

HARIS IOBAL

7926 (A)

STRUCTURE ANALYSIS (1)

Assignment (4)

SIR Amjid Islam

13, July 20

Question # 1

Date: _____

Solution:

Member BC:

$$\sum \vec{F}_x = 0 \quad B_x = 0$$

R.w

$$L = 80$$

$$h = 10$$

Member AB:

$$\sum \vec{F}_x = 0 \quad A_x = 0$$

Moment At A:

$$\sum M_A^+ = 0 \quad F_H(1) - B_y(15) - (45)(7.5) = 0 \rightarrow \textcircled{1}$$

FBD:

$$\sum M_C^+ = 0 \quad -F_H(10) - B_y(30) + (45)(30) = 0 \rightarrow \textcircled{2}$$

$$F_H = 153.4 \quad B_y = 0$$

$$w_0 = \frac{2 F_H h}{L^2} = \frac{2 (153.4) (10)}{80^2} = \frac{3068}{6400}$$

$$w_0 = 3.40$$

~~Use the following formula~~

$$F_{max} = w_0 L \sqrt{1 + \left(\frac{L}{2h}\right)^2}$$

$$= 3.4(80) \sqrt{1 + \left(\frac{80}{2(10)}\right)^2} = F_{max} = 183.6 \text{ K}$$

Date: _____

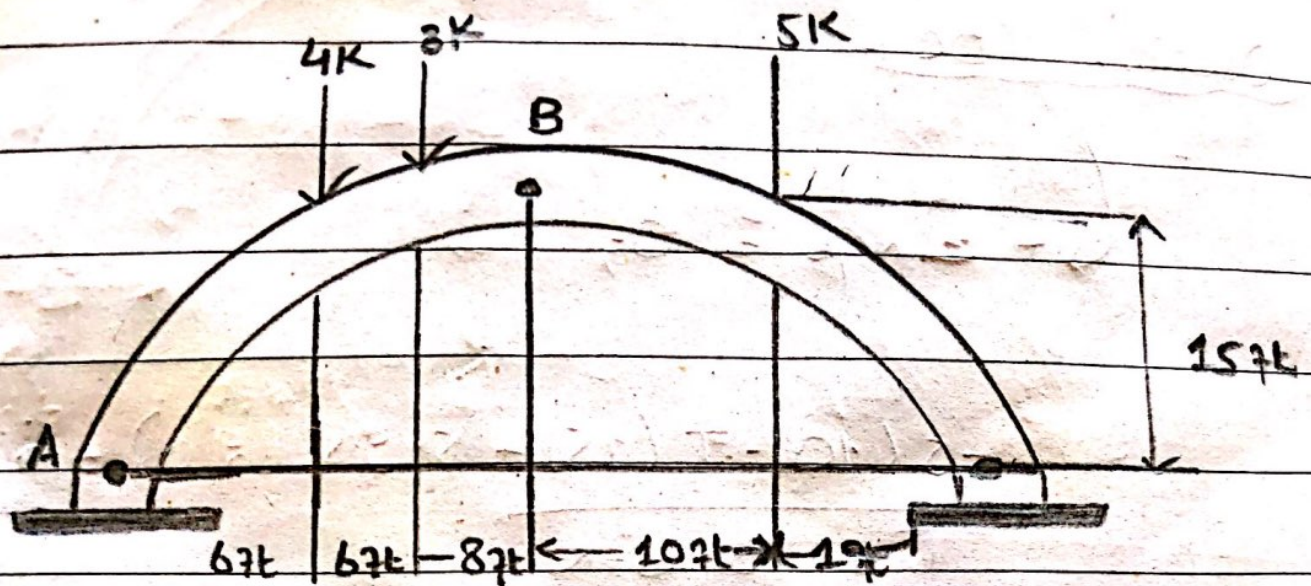
Each member carries

SFE of 150

$$P = (SFE) (3.4 \text{ K/ft})$$

$$P = 17 \text{ K}$$

Question No 2.

