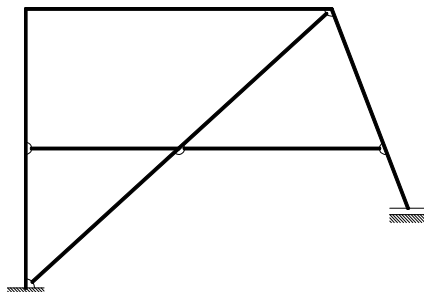
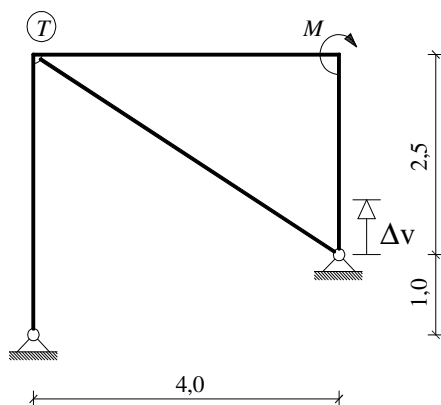


GS 1. - 2. kolokvij (A1) – (2010./2011.)

1. () Za zadani sustav odredite stupanj statičke neodređenosti.



2. () Za zadani statički sustav odredite zaokret točke T .



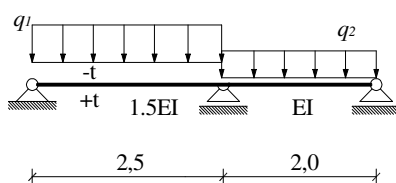
$$M = 300 \text{ kNm}$$

$$\Delta v = 3 \text{ cm}$$

$$EI = 150000 \text{ kNm}^2$$

$$EA = 1000000 \text{ kN}$$

3. () Odredite dijagram momenata savijanja.



$$\pm t = 22^\circ \text{ C}$$

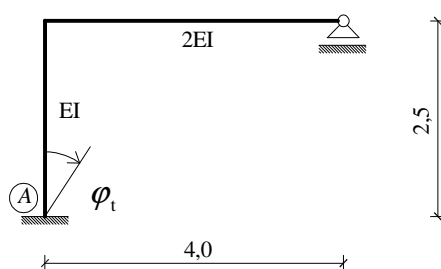
$$EI = 140000 \text{ kNm}^2$$

$$h = 40 \text{ cm}$$

$$q_1 = 60 \text{ kN/m}$$

$$q_2 = 45 \text{ kN/m}$$

4. () Odredite iznos prisilnog zaokreta na upetom ležaju A koji uzrokuje moment od 350 kNm na tom ležaju.

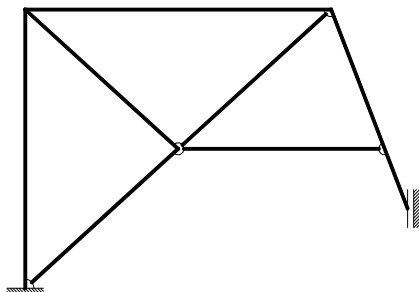


$$\frac{b}{h} = \frac{30}{50} [\text{cm}]$$

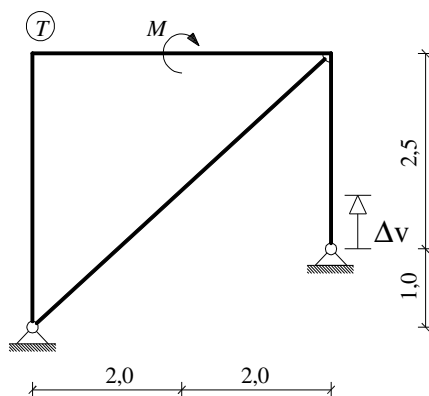
$$E = 3 \cdot 10^7 \text{ kN/m}^2$$

GS 1. - 2. kolokvij (A2) – (2010./2011.)

1. () Za zadani sustav odredite stupanj statičke neodređenosti.



2. () Za zadani statički sustav odredite zaokret točke T .



