CE383 STRUCTURAL ANALYSIS

SPRING 2015

HOMEWORK 2

DUE: 14.04.2015 @ 13.00

Homework assignments submitted past the deadline will be accepted subject to a 20% deduction per day.

Q1)

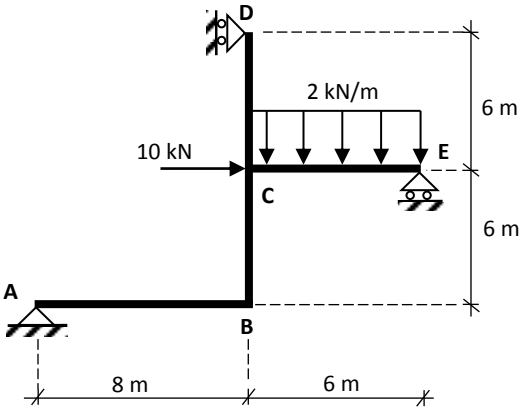

Figure 1
(All members with *EI*)

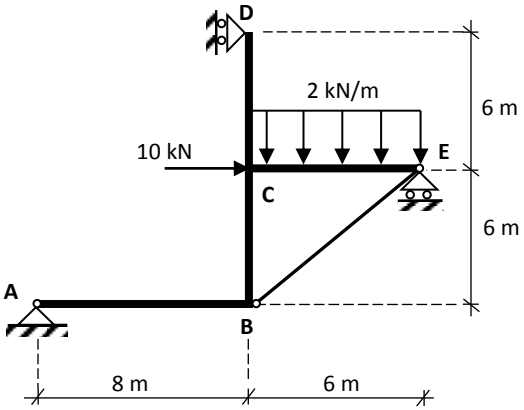

Figure 2
(Brace with EA inserted)

The structure in Figure 1 has four members that are rigidly connected to each other as shown. These four members have flexural rigidity *EI* and negligible axial deformations. This structure is then braced as shown in Figure 2 with axial stiffness *EA*. You are asked to answer the following listed questions.

- **a)** Calculate the support reactions of the structure in Figure 1 by using force method of analysis.
- **b)** Calculate the support reactions of the structure in Figure 2 by using slope deflection method.
- **c)** For structure in Figure 2, determine the support reactions by using force method of analysis. Take $EI_{frame} = 4EA_{truss}$

Q2) For the given structure with axially rigid members and constant *EI*, you are asked to answer the following:

- **a)** Calculate the support reactions of the structure by using force method of analysis.
- **b)** Calculate the support reactions of the structure by using slope deflection method.
- **c)** Plot axial force, shear force and bending moment diagrams for the entire structure. Clearly show your sign convention for your plots.