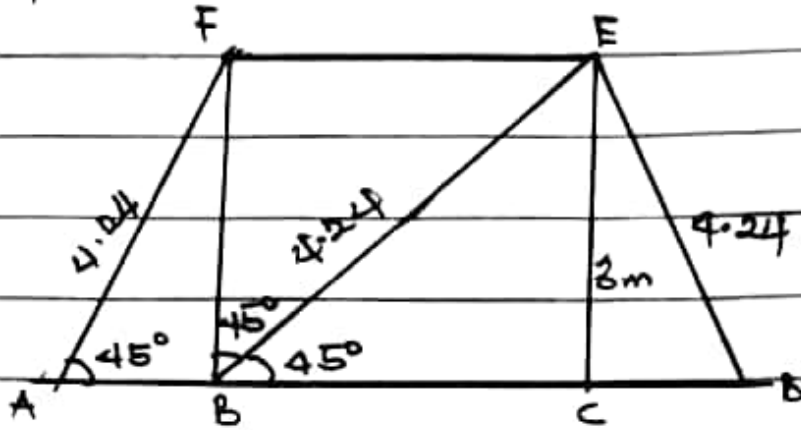


Structural Mechanics - CVE 304

Udobang, Odotekom Peter

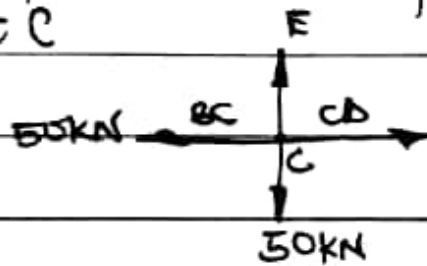
17 | ENGG03 | 052 - Civil Engineering

Assignment;



— Complete the solution for joint C & B

Joint C



$$\sum F_y = 0$$

$$-50 + CE = 0$$

$$CE = 50 \text{ kN (T)}$$

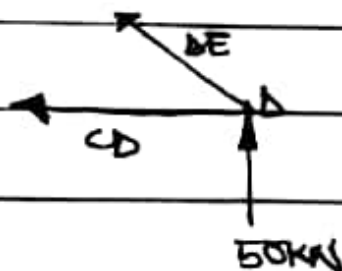
T → tension

$$\sum F_x = 0$$

$$-50 + CB = 0$$

$$CB = 50 \text{ kN (T)}$$

Joint B



$$\sum F_y = 0$$

$$50 + DF \sin 45^\circ = 0$$

$$DF = -70.71 \text{ (C)}$$

c \Rightarrow Compression

	K (kN)	F (kN)	L (m)	KFL
AB	0.333	50	3	49.95
AF	-0.471	-70.71	4.24	141.21
BF	0.333	50	3	49.95
BC	0.666	50	3	99.90
BE	-0.471	0	4.24	0
CB	0.666	50	3	99.90
CE	1	50	3	150
DE	-0.942	-70.71	4.24	282.42
EF	-0.333	-50	3	49.95

$$\sum KFL = 923.28 \text{ kNm}$$

$$AE = 400 \text{ mm}^2 \times 200000 \text{ N/mm}^2$$

$$= 80000 \text{ kN}$$

$$\frac{\sum KFL}{AE} = \frac{923.28}{80000} = 0.11541 \text{ m}$$

$$\approx 11.54 \text{ mm}$$