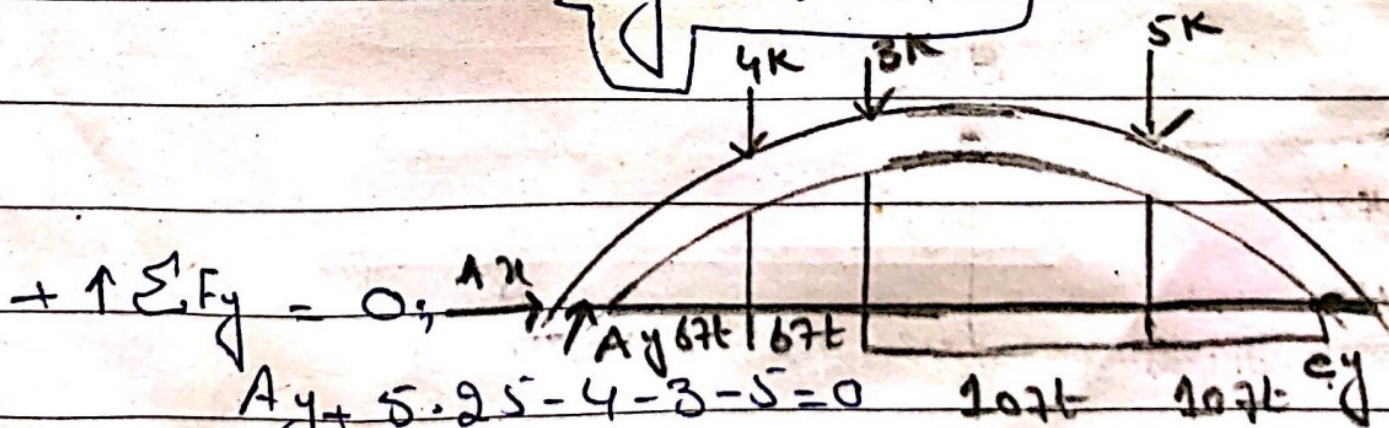


Entire Arch

$$\hookrightarrow + \sum M_A = 0;$$

$$-4(6) - 3(12) - 5(30) + C_y(40) = 0$$

$$C_y = 5.5 \text{ k}$$



$$+ \uparrow \sum F_y = 0;$$

$$A_y + 5.25 - 4 - 3 - 5 = 0$$

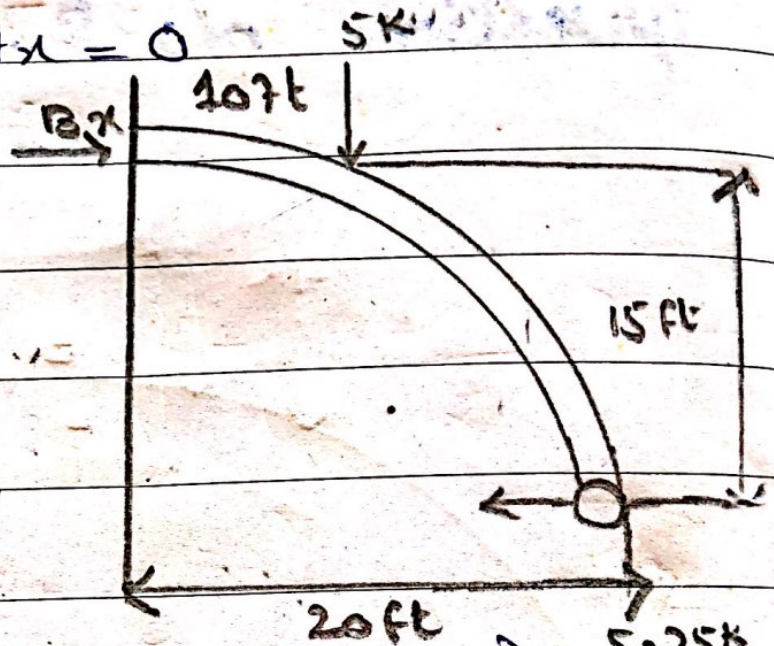
$$A_y = 6.75 \text{ k}$$

Date: _____

$$\rightarrow \sum F_x = 0; \quad A_x = 0$$

Section Bc :-

$$\curvearrowright + \sum M_B = 0;$$



$$-5(10) - T(15) + 5.25(20) = 0$$

$$T = 3.67 \text{ k}$$