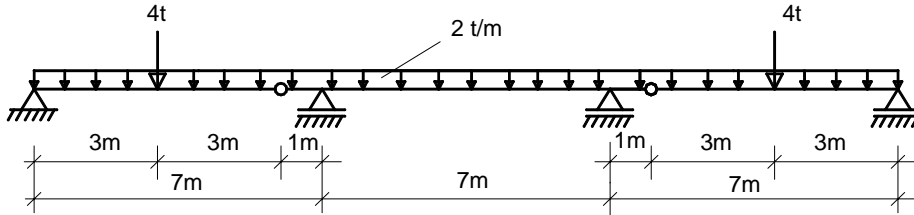


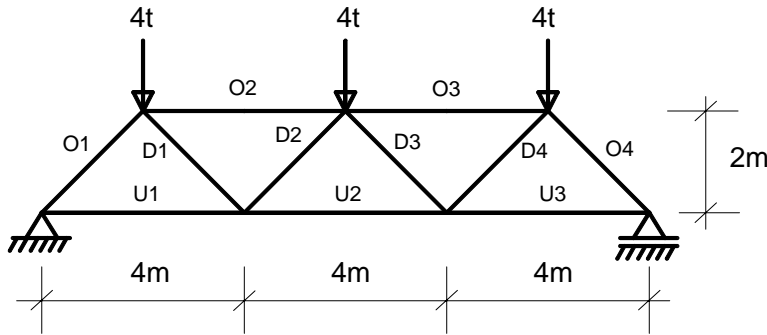
YAPI STATİĞİ YARIYIL İÇİ SINAVI

SORU 1:



Şekilde ölçüleri ve yükleme durumu verilen mafsallı sürekli kirişte T ve M iç kuvvet diyagramlarını çiziniz.

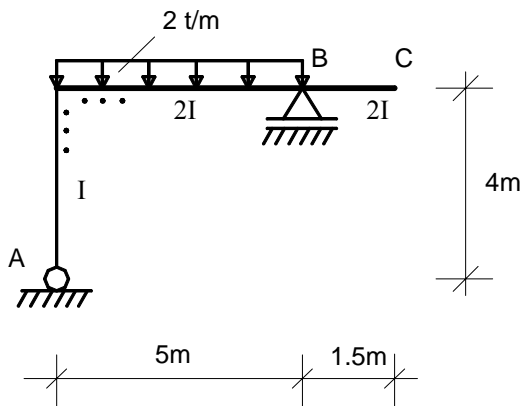
SORU 2:



- Şekilde ölçüleri ve yükleme durumu verilen kafes sistemde CREMONA yöntemi ile çubuk kuvvetlerini hesaplayıp sonuçları bir tabloda özetleyiniz,
- O2, U2, D3 çubuk kuvvetlerini kesim yöntemi ile hesaplayınız.

