

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VIII (old) - EXAMINATION – SUMMER 2018****Subject Code:182303****Date:02/05/2018****Subject Name:Nano Technology and Advanced Application 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) Draw a block diagram of Different Modes of Nano manufacture. Explain the Top down method of Nanofracture. **07**
- Q.2** (a) Write Down the principle and working procedure of Fourier Transform Infrared Spectroscopy (FT-IR) **07**
- (b) Describe in details the Nucleation and Growth Approach for making Nano Particles **07**
- OR**
- (b) Explain in details the various types of bonds present in nanostructure material **07**
- Q.3** (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) List out various Nano devices and discuss in detail. **07**
- OR**
- Q.3** (a) Write detailed notes on characterization of nano structures by using Scanning Electron Microscope (SEM). **07**
- (b) Describe (a) Comminution and Dispersion Approach (b) Nucleation and Growth Approach for making Nano Particles. **07**
- Q.4** (a) What is Polymer Nanocomposites (PNC)? Explain, the types of PNC and its applications **07**
- (b) Write short notes on (a) Nano-Fibers and (b) Nano Plates **07**
- OR**
- Q.4** (a) Write down the principle and working procedure of Atomic Force Microscope (AFM). **07**
- Q.4** (b) Write short notes on (a) Bottom up methods and (b) Biological growth of Nanofacture. **07**
- Q.5** (a) Write detailed notes on characterization of nano structures by using Transmission Electron Microscope (TEM). **07**

(b) Write short notes on (a) In Situ generation of ultrathin inorganic film (b) In Situ formation of inorganic nanoparticles **07**

**Q.5** (a) What do you understand by Nano particles, what are its benefits? Define Nano science and Nano additives. **07**

(b) What are the building blocks of Nanotechnology? Explain it with the neat diagram **07**

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