

# IDE 110 - Mechanics of Materials - Winter 2006

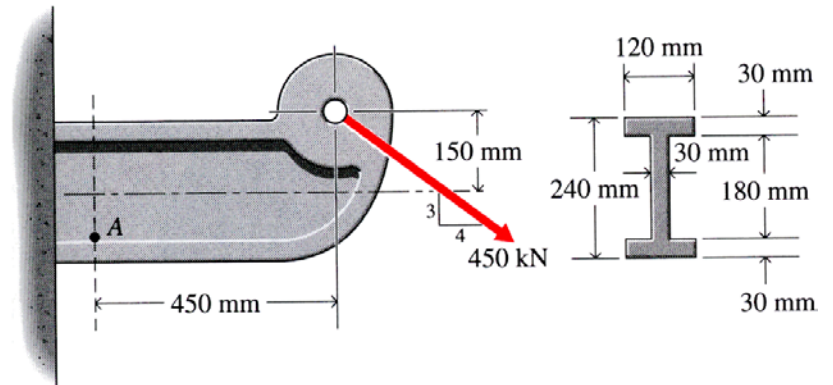
## Exam 4 – Combined Loading and Beam Deflection

Name:

Section: D

1. The machine element is loaded as shown. Sketch the state of stress at point A, which is in the web just above the junction between the flange and the web, on the element provided.

**A**



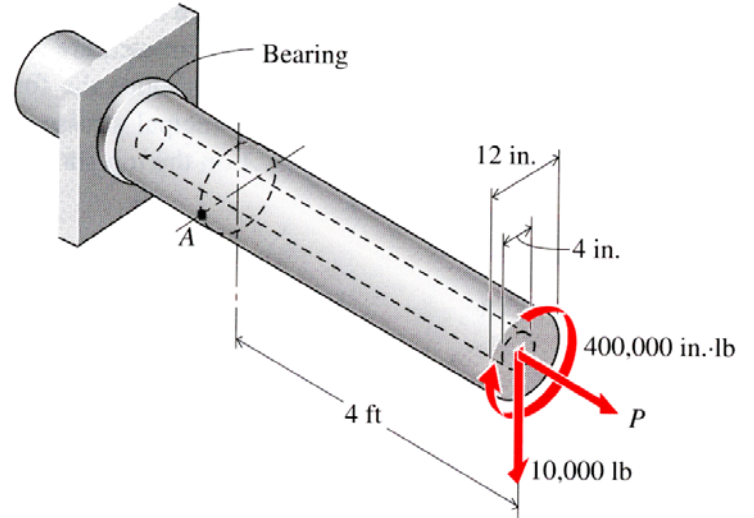
# IDE 110 - Mechanics of Materials - Winter 2006

## Exam 4 – Combined Loading and Beam Deflection

Name:

Section: D

2. A hollow circular shaft has an outside diameter of 12 in. and an inside diameter of 4 in. The shaft is in equilibrium when the indicated loads and torque are applied. If the axial load  $P$  is 186,000 lb, determine the stress state at point A, which is on the side of the shaft. Show your answers on the element provided.



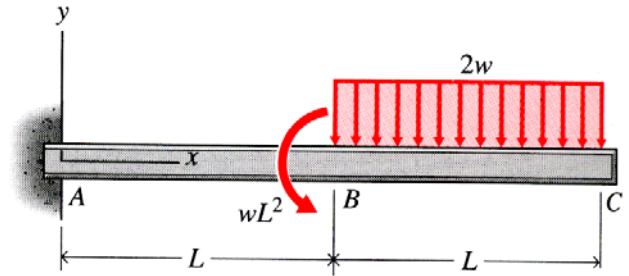
# IDE 110 - Mechanics of Materials - Winter 2006

## Exam 4 – Combined Loading and Beam Deflection

Name:

Section: D

3. A cantilever beam is loaded and supported as shown. Determine the deflection  $y_C$  at the right end of the beam.

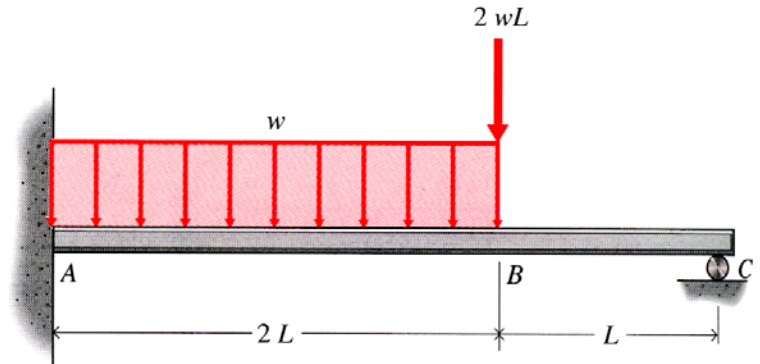


# **IDE 110 - Mechanics of Materials - Winter 2006**

## **Exam 4 – Combined Loading and Beam Deflection**

Name:  
Section: D

4. A beam is loaded and supported as shown. Determine the reactions at supports A and C.



**Write legibly – box answers**  
**Include proper units**