力学与航空航天工程系
DEPARTMENT OF MECHANICS AND AEROSPACE ENGINEERING

MECHANICS OF MATERIALS

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Problem 1

2 Each of the five struts shown consists of a solid steel rod. (a) Knowing that the strut of Fig. (1) is of a 20-mm diameter, determine the factor of safety with respect to buckling for the loading shown. (b) Determine the diameter of each of the other struts for which the factor of safety is the same as the factor of safety obtained in part a. Use $E = 200$ GPa.

$/ 0.2 \overline{} \overline{}$

$P_0 = 7.5$ kN · 900 mm · P_0 · P_0 · P_0 · P_0

(1)   (2)   (3)   (4)   (5)
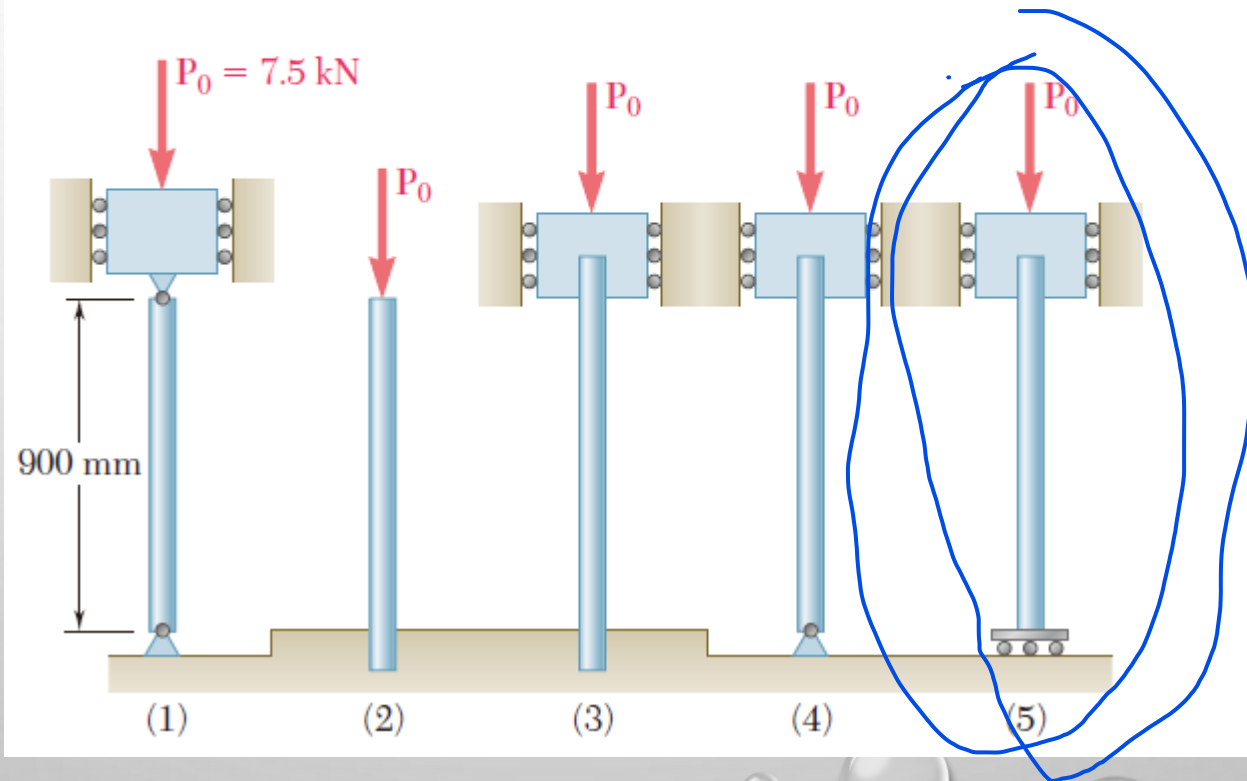
Problem 2

An axial load **P** is applied to the 32-mm-diameter steel rod AB as shown. For $P = 37$ kN and $e = 1.2$ mm, determine (a) the deflection at the midpoint C of the rod, (b) the maximum stress in the rod. Use $E = 200$ GPa.
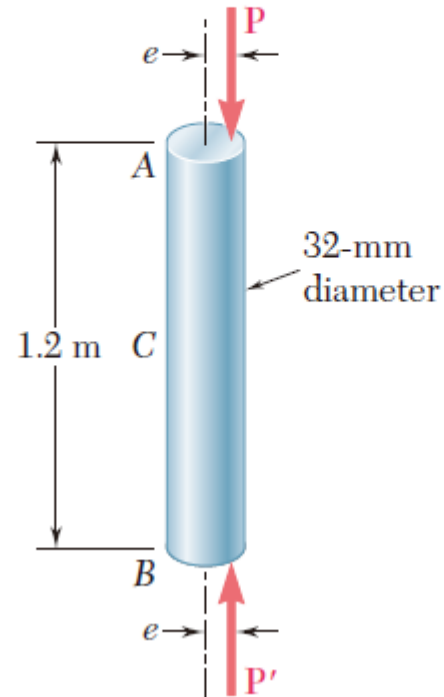
10.29

Problem 3

An axial load $P = 15$ kN is applied at point D that is 4 mm from the geometric axis of the square aluminum bar BC. Using $E = 70$ GPa, determine (a) the horizontal deflection of end C, (b) the maximum stress in the column.

$/0.30$