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B.E/B.Tech (Full-Time) DEGREE END SEMESTER EXAMINATIONS, NOV/DEC2013
MATERIALS SCIENCE AND ENGINEERING BRANCH
SIXTH SEMESTER-REGULATION 2008

ML9353- COMPOSITE MATERIALS

Time: 3Hr

Max.Mark:100

Answer ALL Questions

Part –A (10x2=20 Marks)

(21)

1. Distinguish between “dispersion strengthened” and “particle strengthened” composites
2. Composite Materials cannot be used as a material for turbine rotor blade: True or false- Justify your answer
3. Distinguish between S glass and E glass
4. Classify the bonding based on the wetting angle
5. Why heating of ceramic particles are necessary before the addition into the liquid melt during MMC processing?
6. Distinguish between interface and Interphase
7. What are the drawbacks of ceramics?
8. Weak interface bonding is desired in CMC-True or false Justify your answer
9. Differentiate high strength and high modulus fibers.
10. Distinguish between PAN and PITCH based Carbon fibers

Part – B (5x16 = 80 Marks)

- 11 (i) Discuss the matrix and reinforcement materials for PMC, MMC and CMC and discuss their important properties.. (12)
- (ii) List out the applications of composite materials in aerospace industries (4)
- 12a (i) With neat diagram explain the following processing technique for PMC (12)
(a) RTM (b) RRTM (c) filament winding
- (ii) Distinguish between fiber pull out and push out (4)
- OR**
- 12b (i) Explain the different types of bonding at the interface? Discuss the important factors that affect the bonding at the interface? (10)
- (ii) Discuss the phenomena of Matrix yielding, fiber fracture, interface debonding (6)
- 13a What are the technological issues with the stir cast technique? What are the methods to overcome the issues (16)
- OR**
- 13b (i) Derive an expression for E_1 and E_2 (10)
- (ii) Explain the processing of MMC by infiltration technique (6)

- 14a (i) Explain the toughening mechanism of CMC (6)
(ii) Explain the following process (i) HIP (2) slurry impregnation technique (10)
OR
- 14b (i) Explain the processing of CMC by direct oxidation and infiltration technique (16)
- 15a Explain the production of carbon fibers from PAN and PITCH (16)
OR
- 15b (i) Explain the following process to fabricate C/C composites (16)
(i) CVD (ii) Sol-gel