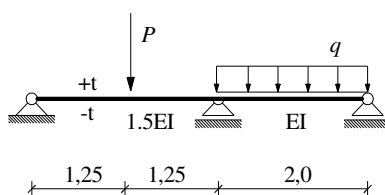
$$M = 260 \text{ kNm}$$

$$\Delta v = 2,5 \text{ cm}$$

$$EI = 170000 \text{ kNm}^2$$

$$EA = 1200000 \text{ kN}$$

3. () Odredite dijagram momenata savijanja.



$$\pm t = 20^\circ \text{ C}$$

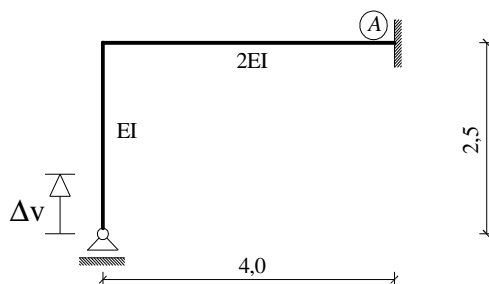
$$EI = 140000 \text{ kNm}^2$$

$$h = 30 \text{ cm}$$

$$P = 160 \text{ kN}$$

$$q = 40 \text{ kN/m}$$

4. () Odredite iznos prisilnog pomaka kliznog ležaja koji uzrokuje moment od 350 kNm na upetom ležaju A.

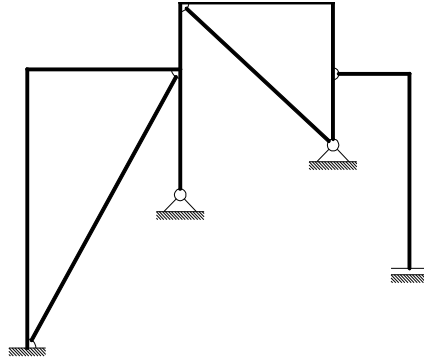


$$\frac{b}{h} = \frac{30}{50} [\text{cm}]$$

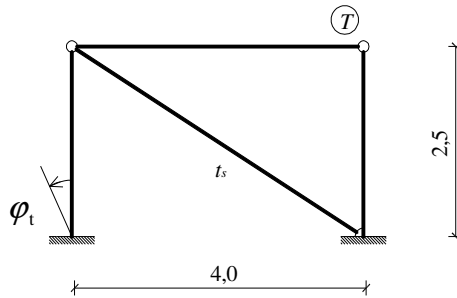
$$E = 3 \cdot 10^7 \text{ kN/m}^2$$

GS 1. - 2. kolokvij (B1) – (2010./2011.)

5. (15) Za zadani sustav odredite stupanj statičke neodređenosti.

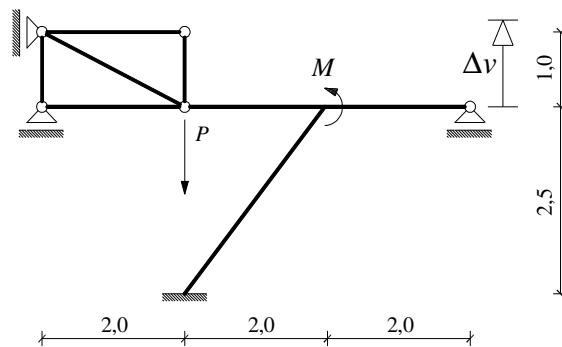


6. (35) Za zadani statički sustav odredite ukupni pomak točke T .



$$\begin{aligned} \varphi_t &= 0,003 \\ t_s &= 20^\circ C \\ \alpha_t &= 10^{-5} K^{-1} \\ EI &= 140000 \text{ kNm}^2 \\ EA &= 1100000 \text{ kN} \end{aligned}$$

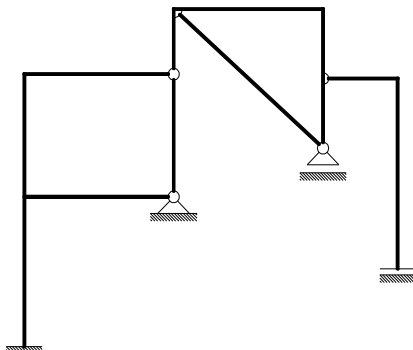
7. (50) Odredite dijagram momenata savijanja, poprečnih i uzdužnih sila.



