Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–III (New) EXAMINATION – WINTER 2015

Subject Code: 2133902 **Date:21/12/2015**

Subject Name: Elements of Nanoscience and Nanotechnology-I

Time: 2:30pm to 5:00pm **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	Give few examples of natural nanomaterials.	
	2	Which materials are used in Nano Solar cells?	
	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	Which Nanomaterial is used to prepare nano magnet.	
	8	Which machine is used for Nano Lithography?	
	9	Give few examples of Nano Colloids.	
	10	Give example of Self Cleaning.	
	11	Butterfly and Bird Wings are example of …….	
	12	Moore`s Law change at every ……..Months	
	13	Cadmium Telluride is ……material.	
	14	Write down full name of DSSC.	
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 short note on plasma arching technique for synthesis of nanomaterials.	**07**
		OR	
	(c)	Write a short note on chemical vapor deposition technique for synthesis of nanomaterials.	**07**
Q.3	**(a)**	Define nanotechnology and nanoscience	**03**
	(b)	Write a short note on Top Down and Bottom Up Technique for synthesis of nanomaterials.	**04**
	(c)	Write a short note on Deep Pen Nano Lithography	**07**
		OR	
Q.3	**(a)**	Define Nano robots.	**03**
	(b)	Define Nanomedicine and its advantages.	**04**
	(c)	Write short note on Ball Milling technique for synthesis of Nanomaterials with its application.	**07**
Q.4	**(a)**	Draw diagram of various types of Carbon Nanotubes.	**03**
	(b)	Write down properties of Carbon Nanotubes.	**04**
	(c)	Write down various applications of Carbon Nanotubes.	**07**
		OR	

Q.4	**(a)**	Define Nanoparticles and Nanostructure.	**03**
	(b)	Explain use of nanotechnology in Quantum Computer.	**04**
	(c)	Write down various applications on Nanotechnology in the field of Nano electronics.	**07**
Q.5	**(a)**	Define Nano Holes and Photons in vicinity of light.	**03**
	(b)	Explain Photonic Crystals with its applications.	**04**
	(c)	Write a short note on Solar Cell with its applications.	**07**

OR

Q.5	**(a)**	Define Optic - Electronic Devices.	**03**
	(b)	Write down environment applications of nanomaterials.	**04**
	(c)	Write a short note on Electron Beam Lithography with its applications.	**07**

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