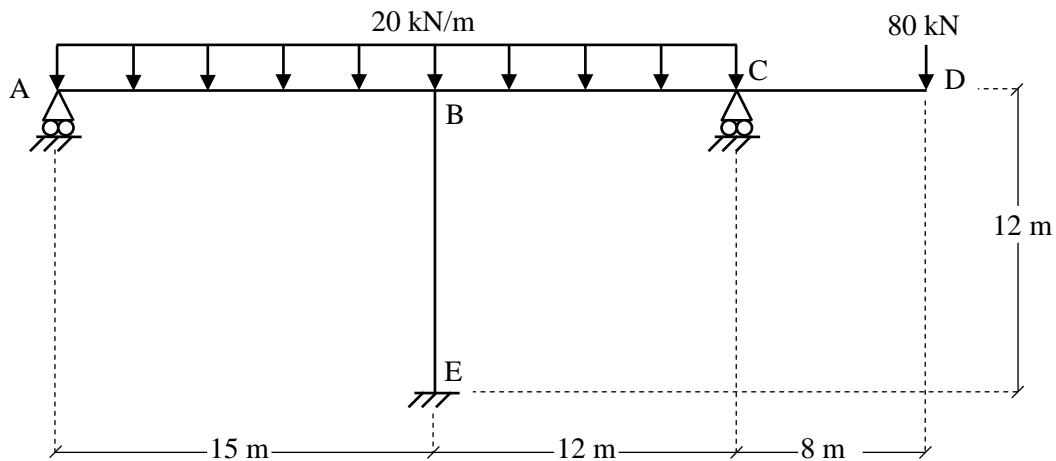**HOMEWORK 4**
DUE: 21.01.2014 @ 17.00

There will 20% deduction per day for late submission

IMPORTANT NOTE: Homework papers will be submitted with all sheets binded together by stapling the upper left corner. Do not use sheet protectors (poşet dosya). Write both your ID number and full name. Homework documents that are not compatible with this format will be penalized.

For the given frames and continous beams; determine the reactions and the member end forces by using the General Stiffness Method. Assume axial rigidity for these structural systems.
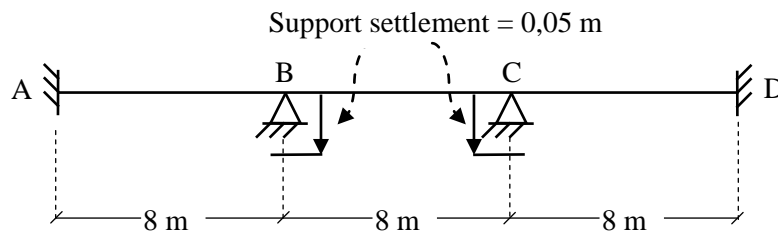
For the given truss system; determine the support reactions and the force in each member by using the General Stiffness Method.
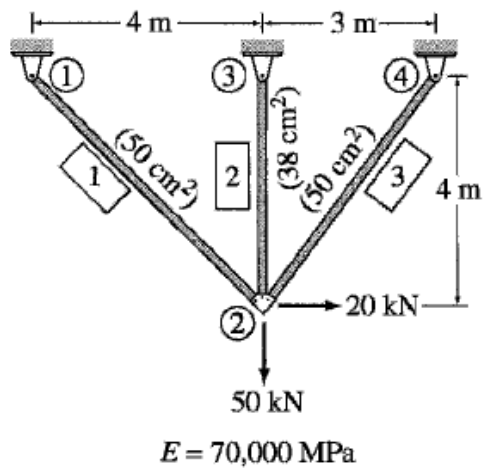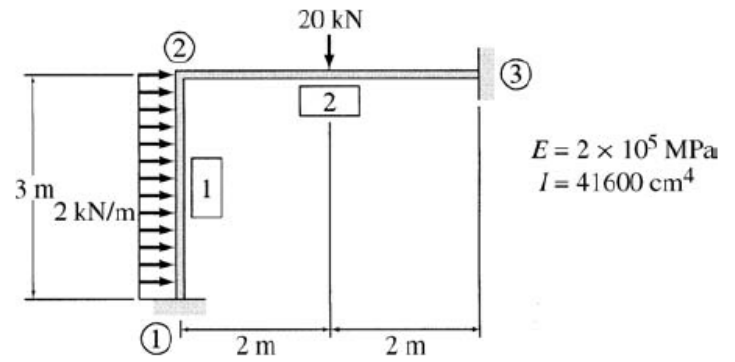
Q1)

$$EI = 80,000 \text{ kNm}^2$$

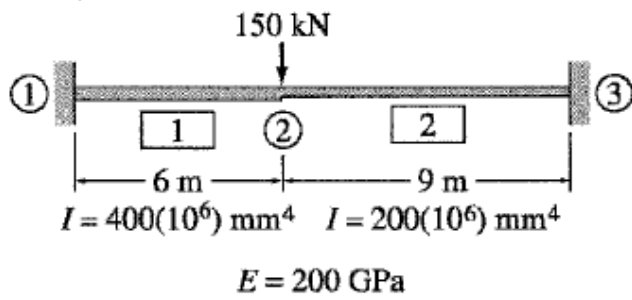**Q2)**

$$EI = 80,000 \text{ kNm}^2$$

Q3)

4 m — 3 m

① ③ ④

1 (50 cm²)

2 (38 cm²)

3 (50 cm²)

4 m

② → 20 kN

↓ 50 kN

$E = 70{,}000$ MPa

Q5)

20 kN

②

2

③

3 m
2 kN/m

1

① 2 m 2 m

$E = 2 \times 10^5$ MPa
$I = 41600$ cm⁴

Q4)

150 kN

① ③

1 ② 2

6 m 9 m

$I = 400(10^6)$ mm⁴ $I = 200(10^6)$ mm⁴

$E = 200$ GPa

Q6)

1.5 kN/m

20 kN →

② 2 ③

2I, 2A

1 3

I, A I, A

30 m

40 m

④

$E = 2 \times 10^5$ MPa
$I = 250000$ cm⁴
$A = 60$ cm²