

GUJARAT TECHNOLOGICAL UNIVERSITY
BE – SEMESTER- VIII (NEW SYLLABUS) EXAMINATION- SUMMER 2018

Subject Code: 2183606

Date: 30-04-2018

Subject Name: Physical Ceramics

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) Describe smart materials with examples	03
	(b) Describe photonic materials with examples	04
	(c) Describe 7 crystal systems and 14 bravais lattices with examples.	07
Q.2	(a) Describe classification of refractories based on acidity.	03
	(b) Describe classification of refractories based on mode of pressing.	04
	(c) Describe Fe- Fe ₃ C phase diagram.	07
	OR	
	(c) Describe any binary phase diagram.	07
Q.3	(a) Deduce the expression of atomic packing factor for BCC close packing.	03
	(b) Deduce the expression of atomic packing factor for FCC close packing.	04
	(c) Describe BCC, FCC, HCP close packing with examples	07
	OR	
Q.3	(a) Describe refining process with examples.	03
	(b) Describe annealing process in brief.	04
	(c) Describe network former, intermediate and modifier with examples.	07
Q.4	(a) Define ferroelectric material.	03
	(b) Describe the hysteresis curve of spontaneous polarization.	04
	(c) Describe various polymorphs of Barium Titanate	07
	OR	
Q.4	(a) Distinguish between homogeneous and heterogeneous nucleation.	03
	(b) Deduce the mathematical model for heterogeneous nucleation	04
	(c) Describe the hysteresis loop to explain polarization.	07
Q.5	(a) Define what is chrome ore.	03
	(b) Describe properties of chrome ore.	04
	(c) Describe chrome ore structure	07
	OR	
Q.5	(a) Describe alumina structure.	03
	(b) Deduce the mathematical model for crystal growth.	04
	(c) Describe the modus operandi of glass tank furnace.	07
