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.
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8. Explain the following terms:
   (a)Thermosetts
   (b)Polymer composites
   (c)Filament winding
   (d) Pultrusion   [12]

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