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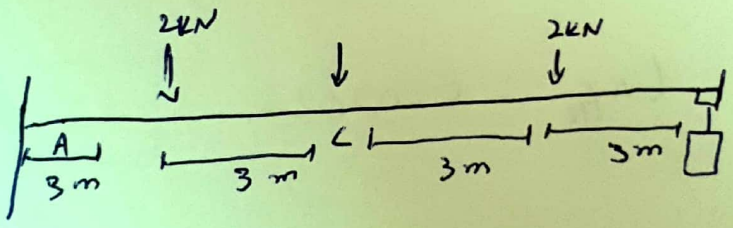
ASSIGMENT 03

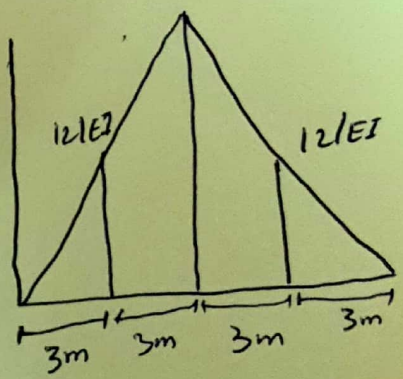
Determine the slope at A & displacement at C of the beam in the figure moment area Theorm take E = 200 Gpa, I_z 6(10⁶) mm⁴.

SOLUTION :-



$$\Theta A/C = \frac{1}{2}\left(\frac{12}{EI}\right)(3) + \left(\frac{12}{EI}\right)(3) + \frac{1}{2}\left(\frac{6}{EI}\right)(3)$$

$$\Theta A/C = \left(\frac{18}{EI}\right) + \left(\frac{36}{EI}\right) + \left(\frac{9}{EI}\right)$$



$$\Theta A/C = \frac{63}{EI}$$

$$\Rightarrow 63 / (200 \times 10^6)(6 \times 10^6)(1000)^{-4}$$

$$\Theta A/C = 0.0525 \text{ rad}$$

$\theta_A = 0.0525$ rad

$$t_{A/C} = \left[\frac{1}{2}\left(\frac{12}{EI}\right)(3)\right]\left(\frac{2}{3}(3)\right) + \left(\frac{12}{EI}(3)\right)\left(3+\frac{1}{2}(3)\right) + \left[\frac{1}{2}\left(\frac{6}{EI}\right)(3)\right]\left(3+\frac{2}{3}\right)(3)$$

$$= 0.202 \text{ m}$$

So,

OC : $t_{A/C} = 0.0202$ m.

✓ ——— x ——— ✓.