

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-III • EXAMINATION – WINTER • 2014****Subject Code: 2133902****Date: 20-12-2014****Subject Name: Elements of Nanoscience and Nanotechnology - I****Time: 02.30 pm - 05.00 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 and explain the Top down and Bottom up processes. **07**
(b) Explain Dip pen nanolithography with necessary schematic diagram. **07**
- Q.2** (a) Write a short note on Chemical Vapor Deposition Technique. **07**
(b) Write a Short note on Sol-Gel technique. **07**
- OR**
- (b) Write a short note on Electro deposition technique to synthesis nanomaterials. **07**
- Q.3** (a) Write a short note on Carbon nanotubes with types and applications. **07**
(b) What are the properties of Carbon Nanotubes? **07**
- OR**
- Q.3** (a) Explain arc method to synthesis of Carbon nanotubes. **07**
(b) Write a short note on purification of Carbon nanotubes. **07**
- Q.4** (a) Write a short note on Nanostructured solar cell. **07**
(b) Give the properties and advantage of nanostructured solar cell. **07**
- OR**
- Q.4** (a) Write a short note on Quantum Electronic devices. **07**
(b) Explain the electron beam lithography **07**
- Q.5** (a) Write a short note on biological applications of Nanotechnology. **07**
(b) Write a short note on Micro and Nano Fabrications **07**
- OR**
- Q.5** (a) What are Nano machines and Nano devices? **07**
(b) Applications of Nanotechnology for environment issues. **07**