Kuvvet Ölçeği: 1 cm=1 ton

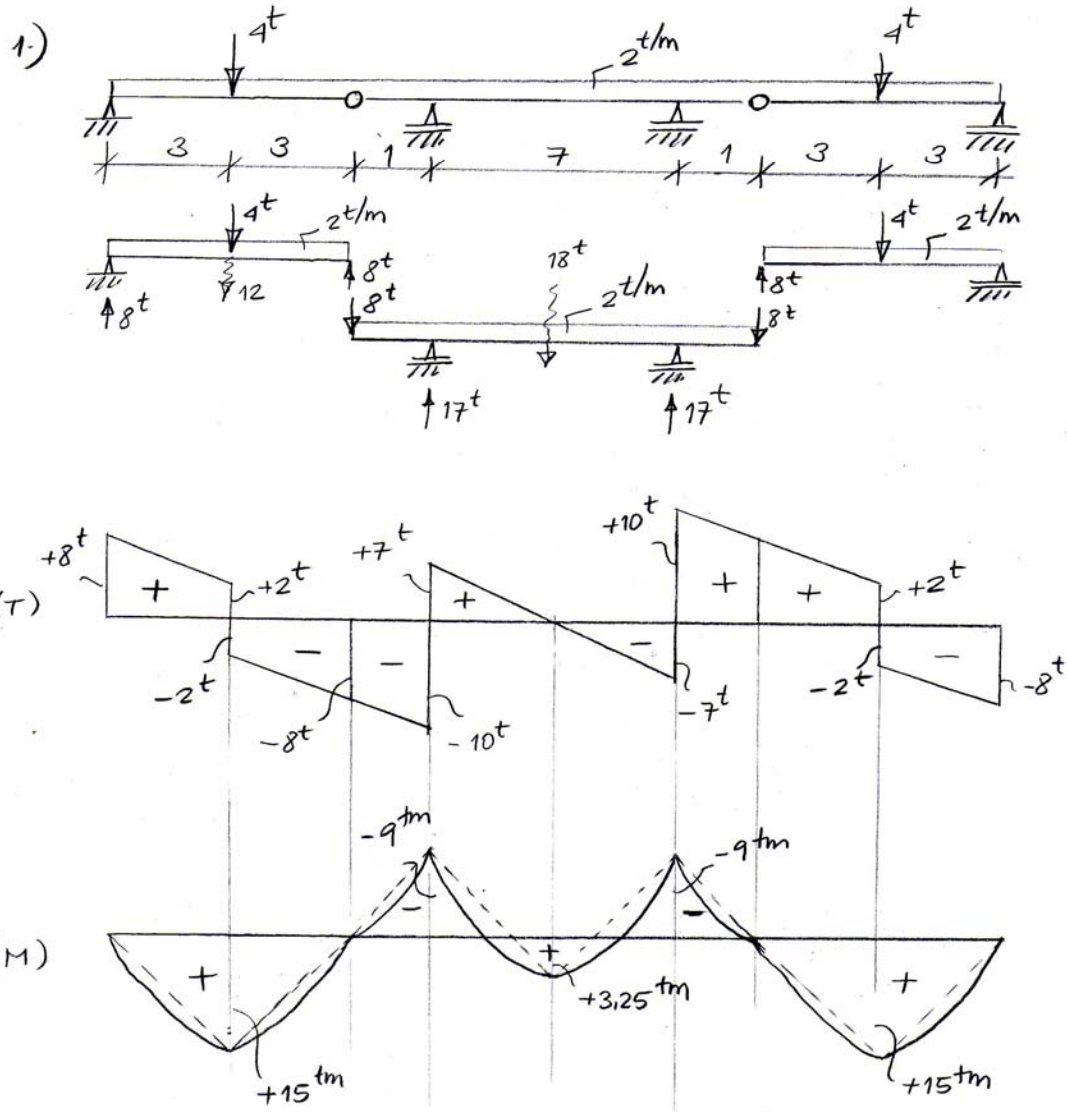
SORU 3



Şekilde ölçüleri ve yükleme durumu verilen çerçevede C noktasının düşey yer değiştirmesini ($\delta_{Cy}=?$) hesaplayınız.

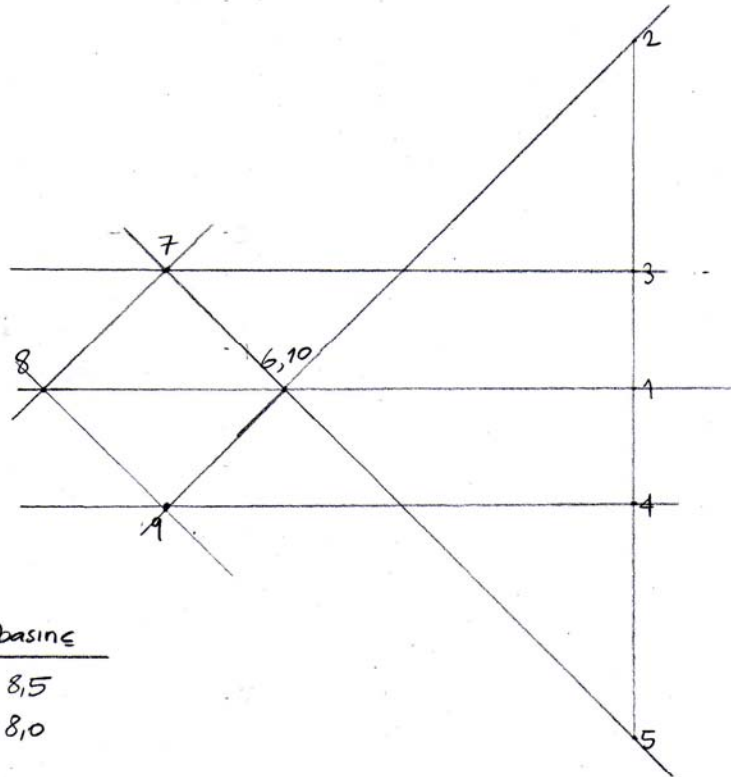
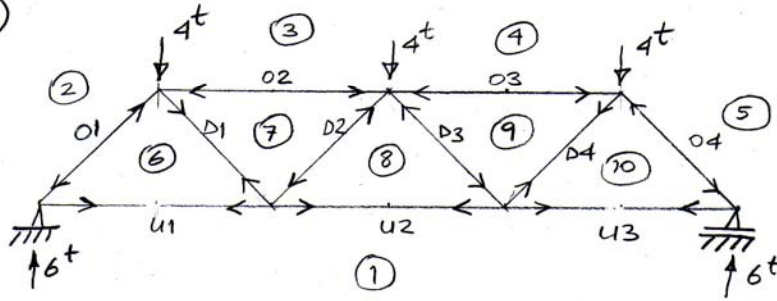
$$EI = 10^{10} \text{ kgcm}^2$$

CEVAPLAR



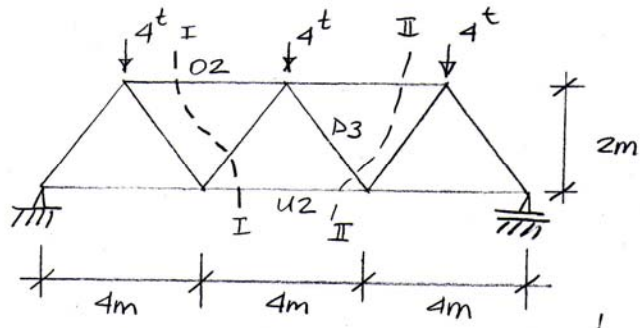
2.)

a.)

