Seat No.: _____ Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

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

Subject Code: 2153902 **Date: 02/12/2019**

Subject Name: Nano Ceramic and Applications

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)**	Define Dielectric Materials.	**03**
	(b)	Describe Application of Ceramic Materials in Industry.	**04**
	(c)	Explain Synthesis of Nano Ceramic materials.	**07**
Q.2	**(a)**	Explain "Ceramic materials for Aerospace applications".	**03**
	(b)	Compare and Contrast between Traditional Ceramic and Advance Ceramic.	**04**
	(c)	Write a short note on Non Stoichiometry.	**07**
		OR	
	(c)	Explain Fracture mechanics, Brittleness and Ductility.	**07**
Q.3	**(a)**	Describe Pressure Assisted Sintering.	**03**
	(b)	Define Piezo Ceramics.	**04**
	(c)	Explain Sol-gel preparation technique for Nano-Ceramics.	**07**
		OR	
Q.3	**(a)**	Explain Injection Molding.	**03**
	(b)	Briefly Describe any Two Densification methods used for Advanced Ceramics.	**04**
	(c)	Write a short note on Oxide Ceramic materials.	**07**
Q.4	**(a)**	Describe Applications of Ceramic materials in Medical Sector.	**03**
	(b)	Define Pechini Process.	**04**
	(c)	Define Ferroelectricity.	**07**
		OR	
Q.4	**(a)**	Define Ionic Conduction	**03**
	(b)	What is vitrification? Explain its role in Ceramic manufacturing.	**04**
	(c)	Explain General steps involved in Manufacturing of Traditional Ceramics.	**07**
Q.5	**(a)**	Explain Briefly Schottky and Frenkel Defects	**03**
	(b)	Define Superconducting Ceramic materials.	**04**
	(c)	Write a short note on Superconducting Ceramics.	**07**
		OR	
Q.5	**(a)**	Mention few Examples of Reaction Sintered ceramic materials.	**03**
	(b)	Explain Tape Casting methods used in Nano Ceramic Fabrication.	**04**
	(c)	Write a short note on Non-Oxide Ceramic materials.	**07**

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