

IV B.Tech II Semester Regular Examinations, April/May 2005
CERAMICS AND COMPOSITE MATERIALS
(Metallurgy & Material Technology)

Time: 3 hours**Max Marks: 70**

Answer any FIVE Questions
All Questions carry equal marks

1. (a) Define the term ceramics. Why are ceramics brittle? Explain from atomic point of view.
(b) Distinguish clearly between crystalline ceramics and non-crystalline ceramics.
2. (a) Discuss the different types of bonds in ceramics.
(b) What are glasses? What are the various types of glasses? Discuss the structure of glasses. Give the advantages, disadvantages and applications of any three types of glasses.
3. What are refractories? What are the important characteristics required of a refractory material? What are the various types of refractories? Give the properties and application of the different types of refractories.
4. (a) What is cement? How are cements classified?
(b) Explain briefly the 'wet process' for the manufacture of Portland cement.
(c) Explain about the following abrasives:
 - i. Corundum
 - ii. Silicon carbide
5. (a) Define the term composites. Give the classification of composites with examples and applications. What are the major advantages of composites over conventional materials?
(b) Explain any 2 important methods of manufacturing fiber-reinforced composites.
6. (a) Explain the response of stress to composites by applying the rule of mixtures.
(b) Draw a neat sketch of a fiber reinforced composite material. Label the different composite in it. Explain the function of the various constituents. Explain the mechanism of strengthening in FR composites.
7. What are dispersion strengthened composites? What are their advantages and limitations over other types composites? Explain the mechanism of strengthening in dispersion-strengthened composites.
8. Write short notes on the following:
 - (a) C-C composites

- (b) Vacuum infiltration
- (c) Oven ware
- (d) Whiskers.

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