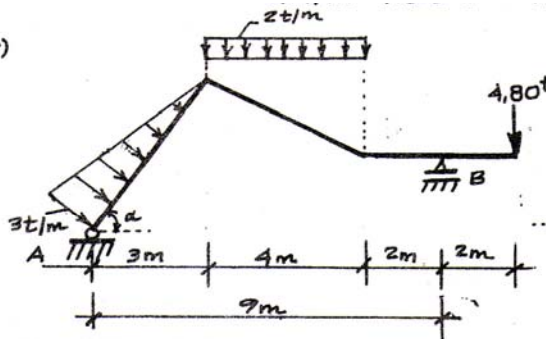


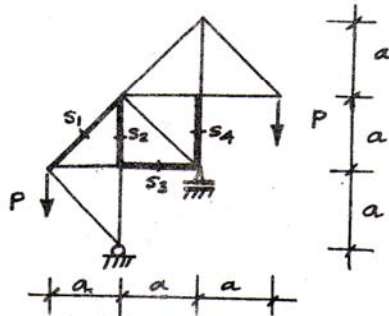
# SINAV 1 SORULAR

4-)



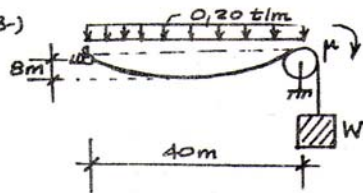
Şekilde ölçüleri ve  
yükleri verilen sütünde  
mesnet tepkilerini hesap-  
layınız.

2.)



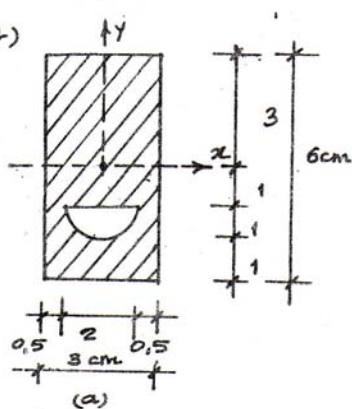
Şekilde ölçütleri ve yükleri verilen kafes sistemde izahetti qubuk kuvvetlerini hesaplayıp, sonuçları bir tabloda gösterelim.

3-)



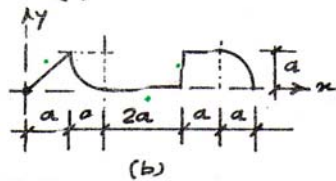
Şekilde verilen sistemde,  
a-) Maksimum ve minimum kablo kuvvetlerini hesaplayıp, yerini gösteriniz.  
b-)  $\mu = 0$  ve  $\mu = 0,223$  için sistemi sağa doğru harekete geçiren W ağırlığını ayrı ayrı hesaplayınız.

4)

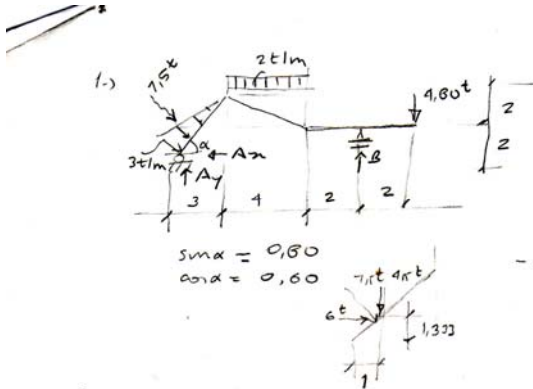


a-) Şekilde verilen kesitin ağırlık merkezinden geçen yatay eksenle göre atalet momentini ( $I_x$ ) ve atalet yarısapını ( $i_x$ ) hesaplayınız.

b-) Şekilde verilen tekin verilen eksen taçımına göre ağırlık merkezinin ordinatını hesaplayıp,  $x$  eksen etrafında  $870^\circ$  döndürülmesiyle oluşacak yüzeyin alanını bulunuz.



