Code No. 3151

FACULTY OF ENGINEERING

B.E. 4/4 (Mech. / Prod.) I – Semester (Main) Examination, December 2010

Subject : Composite Materials (Elective – I)

Time : 3 Hours Max.Marks: 75

Note: Answer all questions from Part – A. Answer any Five questions from Part – B.

PART – A (10x2.5 = 25 Marks)

1. Classify fibers with examples?
2. What are the properties of wishker?
3. Differentiate Hand-Lay-up and Prepreg Lay-up processes?
4. Sketch stress – strain behaviour of polymers?
5. Explain the terms Heterogeneous, Anisotropic?
6. Calculate the transverse elastic modulus of composite consists of 40% vol. of glass fiber incorporated in epoxy matrix. E_F = 70 GPa, E_M = 10 GPa?
7. Define and classify the laminated composites?
8. What are the assumptions of governing equations for bending, buckling, and vibration of laminated plates?
9. Explain the delamination failure of composite materials?
10. What is first ply failure in composites?

PART – B (5x10 = 50 Marks)

11. Define composite material and write the advantages and limitations of composites?
12. Describe the Filament Winding process and mention its applications.
13. Discuss about the failure analysis, causes and analysis procedures of composite materials?
14. Derive the relations between engineering constants and reduced stiffness and compliances?
15. What are the basic approaches to the micromechanics of composite materials and explain in detail?
16. Explain the concept behind the Halpin-Tsai equation in composite materials?
17. Briefly explain the environmental effects of composites?

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