Seat No.:	Enrolment No
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GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VII (NEW) - EXAMINATION - SUMMER 2017

Subject Code: 2170508 Date: 06/05/2017

Subject Name: Nano Technology(Department Elective - II)

Time: 02.30 PM to 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.

			MARKS
Q.1		Short Questions	14
	1	What is the range of particle size covered in Nano-	Technology?
	2	What is Nano Wire?	
	3	What is quantum dot?	
	4	What is Bottom up and Top down approach in Nano	Material
	5	List the equipments used for Nano particle analyser.	
	6	What is Photo resist material?	
	7	List Molecular properties that change at Nano level.	
	8	Give some application of Nano-coatings.	
	9	Where Nanosilver is used?	
	10	What is co-precipitation?	
	11	What properties are improved when Catalyst is in	Nano-form?
	12	What is Micro Emulsion?	
	13	Give list of Chemicals used for Etching.	
	14	List Nano materials that is used as cosmetic products.	
Q.2	(a)	Classify the vapor deposition techniques used in	03
_		Nano-technology.	
	(b)	Discuss preparation of Nano-filter.	04
	(c)	With the help of diagram explain construction and	07
		working of Boat reactor.	
		OR	
	(c)	Discuss inert Gas Evaporation technique.	07
Q.3	(a)	Differentiate Wet and Dry Etching.	03
	(b)	Discuss chemicals used in Etching.	04
	(c)	Discus Etching Process and its application.	07
		OR	
Q.3	(a)	Discuss steps of Nano-lithography.	03
	(b)	Discuss Fabrication of Nano-wires using Template	04
		fabrication.	
	(c)	Discuss Co-precipitation method for making Nano-	07
		particles.	
Q.4	(a)	Discuss type of MicroEmulsion.	03
	(b)	Discuss Sol-gel technique.	04
	(c)	Discuss Top-Down and Bottom-up approach in	07
		fabrication of Nano-material.	
. .		OR	
Q.4	(a)	Show various types of structure of Carbon nano-tubes.	03
	(h)	Discuss method of synthesis of Carbon Nano tube	04

	(c)	Discuss some properties and applications of titanium dioxide.	07
Q.5	(a)	Discuss the principle of Atomic force Microscope.	03
	(b)	Discuss Scanning Electron Microscopy.	04
	(c)	Discuss principle of X-Ray Diffraction.	07
		OR	
Q.5	(a)	Discuss application of Nano oxide as protective coatings.	03
	(b)	Discuss various application of Nano-technology in medical Science.	04
	(c)	What is self-assembly? Show examples of Self-assemly in Biology.	07
