Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/B.Tech(CT)/SEM-7/CT-702/2009-10

2009

ADVANCED CERAMICS – II

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.

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for any *ten* of the following : $10 \times 1 = 10$

i) Nano particle size is

a) 10^{-7} cm b) 10^{-6} cm

c) 10^{-8} cm d) 10^{-9} cm .

ii) In superconductivity, resistance is

a) zero b) high

c) low d) medium.

iii) Ferromagnetism is

a) ↑ ↑ ↑ ↑

b) ↑ ↓ ↑ ↓

c) ↑↓ ↑↓ .

iv) Curie Temperature of Barium Titanate is

a) 130°C b) 120°C

c) 140°C d) 150°C.

v) For Memory Application

a) Hard Ferrite b) Soft Ferrite

c) Medium Ferrite d) Very soft Ferrite.

vi) Curie Temperature of Lead Titanate is

a) 480°C b) 490°C

c) 470°C d) 460°C.

vii) Very pure chemically homogeneous product is obtained through

a) Sol-Gel Process b) Attrition Milling

c) Ball Milling d) Co-precipitation.

viii) Thermistors are generally made of

a) ZnO b) PbO

c) BaO d) CaO.

ix) Hard Ferrite lattice is of

a) Hexagonal b) Triclinic

c) Monoclinic d) Trigonal.

x) Coercivity of Hard Ferrite is

a) low b) moderate

c) high d) very high.

xi) Varistors are generally made of

a) $Cr_2 O_3$ b) CaO

c) ZnO d) MgO.

xii) Nano particle is obtained through

a) Attrition Milling b) Slip casting

c) Extrusion d) Pressing.

GROUP – B

(Short Answer Type Questions)

Write short notes on any *three* of the following. $3 \times 5 = 15$

2. Single Crystal Ferrite.
3. Hexagonal Ferrite.
4. Varistors.
5. Thermistors.
6. Piezoelectric Materials.

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

7. What is ferrites ? Describe the preparation of ferrite. Write application of ferrites. 5 + 6 + 4

8. What is Sol-Gel process ? Write the advantages of Sol-Gel Process. Write applications of Sol-Gol Process in ceramic systems. 4 + 6 + 5

9. What is superconductivity ? Name the super conducting ceramic material. Describe the preparation of super conducting ceramic material. Write application of super conducting material. 4 + 1 + 6 + 4

10. What is Nano Particle ? Write the different processes of preparation of Nanoceramic particles. What are the advantages of Nanoceramic materials ? 2 + 8 + 5

11. What is ferroelectric materials ? Describe with an example. What is Currie Temperature ? State its applications.

3 + 4 + 3 + 5