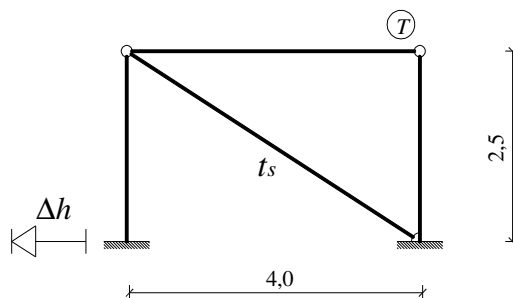
$$\begin{aligned} M &= 150 \text{ kNm} \\ P &= 100 \text{ kN} \\ \Delta v &= 2 \text{ cm} \\ \text{okvir :} \\ \frac{b}{h} &= \frac{30}{50} [\text{cm}] \\ E &= 3 \cdot 10^7 \text{ kN/m}^2 \\ \text{štapovi :} \\ \frac{b}{h} &= \frac{10}{10} [\text{cm}] \\ E &= 2 \cdot 10^8 \text{ kN/m}^2 \end{aligned}$$

GS 1. - 2. kolokvij (B2) – (2010./2011.)

1. (15) Za zadani sustav odredite stupanj statičke neodređenosti.



2. (35) Za zadani statički sustav odredite ukupan pomak točke T .



$$\Delta h = 2,5 \text{ cm}$$

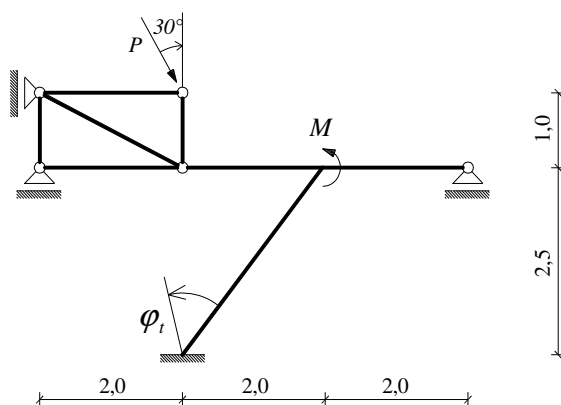
$$t_s = 24^\circ \text{ C}$$

$$\alpha_t = 10^{-5} \text{ K}^{-1}$$

$$EI = 140000 \text{ kNm}^2$$

$$EA = 1100000 \text{ kN}$$

3. (50) Odredite dijagram momenata savijanja, poprečnih i uzdužnih sila.



$$M = 170 \text{ kNm}$$

$$P = 120 \text{ kN}$$

$$\varphi_t = 0,004$$

okvir :

$$\frac{b}{h} = \frac{30}{50} [\text{cm}]$$

$$E = 3 \cdot 10^7 \text{ kN/m}^2$$

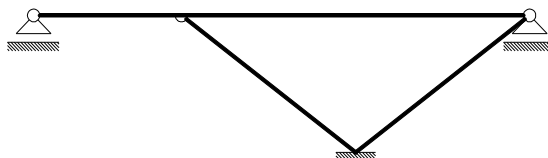
štapovi :

$$\frac{b}{h} = \frac{10}{10} [\text{cm}]$$

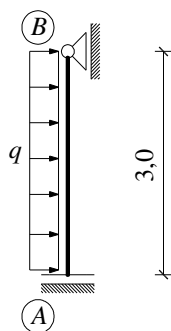
$$E = 2 \cdot 10^8 \text{ kN/m}^2$$

GS 1. - 2. kolokvij (C1) – (2010./2011.)

