

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VIII EXAMINATION – WINTER 2015

Subject Code:182303

Date:07/12/2015

Subject Name: Nanotechnology and Advanced Applications of Plastics

Time: 2:30pm to 5:00pm

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) Why one wants to make things very small? Viewing Nanotech along the materials, devices and systems, discuss the issues in its miniaturization **07**
- (b) What are the methods of measuring the results of fabrication of nano materials? In short, write about (a) Reduce the wavelength (b) New field Microscopy and (c) Non Imaging approaches. **07**

- Q.2** (a) Define Nanotechnology. Explain it with the help of 3 imaginary axes **07**
- (b) What do you understand by Nano particles, what are its benefits? Define Nano science and Nano additives **07**

OR

- (b) Write short notes on (a) Bottom up methods and (b) Biological growth of Nanofacture. **07**

- Q.3** (a) Discuss Graphen based materials. **07**
- (b) List the various nano devices. Discuss all Electronic Devices in detail **07**

OR

- Q.3** (a) Write short notes on (a) The Atomic Force Microscope and (b) The Scanning Ion Current Microscope **07**
- (b) Write short notes on (a) Nano fibers and (b) Nano plates or Carbon Fiber **07**

- Q.4** (a) Draw a block diagram of Different Modes of Nano manufacture. Explain the Top down method of Nanofacutre. **07**
- (b) Write short notes on (a) Nano medicine and (b) Biosensors **07**

OR

- Q.4** (a) Describe (a) Comminution and Dispersion Approach (b) Nucleation and Growth Approach for making Nano Particles. **07**
- (b) Write short notes on (a) Nano-Fibers and (b) Nano Plates. **07**

- Q.5** (a) Write a detailed notes on Polyether Sulphone (PES) **07**
- (b) Write a detailed notes on Polyether ether Ketone (PEEK) **07**

OR

- Q.5** (a) How the Poly tetra fluoro ethylene (PTFE) is manufactured? List its characteristics, grade of its avaibility and techniques for its processing. Give its at least 5 trade names along with its manufacturers and suppliers **07**
- (b) List the various applications of PTFE and NYLONE **07**