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.

Aanswer 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 α-Al_2O_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.

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 properites 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 it structure. Discuss briefly how pure phase spinel bodies can be prepared in the laboratory for different advanced applications. $2 + 4 + 8 = 14$