Code: **17MEMD1T2**

I M.Tech - I Semester – Regular / Supplementary Examinations
December 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) yielding, (ii) toughness, and (iii) strain hardening.

   b) Explain without using equations, the difference between
   engineering strain and true strain.   9 M

(OR)

2. a) Explain about Mohr's circle usage in plane strain.   7 M

   b) Discuss the concept of Lüders band of plastic deformation.
                                      8 M

3. a) What happens in the microstructure of a metal that is
   undergoing strain hardening?   7 M

   b) How does dislocation movement influence strain
   hardening?   8 M

(OR)

4. a) Explain the Coble and Nabarro-Herring Creep mechanism.
                                                   7 M

   b) What are the metallurgical factors affecting Creep behavior?   8 M

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

   b) Write the advantage and disadvantage of using Polymer matrix composites when comparing with Metal matrix composite.   7 M

(OR)

6. a) With a ray diagram explain working of TEM. Discuss-Diffraction pattern in TEM.   8 M

   b) Explain why Bulk samples cannot be analyzed by TEM technique.   7 M

7. a) Explain the Griffith Mechanism for brittle fracture.   8 M

   b) Explain the temperature curve influencing the brittle fracture.   7 M

(OR)

8. a) Write a short on Stress- corrosion cracking.   8 M

   b) Write a short on Neutron embrittlement.   7 M