Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– V (New) EXAMINATION – WINTER 2019

Subject Code: 2153904 Date: 21/11/2019

Subject Name: Elements of Nanoscience and Technology-II

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	**(a)**	Differentiate: Surface and Interface	**03**
	(b)	Explain super hydrophobicity with contact angle.	**04**
	(c)	Explain Nano synthesis using AAO template for industrial aspect.	**07**
Q.2	**(a)**	Write down various properties associated with small cluster.	**03**
	(b)	Explain, How to transfer white material in to transparent materials using nanotechnology with example.	**04**
	(c)	Write short note on thermal expansion with necessary examples.	**07**
		OR	
	(c)	Write a short note on Zeolites with industrial applications.	**07**
Q.3	**(a)**	Give two example of Color generation from nanostructure.	**03**
	(b)	Write down various applications associated with Super Critical Fluids.	**04**
	(c)	Explain Electrophoretic deposition in the vicinity on Nano synthesis.	**07**
		OR	
Q.3	**(a)**	Explain role of shape of matter at a nanoscale.	**03**
	(b)	List out name of various materials used as catalyst.	**04**
	(c)	Draw necessary diagram to explain electrospinning technique for prepare on Nano sensor.	**07**
Q.4	**(a)**	Draw bandgap for Semiconductor, Quantum Dot and Atom in the vicinity of Energy.	**03**
	(b)	Write down importance of electrolyte and surface preparation in electroplating	**04**
	(c)	Draw the phase diagram to explain Supercritical fluid and explain it in the vicinity of physiochemical parameter.	**07**
		OR	
Q.4	**(a)**	Define: Nano porous material.	**03**
	(b)	Differentiate: High angle and Low angle grain boundary.	**04**
	(c)	Write a short note on AgX photography.	**07**
Q.5	**(a)**	Define :Ceramic Surface	**03**
	(b)	Write a short not on magnetic and mechanical properties of nanomaterial.	**04**
	(c)	Explain in detail: Electroplating for synthesis of Nano coating.	**07**
		OR	
Q.5	**(a)**	Define: Nanocrystal	**03**
	(b)	Write down various application associated with Nano membranes	**04**
	(c)	Explain , How to synthesis nanoparticles using Supercritical fluid	**07**

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