Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V(New) • EXAMINATION – WINTER 2016

Subject Code:2153902 **Date:17/11/2016**

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.**

Q.1		**Short Questions**	**14**
	1	Define pyro-electricity.	
	2	Define extrinsic semiconductor	
	3	What is ferroelectric material?	
	4	Draw P-E loop of ferroelectric materials	
	5	Define dielectric materials	
	6	Draw P-E loop of dielectric materials	
	7	Define super conductor.	
	8	Define stoichiometric.	
	9	What is Color of ZnO in stoichiometric ratio?	
	10	Define Non stoichiometric.	
	11	Write definition of oxide ceramics.	
	12	Define wide band gap semiconductor.	
	13	Give examples of non-oxide ceramics any two.	
	14	Give examples of transparent ceramics.	
Q.2	**(a)**	Describe ferroelectricity in ceramics.	**03**
	(b)	Write a note on fracture mechanics.	**04**
	(c)	Explain transparent ceramics	**07**
		OR	
	(c)	Describe the Sol-gel preparation techniques for Nano Ceramics.	**07**
Q.3	**(a)**	Describe semiconducting ceramics.	**03**
	(b)	Explain ionic conduction	**04**
	(c)	Explain Non Stoichiometry.	**07**
		OR	
Q.3	**(a)**	Explain piezoelectric materials.	**03**
	(b)	Write different fracture mechanics.	**04**
	(c)	Write properties of nano ceramics.	**07**
Q.4	**(a)**	Write application of transparent ceramics.	**03**
	(b)	Describe applications of dielectric material.	**04**
	(c)	Describe superconducting ceramics.	**07**
		OR	
Q.4	**(a)**	Describe oxide ceramics	**03**
	(b)	Write applications of ceramics.	**04**
	(c)	Describe defects in ceramics.	**07**
Q.5	**(a)**	Write typical properties of ceramics	**03**
	(b)	Write short note on nano ceramics.	**04**
	(c)	Explain preparation of Solid State Reaction nano ceramics.	**07**
		OR	
Q.5	**(a)**	Describe non oxide ceramics.	**03**
	(b)	Describe types of dielectric materials.	**04**
	(c)	Discuss examples of non-oxide ceramics.	**07**

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