

**R09**

**Code No: C3302, C5202**

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**

**M.Tech I Semester Examinations, March/April 2011**

**MATERIALS TECHNOLOGY**

**(COMMON TO ADVANCED MANUFACTURING SYSTEMS, DESIGN FOR  
MANUFACTURING)**

**Time: 3hours**

**Max. Marks: 60**

**Answer any five questions  
All questions carry equal marks**

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1. a. Explain the role of grain boundary in strengthening of a metal.  
b. Explain the difference between yield strength and shear strength. [12]
2. a. What is dispersion strengthening? Explain the differences between precipitation strengthening and dispersion strengthening.  
b. What is super plasticity? Explain the conditions required for super plasticity. [12]
3. a. What is stress intensity factor? Explain its significance.  
b. Explain different stages of creep with a neat sketch. [12]
4. a. Discuss the procedure for failure analysis.  
b. Explain the fracture of non-metallic materials. [12]
5. a. Explain the selection of materials based on service requirements.  
b. What is creep? Explain the behavior of a material during creep test. [12]
6. a. Discuss the study on materials selection with relevance to marine applications.  
b. Distinguish between corrosion and wear resistance. [12]
7. Write a brief note on composition, microstructure, heat treatment and applications of :  
(a) TRIP steels (b) Shape memory alloys. [12]
8. Write a short note on the following:  
(a) Properties and applications of engineering polymers  
(b) Adhesives and coatings. [12]

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