Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

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

Subject Code:2133603 Date:02/01/2017

Subject Name:Introduction to Glass & Ceramic Technology-I

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		**Short Questions**	**14**
	1	Give the formula of Kaolinite clay	
	2	Give the formula of Potash mica	
	3	Give the formula of Albite	
	4	Give the formula of Anorthite	
	5	Give the formula of Ortholase	
	6	Give the formula of lepidolite	
	7	Give the formula of paragonite	
	8	Give the formula of monticelite	
	9	Define porosity	
	10	Define creep.	
	11	Define thermal shock resistance	
	12	Define slag corrosion resistance	
	13	What is talc?	
	14	Write three polymorphs of zirconia	
Q.2	**(a)**	What is meant by refractoriness of a material? Explain	**03**
	(b)	Discuss the polymorphic transformation of silica.	**04**
	(c)	Describe island, group, ring and sheet structure found in silicate materials.	**07**
		OR	
	(c)	Describe the difference between Conversion and Inversion.	**07**
Q.3	**(a)**	Describe what is flint in brief.	**03**
	(b)	Write short notes on Vitreous silica and silica gel.	**04**
	(c)	Explain classification of refractories based on porosity, acidity and mode of pressing.	**07**
		OR	
Q.3	**(a)**	Define nucleation and growth.	**03**
	(b)	Explain difference between nucleation and growth.	**04**
	(c)	Explain the model of homogeneous nucleation with mathematical derivation	**07**
Q.4	**(a)**	Define natural and sea water magnesia	**03**
	(b)	Explain how hydration resistance of natural magnesia be	**04**

		increased.	
	(c)	Explain the synthesis of Sea water magnesia	**07**
		OR	
Q.4	**(a)**	Define normal and inverse spinel.	**03**
	(b)	Describe the occurrences of spinel.	**04**
	(c)	Describe the structure of chrome ore in detail.	**07**
Q.5	**(a)**	Describe aluminosilicates.	**03**
	(b)	Describe difference between alpha, beta and gamma alumina	**04**
	(c)	Explain the synthesis of alumina by Bayer's process.	**07**
		OR	
Q.5	**(a)**	Define what is steatite and talc.	**03**
	(b)	Explain the processing of cordierite bodies.	**04**
	(c)	Explain the role of silica, soda ash and alumina in soda lime silica glass.	**07**

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