

**II B.Tech II Semester Supplementary Examinations,  
November/December 2005  
AEROSPACE MATERIALS  
(Aeronautical Engineering)**

**Time: 3 hours**

**Max Marks: 80**

**Answer any FIVE Questions  
All Questions carry equal marks**

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1. (a) Distinguish between Rockwel hardness test method and Brinnel's hardness test method.  
(b) Draw stress-strain diagram for a ductile material and explain the salient features in it . [16]
2. What are the various tests available for the detection of flaw in a finished component. Explain ultrasonic flaw detection method in detail, with the help of a neat sketch. [16]
3. Name any two important Aluminium alloys. Explain their distinguishing features, specification? Heat treatments applications of the above . [16]
4. What are the important Magnesium alloys. What are their physical properties. Explain any two of them with reference to specifications, fabrication problems & Aircraft applications. [16]
5. (a) What is Heat resistant steel? Name any one heat-resistant steel. Give its composition, properties & applications.  
(b) Write an essay on cobalt-base super alloys. [16]
6. Explain the following.  
(a) Diffusion - Bonding  
(b) Typical bonded-joints  
(c) Structural adhesive materials. [16]
7. (a) Define the term composite material. What are the various types of composite materials? What are the major advantages & limitations of composite materials?  
(b) Explain any one type of composite material including the fabrication process. [16]
8. Write short notes on the following:  
(a) Yielding phenomena  
(b) Strain hardening  
(c) Maraging steels

(d) Titanium alloys

[16]

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