4. (15) Za zadani sustav odredite stupanj statičke neodređenosti, nacrtajte dva osnovna sustava i na njima označite prekoobrojne statičke veličine.

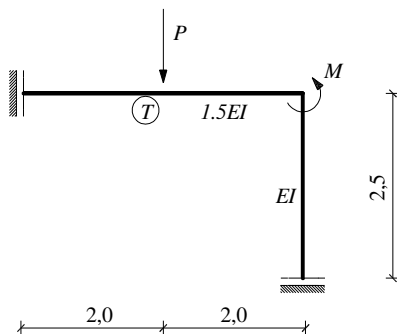


5. (25) Odredite vrijednost kontinuiranog opterećenja q tako da zaokret točke B iznosi $0,003\text{rad}$.



$$EI = 140000\text{kNm}^2$$

6. (30) Odredite ukupan pomak točke T .

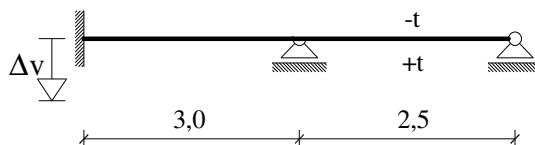


$$M = 150\text{ kNm}$$

$$P = 100\text{ kN}$$

$$EI = 120000\text{ kNm}^2$$

7. (30) Odredite dijagram momenata savijanja i dijagram poprečnih sila.



$$\Delta v = 1,5\text{ cm}$$

$$\pm t = 18^\circ\text{ C}$$

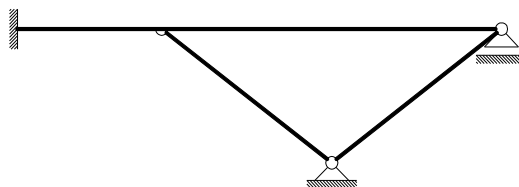
$$\alpha_t = 10^{-5}\text{ K}^{-1}$$

$$EI = 120000\text{ kNm}^2$$

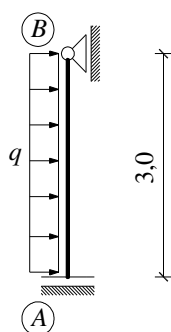
$$h = 45\text{ cm}$$

GS 1. - 2. kolokvij (C2) – (2010./2011.)

8. (15) Za zadani sustav odredite stupanj statičke neodređenosti, nacrtajte dva osnovna sustava i na njima označite prekobrojne statičke veličine.

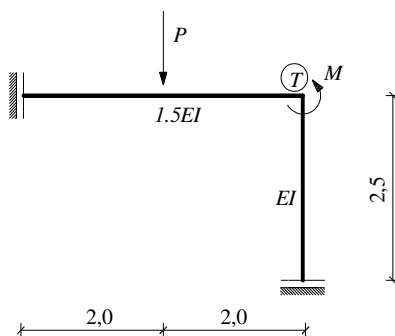


9. (25) Odredite vrijednost kontinuiranog opterećenja q tako da horizontalni pomak točke A iznosi 4cm.



$$EI = 140000 \text{ kNm}^2$$

10. (30) Odredite ukupan pomak točke T.

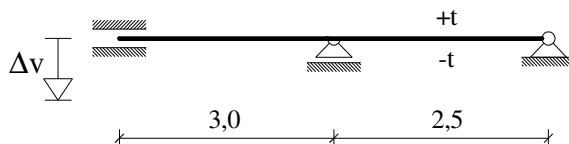


$$M = 150 \text{ kNm}$$

$$P = 110 \text{ kN}$$

$$EI = 140000 \text{ kNm}^2$$

11. (30) Odredite dijagram momenata savijanja i dijagram poprečnih sila.



