

Code: 17MEMD1T2

I M.Tech - I Semester - Regular Examinations – February 2018

**MECHANICAL BEHAVIOUR OF MATERIALS
(MACHINE DESIGN)**

Duration: 3 hours

Max Marks: 60

Answer the following questions.

1. a) Define the following terms: 6 M
i) stiffness ii) strength, and iii) ductility.
b) Explain without using equations, the difference between engineering stress and true stress. 9 M
(OR)
2. Explain any three tests used to study the plastic behavior of materials. 15 M
3. a) What is strain hardening? How do the material properties change due to strain hardening? Write the advantages and disadvantages of strain hardening or cold-working? 8 M
b) What are the properties affected by Strain Hardening? 7 M
(OR)
4. a) Explain the statistical nature of Fatigue. 8 M
b) What are the variables affecting fatigue property of metallic materials. 7 M

5. a) Write a short note on mechanical behavior of Metal matrix composite. 8 M

b) Write the advantages and disadvantages of using Metal matrix composites when compare with Polymer matrix composite. 7 M

(OR)

6. a) Draw schematic showing basic components of the Scanning Electron Microscope. Briefly explain each component and its working in SEM. 8 M

b) What is basic difference between SEM and TEM? 7 M

7. a) Explain about Fracture Analysis diagram. 8 M

b) What are the factors affecting the type of fracture? 7 M

(OR)

8. a) Write a short note on Liquid-metal embrittlement. 8 M

b) Write a short note on Neutron embrittlement. 7 M