Code No: R21211 **R10** SET - 1

II B. Tech I Semester Supplementary Examinations, Oct/Nov- 2017
AEROSPACE MATERIALS AND COMPOSITES
(Aeronautical Engineering)

Time: 3 hours Max. Marks: 75

Answer any **FIVE** Questions
All Questions carry **Equal** Marks
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1. Discuss the effect of the type of notch and velocity of the hammer on the results of the impact test. (15M)

2. a) Give the classification of aluminum alloys. What is the basis for such a classification? (10M)
   b) What are castable aluminum alloys? (5M)

3. What is the selection criterion for reinforcement of the composite material? Explain the requisites of the matrix material in detail. (15M)

4. A continuous and aligned glass fiber composite consists of 20 vol % of glass fibers having a modulus of elasticity of 82 GPa in a polyester resin, having a modulus of 29 GPa, calculate the following: (15M)
   i) Modulus of elasticity of the composite in longitudinal direction.
   ii) Load carried by each fiber and the matrix phases when a stress of 50 MPa is applied on a cross sectional area of 250 mm^2
   iii) Strain sustained by each phase when the above stress is applied.

5. How the mechanics of materials approach is used to determine the apparent young's modulus for a composite with an arbitrary shape? (15M)

6. a) What are the various factors to be considered in improving the quality and quantity of production in the selection of particular manufacturing process of composites? (8M)
   b) What are the advantages and limitations of hand lay up of composite structures? (7M)

7. What the various factors to be considered in making laminated parts to with stand (15M)

8. a) What are the advantages of titanium alloys and explain about advantages of β - Titanium alloys? (8M)
   b) What are the various parts made by titanium alloys and mention their effects on other parts? (7M)
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