$$\Delta v = 1,7 \text{ cm}$$

$$\pm t = 16^\circ \text{ C}$$

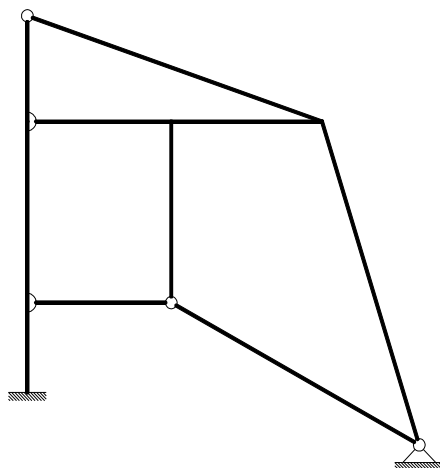
$$\alpha_t = 10^{-5} \text{ K}^{-1}$$

$$EI = 120000 \text{ kNm}^2$$

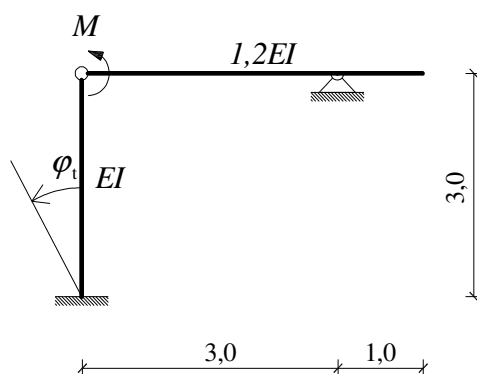
$$h = 40 \text{ cm}$$

GS 1. - 2. kolokvij (D1) – (2010./2011.)

12. () Za zadani sustav odredite stupanj statičke neodređenosti.



13. () Odredite iznos relativnog zaokreta dva diska zadanog sustava.

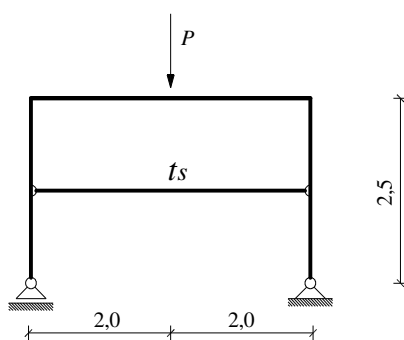


$$EI = 140000 \text{ kNm}^2$$

$$M = 200 \text{ kNm}$$

$$\varphi_t = 0,005$$

14. () Odredite dijagram momenata savijanja.



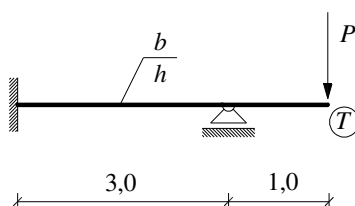
$$P = 100 \text{ kN}$$

$$t_s = 19^\circ \text{ C}$$

$$EI = 120000 \text{ kNm}^2$$

$$EA = 2000000 \text{ kN}$$

15. () Odredite visinu poprečnog presjeka h tako da vertikalni pomak točke T iznosi 5cm.



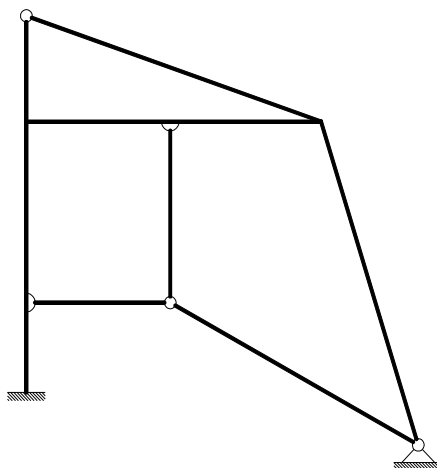
$$P = 100 \text{ kN}$$

$$E = 3 \cdot 10^7 \text{ kN/m}^2$$

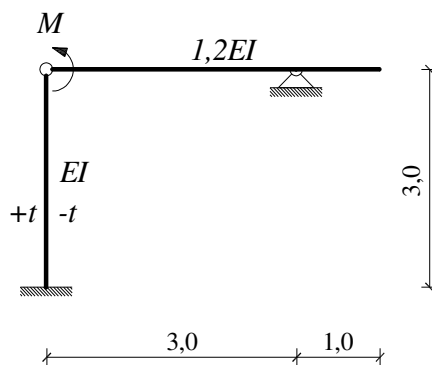
$$b = 35 \text{ cm}$$

GS 1. - 2. kolokvij (D2) – (2010./2011.)

