Code: **MEMD1T3**

**I M.Tech - I Semester – Regular/Supplementary Examinations – January - 2017**

## MECHANICS OF COMPOSITE MATERIALS
### (MACHINE DESIGN)

Duration: 3 hours                                         Max. Marks: 70

Answer any FIVE questions.   All questions carry equal marks

1. a) Compare and contrast between metal matrix composites and ceramic matrix composites.                    7 M

   b) Explain different configurations and characteristics of laminates  used in composites.                    7 M

2.    Explain the important characteristics of different fiber materials used in Composites.                    14 M

3.  Discuss about the following:
    a) Autoclaves                                                7 M
    b) Filament winding technique                                7 M

4. a) Explain about Hook's law for different types of  materials.                    7 M

   b) Give the relationship of compliance and stiffness matrix to Engineering constants of a lamina.                    7 M

5. Explain the following:
   a) Maximum stress failure theory                               7 M
   b) Tsai-Hill failure theory                                    7 M

6. a) Discuss about the strength of an orthotropic lamina.   7 M

   b) Derive the expression for Elastic moduli of Lamina with
      transversity isotropic fibers.                             7 M

7. a) List the assumption in classical Lamination theory.    7 M

   b) Explain the hygro thermal effects on mechanical Behavior
      of a Laminate.                                            7 M

   8. Discuss the failure criterion of a laminate.              14 M