

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
II B.TECH II SEM-REGULAR/SUPPLEMENTARY EXAMINATIONS MAY - 2010
AEROSPACE MATERIALS AND COMPOSITES
(AERONAUTICAL ENGINEERING)

Time: 3hours**Max.Marks:80**

Answer any FIVE questions
All questions carry equal marks

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1. What are the super alloys which are indigenously manufactured for the applications of Indian space industry? Give the compositions of at least six alloys.
[16]
- 2.a) List out the age-hardenable Aluminium alloys? Explain their composition, properties and microstructure of any three alloys?
b) List the non-heat treatable type of aluminum alloys with their composition. Explain their applications?
[8+8]
3. Write short notes on the following:
i) Requisites of matrix materials and their functions
ii) Requisites of reinforcement materials and their functions
iii) Applications of composite materials
iv) Requisites of fiber materials.
[4+4+4+4]
- 4.a) Derive an equation for the modulus of fiber reinforced composites in longitudinal loading.
b) Discuss the influence of fiber length on the composite properties.
[9+7]
- 5.a) Describe about angle ply - laminates and anti – symmetric laminates?
b) How the finite element technique is used in the analysis of stresses in the composites?
[8+8]
- 6.a) How the PAN based and pitch based carbon fibers are used in the manufacture of carbon - carbon composite?
b) Sketch and explain the construction and working of resin transfer moulding process for composites?
[8+8]
- 7.a) How the impact strength is measured for carbon – carbon composites?
b) What are the advantages of NDT methods over the destructive methods? [8+8]
- 8.a) What are the various heat – treatment methods used to improve the properties of aluminum alloys?
b) How the fibers and matrix materials are selected in the manufacture of FRP materials?
[8+8]
