Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME - SEMESTER–II EXAMINATION – SUMMER 2015

Subject Code: 2720816 **Date: 01/06/2015**

Subject Name: Design for manufacturing and assembly

Time: 02:30 PM to 05:00 PM **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Figures to the right indicate full marks.**
3. **Make suitable assumptions wherever necessary and mention it clearly in your solution.**

Q-1	**(a)**	Define Geometric tolerancing. Draw geometric characteristics symbol used in GD & T. State the benefits of GD & T.	**07**
	(b)	Explain a relationship between attainable tolerance grade and various machining processes	**07**
Q.2	**(a)**	A 75 mm shaft rotates in a bearing. The tolerance for both shaft and bearing is 0.075 mm and the required allowance is 0.1 mm. Determine the dimensions of the shaft and the bearing bore with the basic hole standard.	**07**
	(b)	What is a tolerance stack up? Why is required to perform a tolerance stack up?	**07**
		OR	
	(b)	Explain redesign of castings based on parting line considerations.	**07**
Q.3	**(a)**	How is the space factor influence the form design?	**07**
	(b)	Which are the points taken into account for design error avoidance? Explain the concept of design for machinability.	**07**
		OR	
Q.3	**(a)**	Summarize the main factors for designing the welded structure.	**07**
	(b)	Enlist types of forging process. What are the advantages offered by forging? Which are the factors considered in the form design of a hand forging?	**07**
Q.4	**(a)**	Write five steps to be followed in design for manufacture (DFM). Draw a flow chart for DFM process.	**07**
	(b)	What is DFA index? State the purpose of it. List the principles of lean manufacturing.	**07**
		OR	
Q.4	**(a)**	Write general guidelines for manual assembly: Part handling, Insertion and fastening.	**07**
	(b)	What are the advantages of applying Design for Manufacture and Assembly (DFMA) during a product design?	**07**
Q.5	**(a)**	What is Six sigma? Explain two key methodologies of six sigma.	**07**
	(b)	Explain traditional design and manufacture Vs concurrent engineering.	**07**
		OR	
Q.5	**(a)**	What is Poka Yoke? Write status and functions of Poka Yoke. Also write seven steps to be followed for Poka Yoke attainment.	**07**
	(b)	List various tools to redesign a product to improve its environmental impact. Discuss any two in detail.	**07**

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