Explain in context of design for an environment: a) Design to minimize material usage, b) Design for disassembly	**07**
	(b)	What is lean? List any five lean principles. State the benefits of using lean manufacturing.	**07**
		OR	
Q.5	**(a)**	Explain in context of design for an environment: a) Design for Recyclability, b) Design for energy efficiency	**07**
	(b)	What is meaning of Poka Yoke? Which are the seven steps to be followed for Poka Yoke attainment?	**07**

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