

GUJARAT TECHNOLOGICAL UNIVERSITY
ME - SEMESTER-1 (NEW) EXAMINATION – WINTER 2018

Subject Code: 3710810**Date: 03/01/2019****Subject Name: Design for Manufacturing and Assembly****Time: 02:30 PM To 05:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full mark.

- Q.1** (a) What is design for manufacturing? Draw a flow chart for DFM process. **07**
(b) What is a tolerance stack up? Why is required to perform a tolerance stack up? **07**
- Q.2** (a) What is Six sigma? Explain two key methodologies of six sigma. **07**
(b) Define Geometric tolerance. Draw geometric characteristics symbol used in GD & T. State the benefits of GD & T. **07**
- OR**
- (b) Explain Basic hole and basic shaft systems. How many grades of standard tolerances are available? Which grades of tolerances are used for gauges? **07**
- Q.3** (a) Enlist the factors to be considered in the form design of a hand forging **07**
(b) Explain DFMA as the tool for concurrent engineering **07**
- OR**
- Q.3** (a) What are the machining considerations for design of an assembly? **07**
(b) Write three DFMA criteria for retaining components for redesign of a product **07**
- Q.4** (a) Write rules and methodologies used to design components for automatic and Flexible assembly. **07**
(b) Explain redesign of castings based on parting line considerations. **07**
- OR**
- Q.4** (a) Explain the following: **07**
(1) Simplification by separation
(2) Simplification by amalgamation
(b) Explain principle of forging. Compare hammer and drop forging. **07**
- Q.5** (a) Write general guidelines for manual assembly: Part handling, Insertion and Fastening. **07**
(b) Mention guidelines for completing environmental responsible product design. Explain basic design for environment methods. **07**
- OR**
- Q.5** (a) Explain in context of design for an environment: **07**
a) Design for Recyclability,
b) Design for energy efficiency
(b) What is lean? List any five lean principles. State the benefits of using lean manufacturing. **07**
