

**DHANALAKSHMI COLLEGE OF ENGINEERING**  
**Tambaram, Chennai - 601 301**

**DEPARTMENT OF MECHANICAL ENGINEERING**  
**REWRAP TEST - 1**  
**SET - 1**

**ME6503 - DESIGN OF MACHINE ELEMENTS**

Year: III  
Sem: V

Time: 45 minutes  
Part-A (2×4 = 8)

1. Define – Impact Load
2. What is meant by adaptive design? (N/D – 12)
3. What are the various steps involved in machine design? (N/D – 06)
4. What are mechanical properties of the metals? Write any four mechanical properties.

Part-B (16×1 = 16)

5. A cantilever of span 500mm carries a vertical downward load of 6 kN at a free end. Assume yield value of 350 Mpa and factor of safety of 3. Find the economical section for the cantilever among.
  - a. Circular cross section of diameter 'd'
  - b. Rectangular section of depth 'h' and width 't' with  $h/t = 2$ .
  - c. I section of depth 7t and flange width 5t where t is thickness. Specify the dimension and cross sectional area.(N/D – 06)

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**DEPARTMENT OF MECHANICAL ENGINEERING**  
**REWRAP TEST - 1**  
**SET - 2**

**ME6503 - DESIGN OF MACHINE ELEMENTS**

Year: III  
Sem: V

Time: 45 minutes  
Part-A (2×4 = 8)

1. Define – Design
2. What is meant by optimum design? (N/D – 11, (N/D – 07)
3. List some factors that influence machine design. (N/D – 15)
4. Define – Factor of Safety (N/D – 14)

Part-B (16×1 = 16)

5. A shaft, as shown in Fig, is subjected to a bending load of 3 kN, pure torque of 1000 N-m and an axial pulling force of 15 kN. Calculate the stresses at A . (M/J – 16)

