

Name :

Roll No. :

Invigilator's Signature :

CS/B.TECH(CT)/SEM-7/CT-703C/2012-13

2012

OXIDE CERAMICS

Time Allotted : 3 Hours

Full Marks : 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Answer any five questions

1. How ZrO_2 is partially stabilized and why it is done ? What do you mean by Duplex structure and how it is fabricated ? What are the applications of Zirconia Ceramics ?

3 + 3 + 2 + 3 + 3 = 14

2. What are the processes used for manufacture of Al_2O_3 ? What are the phases present in Al_2O_3 ? Write in short the structure of $\alpha\text{-Al}_2\text{O}_3$? Write are the properties of Al_2O_3 ?

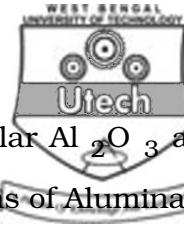
5 + 2 + 3 + 4 = 14

3. What is calcined Al_2O_3 , Reactive Al_2O_3 , Tabular Al_2O_3 , Fused Al_2O_3 and high purity Al_2O_3 .

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4. What do you mean by Reactive Al_2O_3 , Tabular Al_2O_3 and high purity Al_2O_3 ? What are the applications of Aluminas ?

$$3 \times 3 + 5 = 14$$

5. What do you mean by pure oxide ? How pure oxides are classified ? Write some important properties of Pure oxide. Describe in short the general methods of fabrication of Pure oxide product ?

$$2 + 2 + 4 + 6 = 14$$

6. Write short notes on :

- a) Thoria
- b) Berillia
- c) Mechanical Properties of Pure oxide
- d) TiO_2 .

$$4 \times 3 \frac{1}{2} = 14$$

7. Define magnesium aluminate spinel ? Discuss its structure. Discuss briefly how pure phase spinel bodies can be prepared in the laboratory for different advanced applications.

$$2 + 4 + 8 = 14$$

