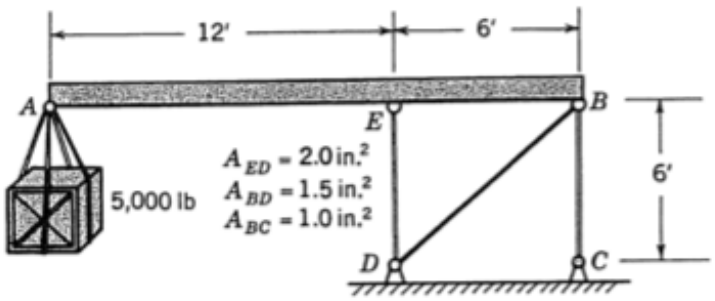
Name: _____ **Roll no.** _____

Department of Aerospace Engineering, Indian Institute of Technology, Madras.

AS 2010: Basic strength of materials. Quiz 3

1. The rigid member AB is horizontal before the load of 5000 lb is applied at A. The three steel bars ($E = 30 \times 10^6$ lb/in^2) ED, BD and BC are fastened with pins at their ends. Find the horizontal and vertical deflections of pin A. **50% weightage for correct and useful free body diagrams.**



Name: _____ **Roll no.** _____

Department of Aerospace Engineering, Indian Institute of Technology, Madras.

AS 2010: Basic strength of materials. Quiz 2

2. A cross-section of a synchrotron with copper coils surrounded by a steel ring is shown. The copper coils alternately expand and contract under magnetic forces. Estimate the tangential force in the copper coil when the magnetic force reaches a value of 70 kN per meter of circumference, directed radially outward. Take the Young's modulus of copper to be 117 GPa.