

NAME: LIBRI MIRACLE

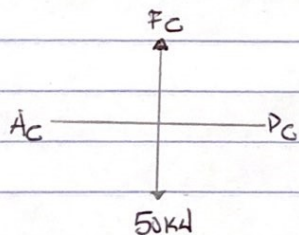
MATRIC NUMBER: 17/ENG108/059

ASSIGNMENT TITLE: DEFLECTION OF DETERMINATE STRUCTURES (method of virtual forces)

COURSE TITLE: STRUCTURAL MECHANICS

COURSE CODE: CVE 804

JOINT C



From the previous calculated example

$$B_C = 50kN$$

$$-B_C + D_C = 0 \text{ (Resolving to horizontal)}$$

$$-50 + D_C = 0$$

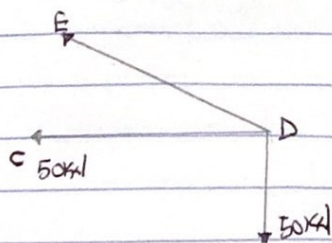
$$D_C = 50kN \text{ (Tensional)}$$

For Resolving to vertical

$$-50kN + F_C = 0$$

$$F_C = 50kN \text{ (Tensional)}$$

JOINT D



FOR RESOLVING TO HORIZONTAL

$$-50\text{kN} - DE \cos 45 = 0$$

$$50\text{kN} = -DE \cos 45$$

$$= \cos 45 \quad = \cos 45$$

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

$$= -70.7$$

$DE = 70.7$ (Compressional)

MEMBER	P (kN)	l (cm)	A (cm ²)	P/A (kN/m ²)	u	Pu l
AF	-70.71	4.24	0.0004	-176775	-0.471	353026.75
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	0	4.24	0.0004	0	0.4	0
EC	50	3	0.0004	125000	1.000	375000
ED	-70.71	4.24	0.0004	-176775	0.942	706053.49
CD	50	3	0.0004	125000	0.666	249750

$$\sum Pu l = 2058455.24$$

$$\frac{\sum Pu l}{E} = \frac{2058455.24}{200000}$$

$$= 10.29\text{mm}$$