Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M.E. SEMESTER III–EXAMINATION – WINTER 2015

Subject code: 2735003 **Date: 04/12/2015**

Subject Name: MICRO AND NANO MANUFACTURING SYSTEM

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 concept of nano technology and elaborate different areas of applications with example.	**07**
	(b)	What is carbon nano tube? Explain the structures of carbon nano tube.	**07**
Q.2	**(a)**	List out the properties of carbon nano tubes. Explain any two of them.	**07**
	(b)	With the help of flow chart briefly explain the significance of micro fabrication.	**07**
		OR	
	(b)	With example of field effect transistor explain the significance of nano fabrication.	**07**
Q.3	**(a)**	With the help of neat sketch elaborate lithography process.	**07**
	(b)	Briefly explain nanolithography and its processes.	**07**
		OR	
Q.3	**(a)**	Explain use of microscope spectrometer with configuration for micro fabrications.	**07**
	(b)	By focusing on production issues explain advanced lithography process.	**07**
Q.4	**(a)**	What are nano materials? Classify nano materials with suitable example.	**07**
	(b)	Briefly explain importance of nano materials and also explain disadvantages of nano materials.	**07**
		OR	
Q.4	**(a)**	Explain importance of "Nanotechnology in biomaterials science".	**07**
	(b)	What are nano composites? Explain polymer-matrix nano composites with electrical, thermal & optical properties.	**07**
Q.5	**(a)**	Brief out commercialization issues of micro and nano technology.	**07**
	(b)	Explain sol-gel process of synthesis of nano materials.	**07**
		OR	
Q.5	**(a)**	Describe various physical fabrication methods with the help of neat sketch.	**07**
	(b)	What is nano wire? Enlist all applications of nano wires and explain any two of them.	**07**

****