

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-VIII • EXAMINATION – SUMMER 2014

Subject Code: 182303**Date: 03-06-2014****Subject Name: Nano Technology and Advanced Applications of Plastics****Time: 10:30 am TO 01:00 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) What is nano-science and nanotechnology? Give its advantages, disadvantages and areas of applications. **07**
(b) What are the building blocks of Nanotechnology? Explain it with the neat diagram. **07**
- Q.2** (a) Write short notes on a) Bottom up method b) Lift –off method **07**
(b) List the various types bonds present in nanostructure. **07**
OR
(b) What is Electron Beam Lithography? **07**
- Q.3** (a) Explain a) Carbon nanostructure b) Nano mechanical sensors **07**
(b) Discuss Graphene based Materials **07**
OR
- Q.3** (a) Explain Nano structures & Nano materials **07**
(b) Discuss the role of semiconductors in the field of Nanotechnology. **07**
- Q.4** (a) Write down the principle and working procedure of Transmission Electron Microscope (TEM). **07**
(b) Write down the principle and working procedure of Atomic Force Microscope (AFM). **07**
OR
- Q.4** (a) List out various Nano devices and discuss in detail. **07**
(b) Write detailed notes on characterization of nano structures by using Scanning Electron Microscope (SEM). **07**
- Q.5** (a) Write Down the principle and working procedure of Fourier Transform Infrared Spectroscopy (FT-IR) **07**
(b) What is Polymer Nanocomposites (PNC)? Mention any types of PNC and its applications. **07**
OR
- Q.5** (a) Write short notes on Nano materials and Nanoclay used with example and its applications. **07**
(b) Explain the term planar technology. List the advantages of this technology. **07**
