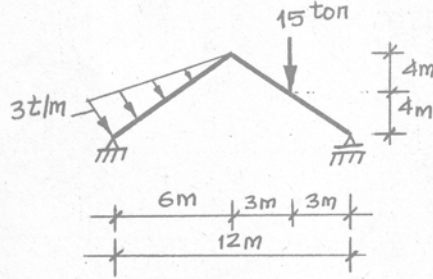


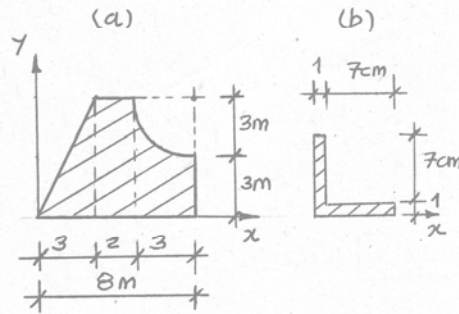
SINAV 2 SORULAR

SORU 1-)



Şekilde ölçüleri ve yükleri verilen sistemde mesnet tepkilerini hesaplayınız.

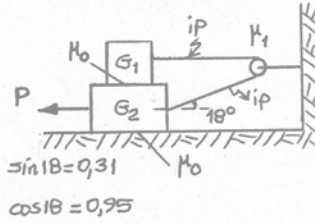
SORU 2-)



a-) Şekilde ölçüleri verilen taralı alanın ağırlık merkezinin koordinatlarını hesaplayınız.

b-) Ölçüleri verilen L kesitin x eksenine göre atalet momentini hesaplayınız.

SORU 3-)



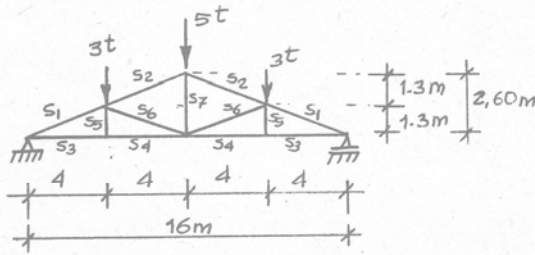
Şekilde verilen düzende $\mu_0 = 0,24$, $G_1 = 60 \text{ kg}$, $G_2 = 160 \text{ kg}$ olduğuna göre sistemi hareket ettiren en küçük P kuvvetini

a-) $\mu_1 = 0$

b-) $\mu_1 = 0,177$

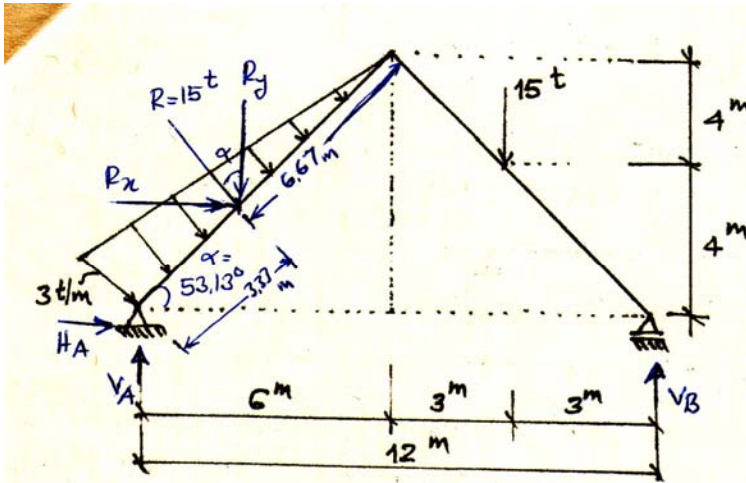
durumları için ayrı ayrı hesaplayınız.

SORU 4-)



Şekilde yükleri ve ölçüleri verilen kafes sistemde tüm çubuk kuvvetlerini hesaplayıp, sonuçları bir tabloda gösteriniz.

SINAV 2
CEVAPLAR



$$\sin \alpha = 0,8$$

$$\cos \alpha = 0,6$$

$$R_y = R \cdot \cos \alpha = 15 \times 0,6 = 9 \text{ t}$$

$$R_x = R \cdot \sin \alpha = 15 \times 0,8 = 12 \text{ t}$$

$$\sum X = 0, H_A + 12 = 0, \boxed{H_A = -12 \text{ t}}$$

$$\sum M_A = 0, 12 \times V_B - 15 \times 9 - 15 \times 0,6 \times 2 - 15 \times 0,8 \times 2,66 = 0$$

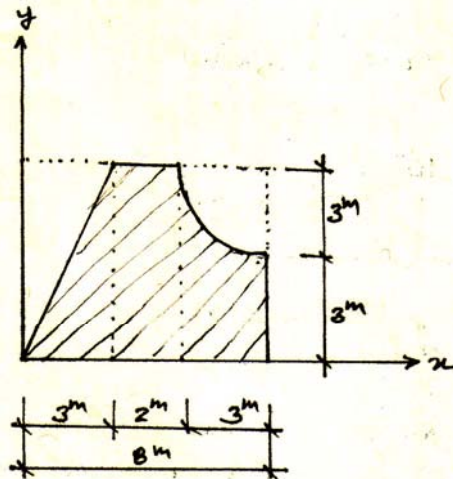
$$V_B = \frac{184,92}{12} \Rightarrow \boxed{15,41 \text{ t} = V_B}$$

$$\sum Y = 0, V_A + V_B = 24$$

$$V_A = 24 - 15,41$$

$$\boxed{V_A = 8,59 \text{ t}}$$

a)