16. () Za zadani sustav odredite stupanj statičke neodređenosti.



17. () Odredite iznos relativnog zaokreta dva diska zadanog sustava.



$$EI = 140000 \text{ kNm}^2$$

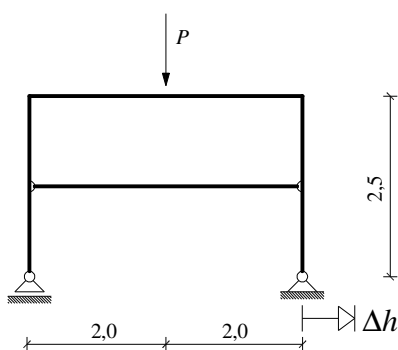
$$M = 200 \text{ kNm}$$

$$\pm t = 22^\circ \text{ C}$$

$$\alpha_t = 10^{-5} \text{ K}^{-1}$$

$$h = 45 \text{ cm}$$

18. () Odredite dijagram momenata savijanja.



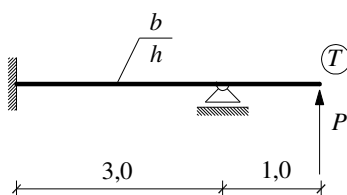
$$P = 100 \text{ kN}$$

$$\Delta h = 3 \text{ cm}$$

$$EI = 120000 \text{ kNm}^2$$

$$EA = 2000000 \text{ kN}$$

19. () Odredite visinu poprečnog presjeka h tako da vertikalni pomak točke T iznosi 5 cm.



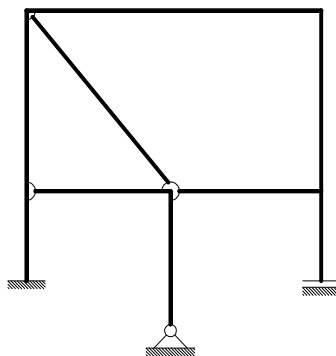
$$P = 120 \text{ kN}$$

$$E = 3 \cdot 10^7 \text{ kN/m}^2$$

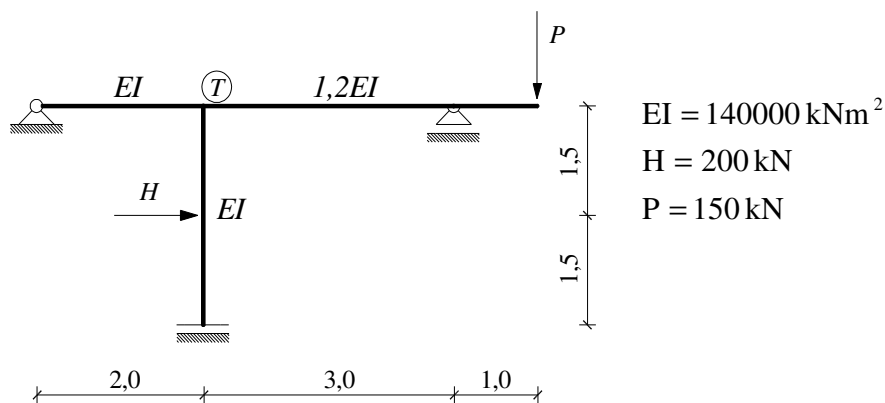
$$b = 30 \text{ cm}$$

GS 1. - 2. kolokvij (E1) – (2010./2011.)

