

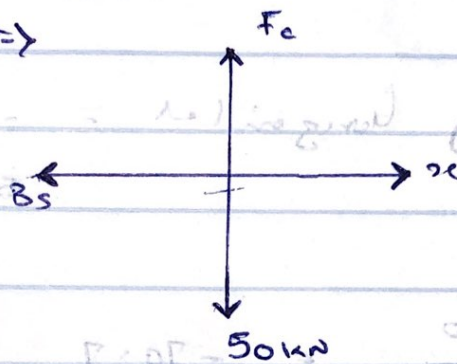
MAT. No.: 17/ENGG03/050

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COURSE: STRUCTURAL MECHANICS

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At joint C \Rightarrow



from previous calculated example,

$$B_c = 50 \text{ kN} \quad P.O.P = 3A$$

$$\Sigma \rightarrow -B_c + D_c = 0 \quad (\text{Resolving to horizontal})$$

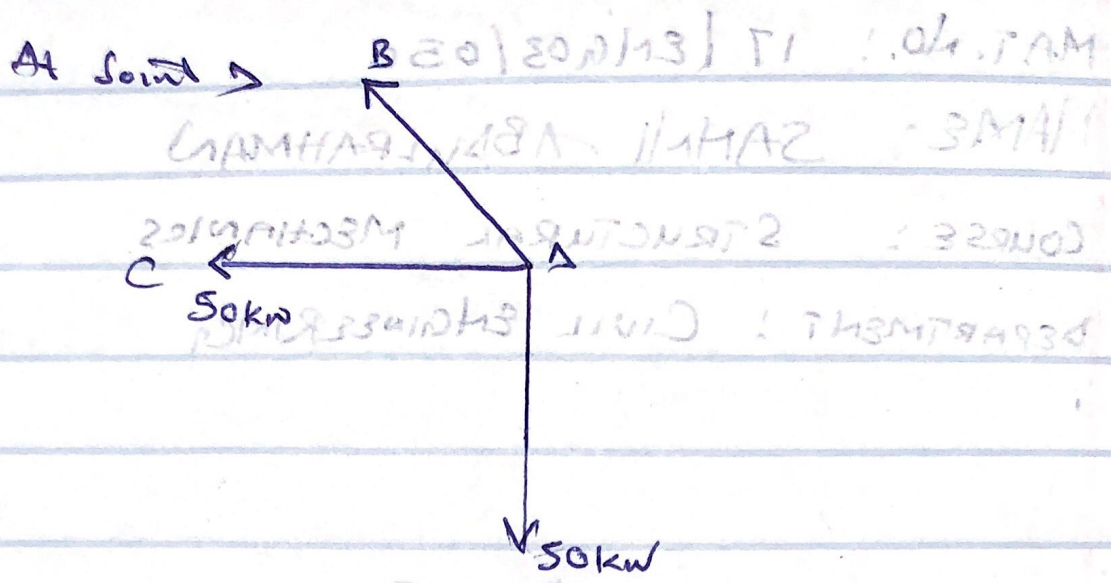
$$-50 + D_c = 0 \quad P.O.P = 7A$$

$$D_c = 50 \text{ kN} \quad (\text{Compressive}) \quad 3A$$

Resolving to Vertical

$$\Sigma \uparrow -50 \text{ kN} + F_c = 0 \quad 02$$

$$F_c = 50 \text{ kN} \quad (\text{Tensional}) \quad 32$$



Resolving horizontally $\rightarrow -50 \text{ kW} - DE \cos 45 = 0$

$\rightarrow 50 \text{ kW} = -DE \cos 45$

$DE = \frac{50}{-\cos 45}$

$= 70.7$

$\Delta E = 70.7$ Compressive stress

MEMBER	P (kN)	A (m ²)	α (m ²)	$\sigma = P/A$ (kN/m ²)	Δ	Pal
AF	-70.71	4.24	0.0004	-176775	-0.471	353026.75
AG	50	3	0.0004	125000	0.333	124875
BC	50	3	0.0004	125000	0.666	249750
BT	50	3	0.0004	125000	0.333	124875
FE	50	3	0.0004	125000	-0.333	-124875
BE	0	4.24	0.0004	125000	-0.471	0
EC	50	3	0.0004	125000	1.000	375000
EA	-70.71	4.24	0.0004	-176775	-0.942	106053.492
CA	50	3	0.0004	125000	0.666	949756

$\Sigma = 2058455.924$

$$\frac{\text{Pm}}{\text{€}} = \frac{2055455.24}{200000} = 10.2772762$$