Seat No.:	Enrolment No.

## GUJARAT TECHNOLOGICAL UNIVERSITY BE - SEMESTER- III (NEW) EXAMINATION – SUMMER 2015

Subject Code: 2133902 Date: 29/05/2015 Subject Name: ELEMENTS OF NANOSCIENCE AND NANOTECHNOLOGY-I **Total Marks: 70** Time: 02.30pm-05.00pm **Instructions:** 1. Attempt all questions. 2. Make suitable assumptions wherever necessary. 3. Figures to the right indicate full marks. **Q.1** Define Nanotechnology? Describe Top-down and Bottom-up approach 07 (a) Describe the Nano-lithography with net and clean diagram. **(b)** 07 **Q.2** Explain Chemical Vapor Deposition Technique. 07 (a) Write brief information of Sol-Gel Technique. **(b)** 07 OR Describe the Electro deposition Technique For synthesis of nanomaterial. **(b)** 07 **Q.3** Which are the types of Carbon Nanotubes? Explain it (a) 07 Short note: Property of Carbon Nanotube. **(b)** 07 Describe Arc method for Synthesis of Nanotube. **Q.3** (a) 07 What is the Meaning of Purification of Carbon Nanotube? Explain it. **(b)** 07 Write a description on Nanostructured Solar cell. **Q.4** 07 (a) **(b)** Explain advantage and application of Nanostructured Solar cell. **07** OR Short note: Quantum Electronic Devices. 07 **Q.4** (a) What is Electron Beam Lithography? Explain it. **(b)** 07 Give a short note on Biological Application of Nanotechnology. **Q.5** 07 (a) Short note: Micro and Nano Fabrication. **(b)** 07 Describe about Nano machine and Nano Devices. 07 Q.5 (a) What is the application of nanotechnology for Environmental problems? **(b) 07** 

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