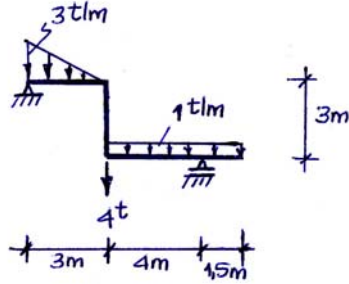


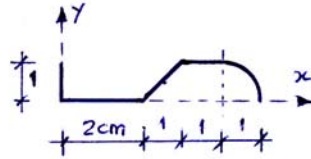
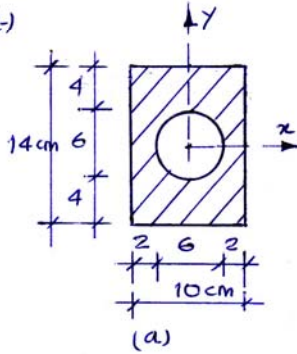
SINAV 3 SORULAR

1-)



Şekilde ölçüleri ve yükleri verilen sistemde mesnet tepkilerini hesaplayınız.

2-)

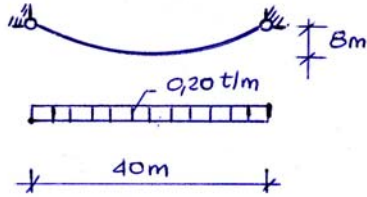


(b)

a- Şekilde verilen kesitin ağırlık merkezinden geçen x ve y eksenlerine göre atalet momentlerini ve atalet yarıçaplarını hesaplayınız.

b- Şekilde verilen telin x eksenine etrafında 180° döndürülmesiyle oluşacak yüzeyin alanını hesaplayınız.

3-)

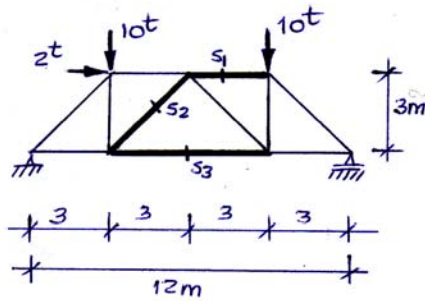


Şekilde verilen kabloda,

a- Maksimum ve minimum kablo kuvvetlerini,

b- Gerekli toplam kablo boyunu hesaplayınız.

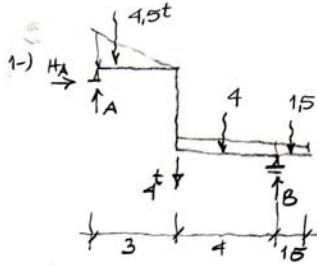
4-)



Şekilde verilen kafes sisteminde işaretli çubuk kuvvetlerini hesaplayıp, sonuçları bir tabloda özetleyiniz.

SINAV 3 CEVAPLAR

STATİK - ENDÜSTRİ - BÖLÜMÜ



$$H_A = 0 \quad \underline{5/}$$

$$-A \cdot 7 + 4,5 \cdot 6 + 4 \cdot 4 + 4 \cdot 2 - 1,5 \cdot 0,75 = 0$$

$$A = 7,125 \text{ t} \quad \underline{10/}$$

$$B \cdot 7 - 4,5 \cdot 1 - 4 \cdot 3 - 4 \cdot 5 - 1,5 \cdot 7,75 = 0$$

$$B = 6,875 \text{ t} \quad \underline{10/}$$

$$\sum Y = 0 \rightarrow 7,125 + 6,875 - 1,5 - 4 - 4 - 1,5 = 0$$

2-)

$$a) \quad I_x = 10 \cdot 14^3/12 - \pi \cdot 3^4/4 = 2223,05 \text{ cm}^4 \quad \underline{5/} \rightarrow i_x = \sqrt{\frac{2223,05}{111,73}} = 4,46 \text{ cm} \quad \underline{3/}$$

$$I_y = 14 \cdot 10^3/12 - \pi \cdot 3^4/4 = 1103,05 \text{ cm}^4 \quad \underline{5/} \rightarrow i_y = \sqrt{\frac{1103,05}{111,73}} = 3,14 \text{ cm} \quad \underline{2/}$$

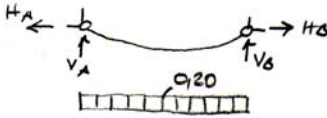
$$A = 10 \cdot 14 - \pi \cdot 3^2 = 111,73 \text{ cm}^2$$

b-)

$$Y_G = \frac{1 \cdot 0,5 + 2 \cdot 0 + 1,41 \cdot 0,5 + 1 \cdot 1 + \pi \cdot 1/2 \cdot 2 \cdot 1/\pi}{1 + 2 + 1,41 + 1 + \pi \cdot 1/2} = \frac{3,205}{6,981} = 0,459 \text{ cm} \quad \underline{5/}$$

$$A = \frac{\pi \cdot 2\pi \cdot Z \cdot L}{360} \cdot Y_G = \frac{180}{360} \cdot 2\pi \cdot 6,981 \cdot 0,459 = 10,067 \text{ cm}^2 \quad \underline{5/}$$

3-)



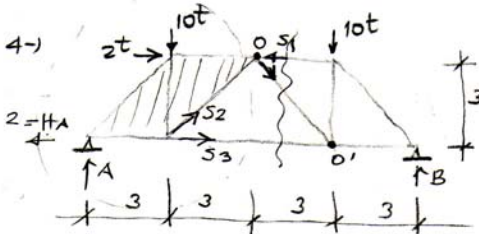
$$a) \quad H_A = H_B = \frac{0,20 \cdot 40^2}{8 \cdot 5} = 5 \text{ ton} = T_{\min} \quad \underline{5/}$$

$$V_A = V_B = 0,20 \cdot 40/2 = 4 \text{ ton} \quad \underline{5/}$$

$$T_{\max} = \sqrt{4^2 + 5^2} = 6,40 \text{ ton} \quad \underline{5/}$$

$$b) \quad m = f/L = 8/40 = 0,20$$

$$L = 40 \cdot (1 + \frac{8}{3} \cdot 0,20^2) = 44,27 \text{ m} \quad \underline{10/}$$



$$H_A = 2 \text{ t} \quad \underline{3/}$$

$$-A \cdot 12 - 2 \cdot 3 + 10 \cdot 9 + 10 \cdot 3 = 0$$

$$A = 9,5 \text{ t} \quad \underline{2/}$$

$$B \cdot 12 - 2 \cdot 3 - 10 \cdot 3 - 10 \cdot 9 = 0$$

$$B = 10,5 \text{ t} \quad \underline{2/}$$

$$\sum M_O = 0 \rightarrow -2 \cdot 3 - 9,5 \cdot 6 + 10 \cdot 3 + S_3 \cdot 3 = 0 \rightarrow S_3 = 11 \text{ ton (çekme)}$$

$$\sum M_O' = 0 \rightarrow -9,5 \cdot 9 - 2 \cdot 3 + 10 \cdot 6 + S_1 \cdot 3 = 0 \rightarrow S_1 = 10,5 \text{ ton (basınç)}$$

$$\sum Y = 0 \rightarrow 9,5 - 10 + S_2 \cdot \sin 45 = 0 \rightarrow S_2 = 0,71 \text{ ton (çekme)}$$

Gubuk	Gekme	Basing
S1		10,50
S2	0,71	
S3	11	

6/

6/

6/