

**GUJARAT TECHNOLOGICAL UNIVERSITY****ME – SEMESTER – III (New)– EXAMINATION – WINTER-2019****Subject Code: 3730810****Date: 16-11-2019****Subject Name: Micro and Nano Manufacturing****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 marks.

- Q.1** (a) Discuss about the applications of Micro and Nano technology in manufacturing industry. **07**  
 (b) Give your comments on the current status of use of Nano technology in india. **07**
- Q.2** (a) What do you mean by the word ‘mechanical micromachining’? State the need of mechanical micromachining technologies in current scenario. **07**  
 (b) Discuss the commercialization issues of Micro-Nano Technology. **07**
- OR**
- (b) Prepare a list of various Physical micro fabrication methods. Discuss the Lithography process as micro fabrication method. **07**
- Q.3** (a) State the significance of Nano lithography and its discuss its manipulation. **07**  
 (b) Give your comments on the significance of the spectrometers and microscopes for micro and nano fabrication. **07**
- OR**
- Q.3** (a) Discuss the precision micro and nano grinding processes with its significance and applications. **07**  
 (b) Discuss pulsed water drop micromachining process with its detailed schematic and its application. **07**
- Q.4** (a) Briefly explain various Laser-Based Micro and Nanofabrication techniques. **07**  
 (b) Give your comments on role of Nano materials and Bio materials for the fabrication of micro and nano components. **07**
- OR**
- Q.4** (a) Give your thoughts on the role of micro and nano fabrication methods in integration of chips and microprocessors. **07**  
 (b) Discuss about the development of nano particles and synthesis of nano materials. **07**
- Q.5** (a) Discuss the applications of Nano chips, Nanotubes and Nanowires in modern technologies. **07**  
 (b) Give your comments on the need of finite element analysis of microstructures. **07**
- OR**
- Q.5** (a) Give your comment on meeting the social needs through micro and nano manufacturing systems. **07**  
 (b) Discuss about 3-D Molecular Modelling with its applications. **07**

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