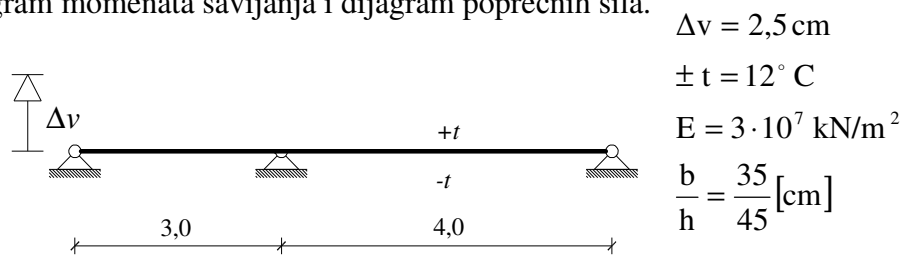
20. (10) Za zadani sustav odredite stupanj statičke neodređenosti.



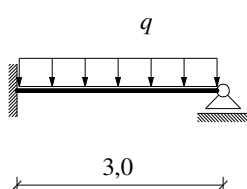
21. (35) Odredite iznos zaokreta točke T .



22. (20) Odredite dijagram momenata savijanja i dijagram poprečnih sila.



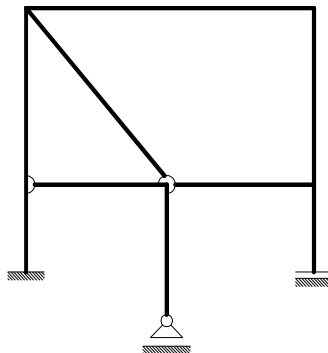
23. (35) Odredite vrijednost i položaj maksimalnog progiba zadanog sustava.



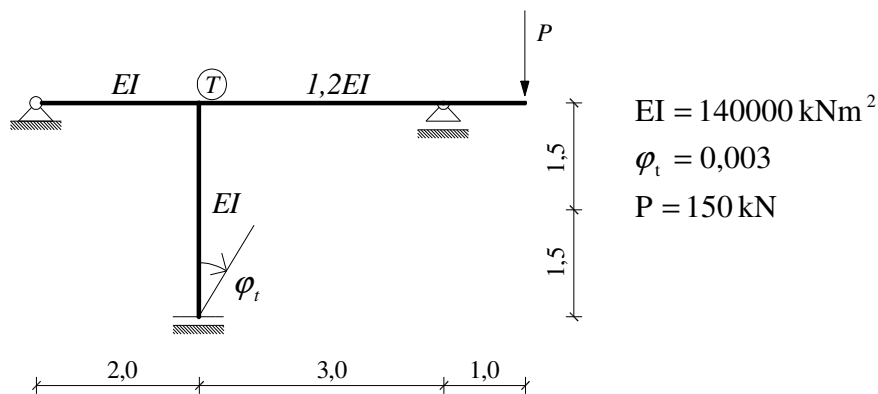
$q = 45 \text{ kN/m}$
 $E = 3 \cdot 10^7 \text{ kN/m}^2$
 $\frac{b}{h} = \frac{30}{30} [\text{cm}]$

GS 1. - 2. kolokvij (E2) – (2010./2011.)

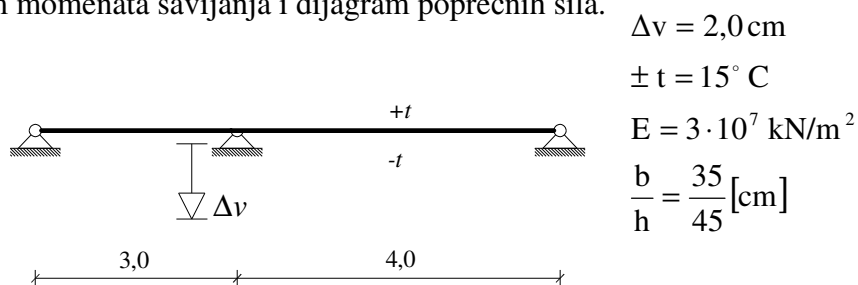
24. (10) Za zadani sustav odredite stupanj statičke neodređenosti.



25. (35) Odredite iznos zaokreta točke T .



26. (20) Odredite dijagram momenata savijanja i dijagram poprečnih sila.



27. (35) Odredite vrijednost i položaj maksimalnog progiba zadanog sustava.

