

**Code No: C0408****JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD****M.Tech I - Semester Examinations March/April-2011****MANUFACTURING METHODS AND MECHANICS OF COMPOSITES****(CAD/CAM)****Time: 3hours****Max.Marks:60**

**Answer any five questions**  
**All questions carry equal marks**

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1. (a) What are the types of composites and classification of composites?  
(b) Distinguish between natural and man-made composites. [12]
2. (a) Explain about the failure of composites.  
(b) Give the characterization of composite properties. [12]
3. (a) Explain about autoclave and tape production.  
(b) Hookes law for different types of materials. [12]
4. (a)What are the micro mechanical predictions of elastic constants?  
(b)What is the relationship between engineering constants and reduced stiffness? [12]
5. (a) Discuss about first-ply failure and free edge-effects?  
(b) Make a critical assessment of various lamina failure theories. [12]
6. (a) What are the important strength criteria that are commonly used to evaluate failure of an orthotropic lamina?  
(b) Determine the deflection equation for a square (axa) symmetric laminated plate subjected to a transverse load  $q=q_0 x_1/a$  when the edges at  $x_1 = 0, a$  are simply supported and those at  $x_2 = 0, b$  are clamped? [12]
7. (a)Explain and derive the equations for orthotropic plate with symmetric cross-ply lamination and angle-ply?  
(b)Make a comparative assessment between the Ritz method and the Galerkin method. [12]
8. Explain the following terms:  
(a)Thermosetts  
(b)Polymer composites  
(c)Filament winding  
(d) Pultrusion [12]

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