



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 × 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_2O_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

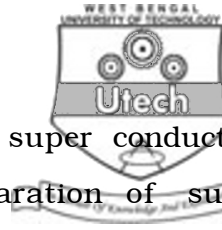
(Long Answer Type Questions)

Answer any *three* of the following.

$$3 \times 5 = 15$$

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-Gel Process in ceramic systems. $4 + 6 + 5$

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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

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