Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/M.Tech (CT)/SEM-2/M(CT)-201/2012

2012

GLASS, GLASS CERAMIC AND COATING

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 *three* questions from Question No. 1 to 6 and Question No. 7 is compulsory.

1. What is glass transition temperature ? What are glass formers ? Explain their roles. What are glass modifiers ? Explain their roles. Write the Zachariasen's rules for glass formation. $3\frac{1}{2} + 3\frac{1}{2} + 3\frac{1}{2} + 3\frac{1}{2}$

2. What are glass ceramics ? What are nucleating agents ? How are glass ceramics formed ? Write down some applications of glass ceramics ? 2 + 2 + 5 + 5

3. Write a note on annealing of glass. Write a note on toughing of glass. 7 + 7

4. Write down the condition of Homogeneous nucleation ? Calculate the critical radius of nucleation.

5. What is viscosity range of glass transformation temperature ? Write a note on effect of various compositions on the viscosity of glass. 3 + 11

6. What is fracture toughness ? Why is actual strength of glass lower than the theoretical strength ? 3 + 11

7. Write notes on any *four* of the following : 4 × 7

   a) Float process

   b) Continuous process of making optical glass

   c) Dena process

   d) Photochromic glass

   e) Vell process.