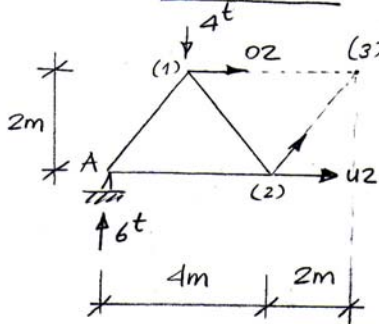


subuk	sekme	basıncı
O1-O4		8,5
O2-O3		8,0
U1-U3	6,0	
U2	10,1	
D1-D4	2,9	
D2-D3		2,9

b)



I-I KESİMİ



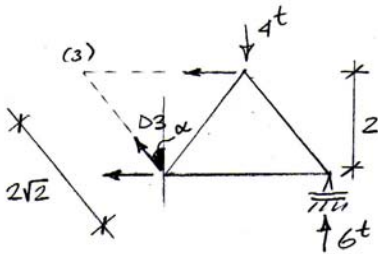
$$\sum M_2 = 0 \rightarrow 6 \cdot 4 - 4 \cdot 2 + 02 \cdot 2 = 0$$

$$02 = -8 \text{ t (basınç)}$$

$$\sum M_3 = 0 \rightarrow 6 \cdot 6 - 4 \cdot 4 - 2 \cdot u2 = 0$$

$$u2 = 10 \text{ t (çekme)}$$

II-II KESİMİ



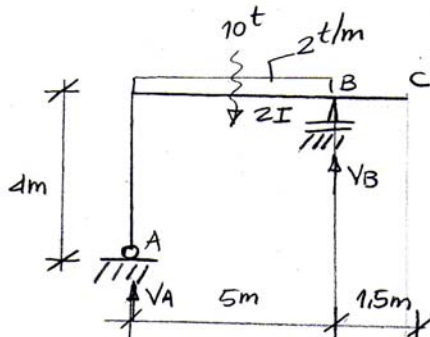
$$\sum Y = 0 \rightarrow 6 + D3 \cos \alpha - 4 = 0$$

$$\cos \alpha = \frac{2}{2\sqrt{2}} = \frac{1}{\sqrt{2}}$$

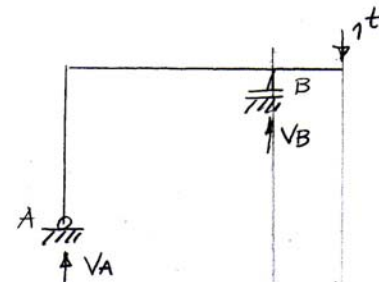
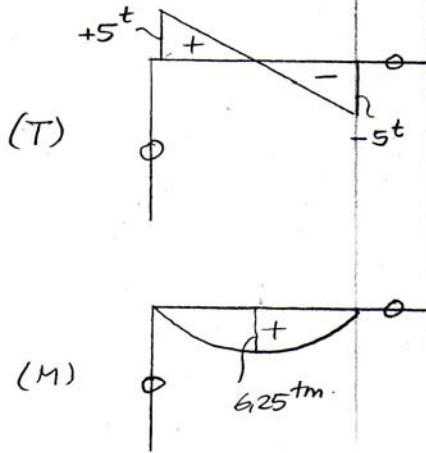
$$6 + \frac{D3}{\sqrt{2}} - 4 = 0 \rightarrow D3 = -2\sqrt{2} \approx -2,8 \text{ t}$$

(basınç)

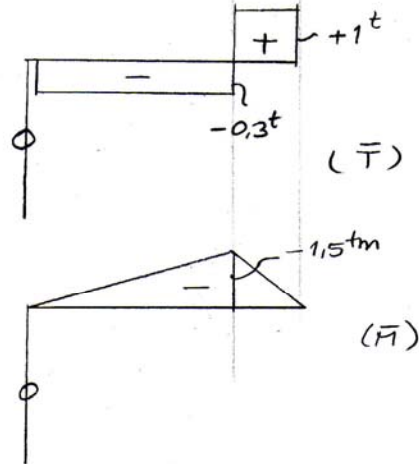
3.)



$$\sum M_A = 0 \rightarrow 5V_B - 10 \cdot 2,5 = 0 \rightarrow V_B = 5^t, \quad \sum Y = 0 \rightarrow V_A = 5^t$$



$$\sum M_A = 0 \rightarrow 1,65 - 5V_B = 0 \rightarrow V_B = 1,3^t, \quad \sum Y = 0 \rightarrow V_A + V_B = 1 \rightarrow V_A = -0,3^t$$



$$\delta_c = \frac{1}{3} \cdot 5 \cdot (6,25) \cdot (-1,5) \cdot \frac{1}{2EI}$$

$$\delta_c = \frac{7812 \text{ tm}^3}{EI} = \frac{7,812 \cdot 10^9}{10^{10}}$$

$$\delta_c = 0,78 \text{ cm}$$