

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-V (NEW) EXAMINATION – WINTER 2018****Subject Code:2153902****Date:11/12/2018****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.

		MARKS
Q.1	(a) Explain the properties of metal oxide ceramics.	03
	(b) Explain what are piezo ceramics?	04
	(c) Write a note on Imperfection created in Ceramics.	07
Q.2	(a) Explain the basic principle behind the development of Nanoceramics.	03
	(b) Compare and contrast between traditional and advance ceramics.	04
	(c) Write the application of ceramics in (1) Aerospace (2) Automotive Engineering (3) Chemical and pharmaceutical industry.	07
OR		
Q.3	(c) Classify the Nanoceramics based on atomic bonding.	07
	(a) What are transparent ceramics and which is the most used transparent ceramic till now?	03
	(b) Write a note on physical properties of transparent ceramics.	04
	(c) Give the practical application of transparent ceramics in defence.	07
OR		
Q.3	(a) Give the difference between normal coating and smart coating.	03
	(b) Give the short history about the development of transparent coating.	04
	(c) Write a note on the manufacturing process of transparent coating.	07
Q.4	(a) Define the following (1)Brittle fracture & (2) Ductile Fracture	03
	(b) Define fracture and explain its various types	04
	(c) Write a note on Fracture Mechanics for development of fracture in ceramics.	07
OR		
Q.4	(a) Give the difference between Ductile and Brittle Fracture.	03
	(b) Explain the stepwise process of development of ductile fracture.	04
	(c) What is the difference between rupture fracture, cup and cone fracture and brittle fracture	07
Q.5	(a) What are the good characteristic properties of the photocatalytic material?	03
	(b) Write a note on the development of the desalination process.	04
	(c) Explain the process of Multistage flash distillation (MSF)	07
OR		
Q.5	(a) What is doping and what are their effects on the semiconductor.	03
	(b) What are applications of Water desalination? And explain and two in detail.	04
	(c) Write a note on the hazardous effect of the toxicity of Arsenic	07