# SINAV 1 CEVAPLAR



$$\sin \alpha = 0,80$$

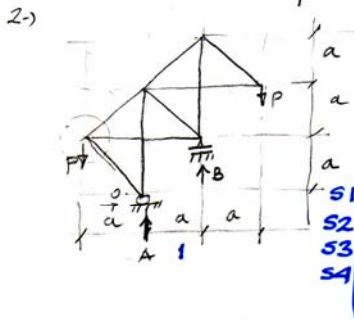
$$\cos \alpha = 0,60$$

$$8,9 - 4,80 \cdot 1 - 8,5 - 7,5 \cdot \frac{5}{13} = 0$$

$$10 \quad B = 11,70t // \quad Ax = 7,5 \cdot \sin \alpha = 6t \quad 5$$

$$-Ay \cdot 9 = 6 \cdot 2 + 6 \cdot (2 - 4/3) + 4,5 \cdot 8 + 8 \cdot 4 - 4,80 \cdot 2 = 0$$

$$Ay = 5,6t // \quad 10$$



$$S1 = 1,414P$$

$$S2$$

$$S3$$

$$S4$$

$$S3 \cdot a - P \cdot a = 0 \rightarrow S3 = P // \quad 6,$$

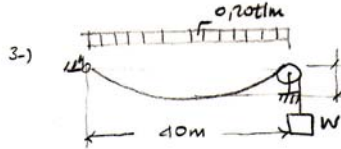
$$-S1 \cdot \frac{a}{\sqrt{2}} + P \cdot a = 0 \rightarrow S1 = \sqrt{2}P = 1,414P // \quad 6,$$

$$-S2 \cdot a + P \cdot a = 0 \rightarrow S2 = P // \quad 6,$$

$$T \cos \alpha = P \rightarrow T = 1,414P //$$

$$-S4 + T \cdot \sin \alpha + P = 0$$

$$S4 = 2P // \quad 6,$$



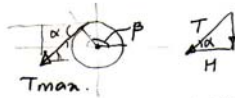
$$a) \quad H = 0,20 \cdot \frac{40^2}{8 \cdot 8} = 5t //$$

$$V = 0,20 \cdot \frac{40}{2} = 4t //$$

$$T_{max} = \sqrt{5^2 + 4^2} = 6,40t //$$

$$b) \quad \mu = 0 \rightarrow$$

$$W = T_{max} = 6,40t // \quad 5$$



$$\tan \alpha = \frac{V}{H} = \frac{4}{5} = 0,8,$$

$$\alpha = 38,66^\circ$$

$$\beta = 90 + 38,66 = 128,66^\circ$$

$$\mu = 0,223 \rightarrow W = T_{max} \cdot e^{\mu \beta} = 6,40 \cdot e^{0,223 \cdot (\frac{128,66}{360} \cdot 2\pi)} = 6,40 \cdot e^{0,15} = 10,56t // \quad 5$$

$$4) \quad a) \quad x_0 = 0, \quad y_0 = \frac{3 \cdot 6 \cdot 10 - \pi \cdot 12^2 \cdot (1 + 4 \cdot \frac{1}{3} \pi)}{18 - \pi/2} = 10,136 \text{ cm} // \quad 5$$

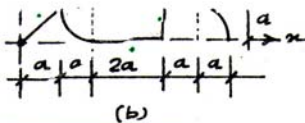
$$5 \quad I_x = 3 \cdot 6^3/12 + 3 \cdot 6 \cdot (0,136)^2 - [0,1097 \cdot 1^4 + \pi/2 \cdot (1 + 4 \cdot \frac{1}{3} \pi + 0,136)^2] = 50,40 \text{ cm}^4$$

$$5 \quad i_x = \sqrt{\frac{50,40}{18 - \pi/2}} = 1,75 \text{ cm}$$

$$b) \quad 5 \quad \gamma_0 = \frac{a\sqrt{2} \cdot a/2 + 2\pi \cdot a/4 \cdot (a - 2a/4) + 2a \cdot 0 + a \cdot \frac{a}{2} + 2\pi a/4 \cdot 2a/4 + a \cdot a}{a\sqrt{2} + 2\pi a/4 + 2a + a + a + 2\pi a/4} = \frac{3,778 a^2}{8,556 a}$$

$$5 \quad A = \frac{270}{360} \cdot 2\pi \cdot 8,556 a - 0,442 a = 17,82 a^2 //$$

$$\gamma_0 = 0,442 a //$$



(b)