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Total No. of Questions : 08

M.Tech(ME) (2017 Batch) (Sem.-2,3)

COMPOSITE MATERIALS

Subject Code : MTME-221

Paper ID : [74997]

Time : 3 Hrs.

Max. Marks : 100

INSTRUCTIONS TO CANDIDATES :

1. Attempt any FIVE questions out of EIGHT question.
2. Each question carries TWENTY marks.

- Q1 a) Define a composite material and explain the classification of composites.
- b) Explain the advantages and limitations of composites over other class of materials.
- Q2 a) Discuss in detail the following properties as applicable to composites :
- i. Physical properties.
- ii. Fatigue resistance properties.
- iii. Strength.
- b) Discuss the comparison of different types of fibres used in composites.
- Q3 a) Discuss the role of reinforcement in metal matrix composites (MMCs). Discuss the influence of shape, size, and particle distribution on the properties of MMCs.
- b) Give an overview of different processes for the production of metal matrix composites.
- Q4 a) Discuss the applications of fibre reinforced composites in automobiles.
- b) Explain the following with respect to composite processing :
- i. Filament winding.
- ii. Pultrusion.

- Q5 a) Explain the vacuum bag moulding techniques for fabricating PMCs giving a neat sketch.
- b) Write short note on any one of the following :
- i. Selection of base metal in MMCs.
 - ii. Particulate composites.
 - iii. Hybrid composites.
- Q6 a) Explain the variation of lamina properties with orientation.
- b) Describe three experimental methods to determine the mechanical properties of composite materials according to ASTM standards.
- Q7 a) Elaborate on different materials used for sandwich construction of polymeric matrix materials.
- b) Elaborate on applications of composites in the field of Aerospace, Structural and biomedical applications.
- Q8 Write short notes on any two of the following :
- a) Thermosetting and thermo plastic polymers.
 - b) Basic properties of GRP, CFRP.
 - c) Production of carbon fibres.
 - d) Joining of composites.