

R09

Code No: C3302, C5202

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

M.TECH I SEMESTER EXAMINATIONS, APRIL/MAY-2012

MATERIALS TECHNOLOGY

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

Time: 3hours

Max. Marks: 60

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

- - -

- 1.a) What is elasticity? Discuss the elasticity in metals and polymers.
- b) Explain the deformation of non crystalline materials.
2. Write short notes on the following.
 - a) Precipitation hardening.
 - b) Dispersion strengthening.
- 3.a) Differentiate between stress intensity factors and fracture toughness.
- b) Explain the effect of temperature on fracture.
- 4.a) Discuss the effect of metallurgical parameters on fatigue.
- b) Differentiate between high cycle and low cycle fatigue.
- 5.a) Discuss the case study in materials selection for automotive industry.
- b) Critically discuss the materials selection for corrosion and wear resistance of the materials.
- 6.a) What are maraging steels? Discuss the composition, heat treatment and applications of maraging steels.
- b) What are metallic glasses? Discuss the any one method of production of metallic glasses.
- 7.a) What are metallic foams? Explain its important characteristics.
- b) Discuss the important properties and applications of diamond.
8. Write short note on the following:
 - a) Advanced structural ceramics.
 - b) Polymeric materials.

* * * * *