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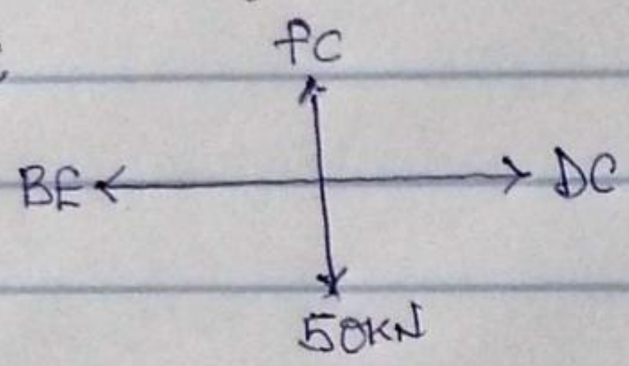
17/ENG03/055
Civil Engineering
Structural mechanics
15th May 2020

Assignment Answers

At point C



from previous calculated examples

BC = 50kN

∴ -BC + DC = 0 (Resolving to horizontal)

-50 + DC = 0

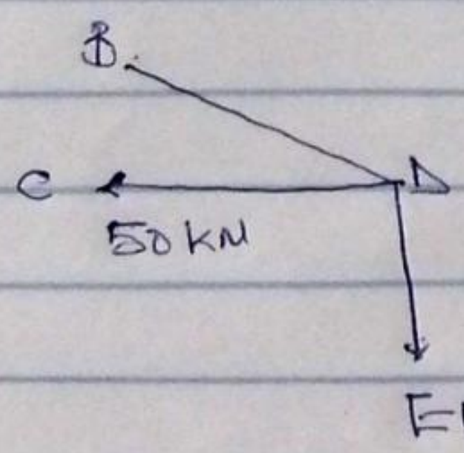
DC = 50kN (Tension

Resolving to vertical

⇒ -50kN + FC = 0

FC = 50kN (Tension)

At point D



Resolving to horizontal = -50kN - DF Cos 45 - 0

50kN = -DF Cos 45

DF = $\frac{50}{-\cos 45}$ = -70.7

DF = 70.7 (Compression)

Member	P(KN)	L(m)	a(m²)	P=P/q(KN/m²)	μ	PμL
AF	→70.71	4.24	0.0004	-176775	0.471	853026.
AB	50	3	0.0004	125000	0.333	124875
BC	50	3	0.0004	125000	0.666	249750
BF	50	3	0.0004	125000	0.333	124875
FE	50	3	0.0004	125000	-0.333	-124875
BE	50	4.24	0.0004	0	-0.471	0
FC	50	3	0.0004	125000	1000	375000
FD	-70.71	4.24	0.0004	-176 775	-0.942	706053.492
CD	50	3	0.0004	125 000	0.666	249750
						Σ=2058455.24

$$\frac{\Sigma p\mu}{\Sigma} = \frac{2058455.24}{200000} = 10.29mm$$