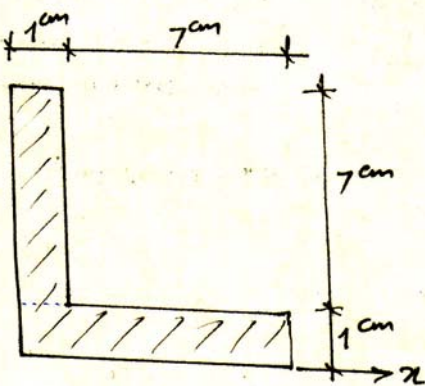


No	A	x	y	A·x	A·y
1	48	4	3	192	144
2	-9	1	4	-9	-36
3	-7.07	6.73	4.73	-47.58	-33.44
	31.93			135.42	74.56

$$x_g = \frac{135.42}{31.93} = 4.24 \text{ m}$$

$$y_g = \frac{74.56}{31.93} = 2.34 \text{ m}$$

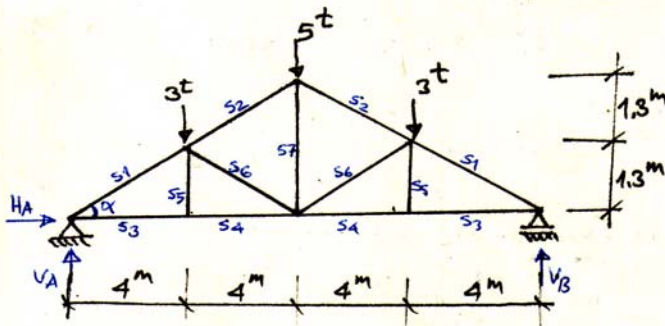
b)



Diagram

$$I_x = \frac{1 \times 7^3}{12} + 1 \times 7 \times (4.5)^2 + \frac{8 \times 1^3}{12} + 8 \times 1 \times (0.5)^2$$

$$I_x = 173 \text{ cm}^4$$



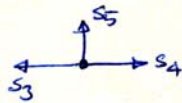
$$\begin{aligned} \sum X = 0, H_A &= 0 \\ \sum Y = 0, V_A &= 5.5 \text{ t} \\ \sum M_A = 0, V_B &= 5.5 \text{ t} \end{aligned}$$

$$\begin{aligned} \sin \alpha &= 0.31 \\ \cos \alpha &= 0.95 \end{aligned}$$

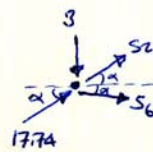


$$\begin{aligned} \sum Y = 0 \\ S_1 \cdot \sin \alpha + S_3 \cdot 0 &= 0 \\ \boxed{S_1 = -17.74 \text{ t}} \end{aligned}$$

$$\begin{aligned} \sum X = 0 \\ S_1 \cdot \cos \alpha + S_3 &= 0 \\ \boxed{S_3 = +16.85 \text{ t}} \end{aligned}$$



$$\begin{aligned} \sum Y = 0 \\ S_5 &= 0 \\ \boxed{S_4 = S_3 = +16.85 \text{ t}} \end{aligned}$$

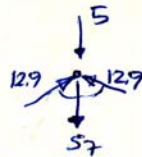


$$\begin{aligned} \sum X = 0 \\ 17.74 \times 0.95 + S_2 \times 0.95 + S_6 \times 0.95 &= 0 \quad (I) \\ \sum Y = 0 \\ 17.74 \times 0.31 + S_2 \times 0.31 - S_6 \times 0.31 - 3 &= 0 \quad (II) \end{aligned}$$

$$\begin{aligned} 0.91 / 0.95 S_2 + 0.95 S_6 &= -16.85 \quad (I') \\ 0.95 / 0.31 S_2 - 0.31 S_6 &= -2.5 \quad (II') \end{aligned}$$

$$\begin{aligned} 0.2945 S_2 + 0.2945 S_6 &= -5.2235 \\ + 0.2945 S_2 - 0.2945 S_6 &= -2.375 \\ \hline 0.589 S_2 &= -7.5985 \end{aligned}$$

$$\begin{aligned} \boxed{S_2 = -12.90 \text{ t}} \\ \boxed{S_6 = -4.84 \text{ t}} \end{aligned}$$



$$\begin{aligned} 2 \times 12.9 \times 0.31 - 5 - S_7 &= 0 \\ \boxed{S_7 = +3 \text{ t}} \end{aligned}$$

Gubuk no	Cekme	Basins
1		17.74
2		12.90
3	16.85	
4	16.85	
5		0
6		4.84
7	3.00	

$$\begin{aligned} H_A &\rightarrow 1 \\ V_A &\rightarrow 4.5 \\ V_B &\rightarrow 4.5 \\ S_i &\rightarrow 3 \times 7 = 21 \end{aligned}$$