Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VIII (old) - EXAMINATION – SUMMER 2017

Subject Code:182303 **Date:02/05/2017**

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 Nanotechnology? Give its advantages, disadvantages and areas of applications	**07**
	(b)	What do you understand by Nano particles, what are its benefits? Define Nano science and Nano additives.	**07**
Q.2	**(a)**	What are the building blocks of Nanotechnology? Explain it with the neat diagram.	**07**
	(b)	Explain in details the various types of bonds present in nanostructure material.	**07**
		OR	
	(b)	Explain a) Carbon nanostructure b) Nano mechanical sensors	**07**
Q.3	**(a)**	Explain briefly about Chemical Vapour Deposition Method	**07**
	(b)	Write short notes on (a) Nano-Fibers and (b) Nano Plates.	**07**
		OR	
Q.3	**(a)**	Write in Detail about X-ray Lithography?	**07**
	(b)	Explain in detail about Spin Coating Process with neat sketch.	**07**
Q.4	**(a)**	Write short notes on (a) Planar Technology for micro technological foundation and (b) Nanolithography (c) Vacuum UV-Lithography.	**07**
	(b)	Write down the principle and working procedure of Atomic Force Microscope (AFM)	**07**
		OR	
Q.4	**(a)**	Write down the principle and working procedure of Scanning Electron Microscope (SEM).	**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)**	Write a short notes on semiconductors and Biopolymers	**07**
	(b)	Write detailed notes on characterization of nano structures by using Transmission Electron Microscope (TEM).	**07**
		OR	
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**

****