

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-III(New) • EXAMINATION – WINTER 2016****Subject Code:2133902****Date:04/01/2017****Subject Name:Elements of Nanoscience and Nanotechnology-I****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.

		MARKS
Q.1	Short Questions	14
	1 Is milk nature nanomaterials?	
	2 is used as a conducting electrode in DSSC Cell.	
	3 Write down the name of types of Carbon Nano Tubes.	
	4 Which catalysts are used in formation of CNT?	
	5 Write down full form of STM.	
	6 Write down full form of TEM.	
	7 Write down one application use of Nano magnate.	
	8 Which machine is used for Nano Lithography?	
	9 Give few examples of nano colloids solution.	
	10 Write down one application of hydrophobicity.	
	11 Butterfly and bird wings are example of	
	12 Moore`s Law change at everyMonths	
	13 Cadmium Telluride ismaterial.	
	14 Give names of different materials used in DSSC cell.	
Q.2	(a) Write down name of various synthesis techniques for synthesis of nanomaterials.	03
	(b) Write down application of nanomaterials.	04
	(c) Write a brief short note on different applications of Carbon Nanotubes for various advanced application.	07
OR		
	(c) Write a brief short note on solar cell with its applications.	07
Q.3	(a) Define nanoparticles and nanostructure.	03
	(b) Explain top down and bottom up Techniques.	04
	(c) Write a brief short note on electron beam lithography with its applications.	07
OR		
Q.3	(a) Define nano robots, is it imaginary concept?	03
	(b) Define nanomedicine and its size dependent advantages.	04
	(c) Write a short note on dip pen nano lithography to prepare nanostructure on surface.	07
Q.4	(a) Define nanotechnology with example.	03
	(b) Write down properties of carbon nanotubes for mechanical and sensor point of view.	04
	(c) Write a brief short note on plasma arching technique for synthesis of nanomaterials and nano devices.	07
OR		
Q.4	(a) Define optic - electronic devices based on nanomaterials.	03
	(b) Show the use and benefit of nanotechnology based quantum computer.	04
	(c) Write down various applications on nanotechnology in the field of sensor and electronics.	07

- Q.5** (a) Define holes and photons in vicinity of interaction of light. **03**
- (b) Write a short note on photonic crystals with its applications. **04**
- (c) Write a short note on CVD (chemical vapor deposition technique) for synthesis of nanomaterials and nanostructure. **07**

OR

- Q.5** (a) Draw sketch of various types of carbon nanotubes. **03**
- (b) Explain nanotechnology based environment applications **04**
- (c) Write short note on ball milling technique for synthesis of various nanomaterials with its application. **07**
