

Code: 17MEMD1T2

**I M.Tech - I Semester – Regular / Supplementary Examinations
February 2020**

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

Duration: 3 hours

Max Marks: 60

Answer the following questions.

1. a) Explain Bridgman correction diagram to obtain true stress-strain relation after necking. 8 M

b) Briefly explain the mechanical properties of materials. 7 M

(OR)

2. Write the salient points of stress-strain curves of the following materials with examples

(a) Ductile materials

(b) Polymer materials

(c) Brittle materials

15 M

3. What is strain hardening? Explain the hardening mechanisms in metals.

15 M

(OR)

4. a) Explain the mechanism of creep deformation.

8 M

b) Illustrate the statistical nature of fatigue failure.

7 M

5. Explain the working of Scanning Electron Microscope with neat block diagram and mention its applications.

15 M

(OR)

6. a) Explain mechanical behaviour of metal matrix composites.

8 M

b) Justify the material characterization using optical microscope.

7 M

7. Write short note on the following

(a) Hydrogen Embrittlement.

(b) Liquid metal Embrittlement.

15 M

(OR)

8. a) Explain in detail the Fracture analysis diagram.

8 M

b) What is transition temperature? Explain its significance in metallurgy.

7 M