

Theory of structure

Assignment No-1

1-D — 12430

BATCH 2015

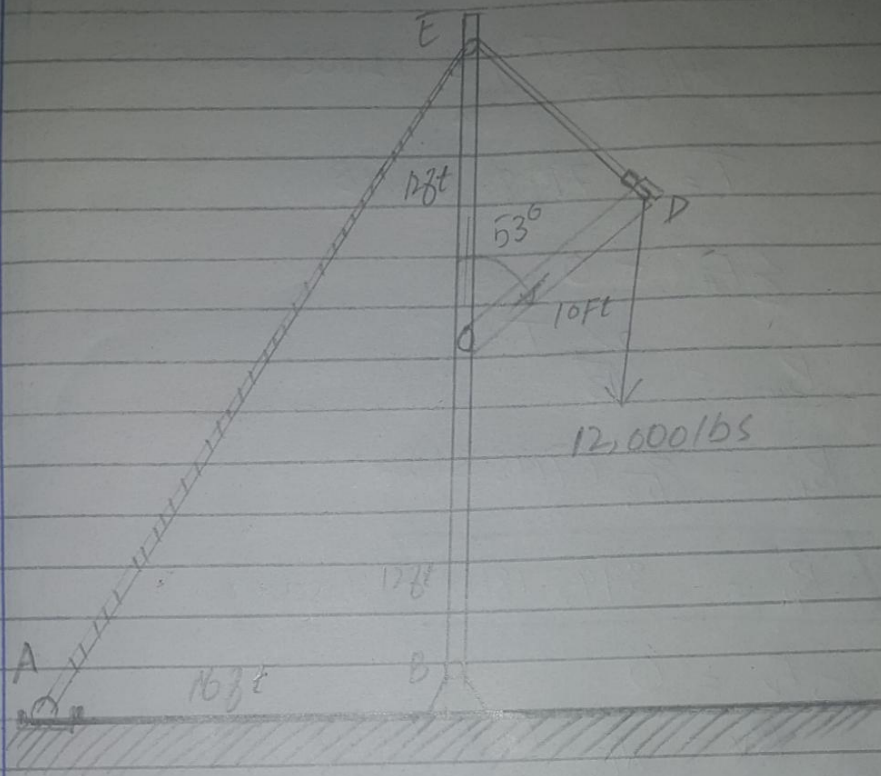
B.TECH CIVIL

NAME DANISH KHATIAK

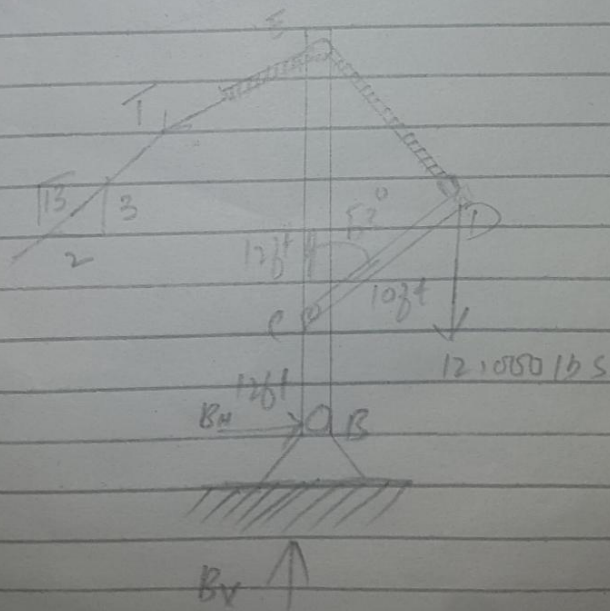
QUESTION NO 1

problem 007-cb.

In the structure shown in Fig. CB-007(FR) members BCE and CD are assumed to be solid rigid member. Members AE DE are cables. For this structure determine the reaction at B.



Solution 00-cb



$$\textcircled{a} \sum M_B = 0$$

$$24\left(\frac{2}{\sqrt{13}}T\right) = 12000(10 \sin 53^\circ)$$

$$T = 7198.80 \text{ lb}$$

$$\sum F_H = 0$$

$$B_H = \frac{2}{\sqrt{13}}T$$

$$B_H = \frac{2}{\sqrt{13}}(7198.81)$$

$$\boxed{B_H = 3993.181 \text{ lb}} \text{ Answer.}$$

$$\sum F_V = 0$$

$$B_V = \frac{3}{\sqrt{13}}T + 12000$$

$$\boxed{B_V = 17989.771 \text{ lb}} \text{ Answer.}$$