

# GUJARAT TECHNOLOGICAL UNIVERSITY

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

Subject Code: 2153614

Date: 21/11/2019

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.

		MARK
Q.1	(a) Define the phenomenon of nucleation.	03
	(b) Differ between homogeneous and heterogeneous nucleation	04
	(c) Establish the empirical equation for homogeneous nucleation.	07
Q.2	(a) Define short range order of glass in comparison to long range order of a crystal.	03
	(b) Explain Silicate theory of glass formation	04
	(c) Explain glass formation with the plot of Enthalpy vs. Temperature.	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 necessary.	04
	(c) Explain the nucleation model with empirical equation.	07
	OR	
Q.3	(a) Define lithium borosilicate glass.	03
	(b) Discuss in detail the finer morphology of alumino borosilicate glass system.	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 refining phenomena in glass melt.	07