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GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V (NEW) EXAMINATION – WINTER 2018

Subject Code:2153614 Date:20/11/2018

Subject Name:Glass science & Technology

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 glass and how it is different from crystal.	03
	(b)	Explain silicate theory of glass formation	04
	(c)	Explain glass formation with the plot of Enthalpy vs. Temperature.	07
Q.2	(a)	Define the phenomenon of nucleation.	03
	(b)	Differ between homogeneous and heterogeneous nucleation.	04
	(c)	Establish the empirical equation for homogeneous nucleation.	07
		OR	
	(c)	Explain Growth phenomena. Explain difference between nucleation and growth.	07
Q.3	(a)	Define and explain annealing.	03
	(b)	Explain why annealing is required.	04
	(c)	Explain the nucleation model with empirical equation.	07
		OR	
Q.3	(a)	Define borosilicate glass.	03
	(b)	Discuss in detail the finer morphology of borosilicate glass.	04
	(c)	Explain the working principle and methodology of Glass melting tank furnace.	07
Q.4	(a)	Describe magnetic materials.	03
	(b)	Describe photonic materials.	04
	(c)	Explain refining process in detail.	07
		OR	
Q.4	(a)	Write a short note on Amber glass.	03
	(b)	Discuss on chalcogenide glass.	04
	(c)	Explain the colouration process of photosensitive glass.	07
Q.5	(a)	Define fiber glass.	03
	(b)	Differ between E- glass and S- glass.	04
	(c)	Explain the role of former, fining agent, colourant in batch composition of glass.	07
		OR	
Q.5	(a)	Define amorphous materials with examples.	03
	(b)	State the importance of random network model for explaining glass structure	04
	(c)	Explain the annealing of glass in detail with schematic diagram.	07

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