

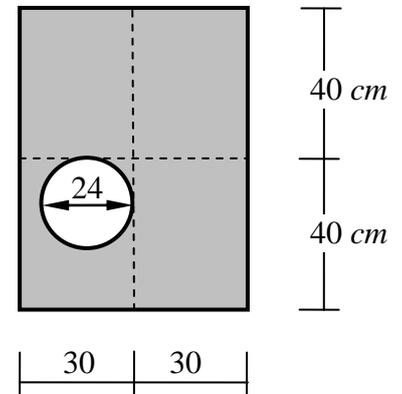
Mid-Term Exam

- The Exam consists of **2** questions in **1** page.

Question (1): (12 Marks)

For the shown cross-section, determine the following:

- (a) The location of the centroid.
- (b) The moments of inertia about the centroidal axes.
- (c) The direction of the principal axes.
- (d) The principal moments of inertia.



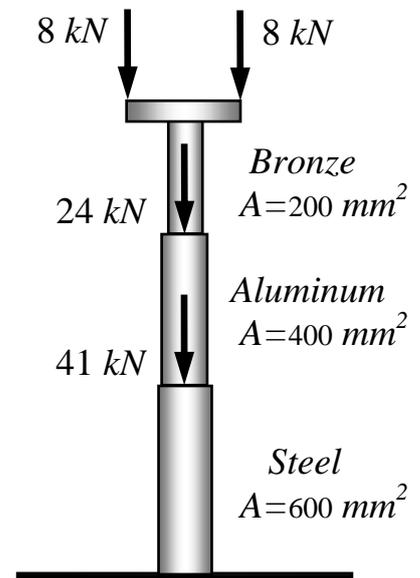
Question (2): (8 Marks)

A column of variable cross-section is subjected to axial loads as shown.

Check if the column is safe or not.

Given Data:

- Allowable stress for bronze = 100 MPa
- Allowable stress for aluminum = 90 MPa
- Allowable stress for steel = 140 MPa



With my best wishes

Dr. M. Abdel-Kader