

2. a)

$$(1 \times 5) + (10 \times 2) = R_2 \times 3$$

$$25 = 3R_2$$

$$R_2 = 8.33$$

so

$$R_1 = 6.67$$

LARGEST BENDING MOMENT = 8.34 kNm

2. b)

$$BM = 8.34 \text{ kNm}$$

$$I_{xx} = \frac{bd^3}{12} \quad \begin{array}{l} b = 100 \text{ mm} \\ d = 200 \text{ mm} \end{array}$$

$$= \frac{100 \times 200^3}{12} \text{ mm}^4$$

$$= \frac{100 \times 200^3}{12} \times 10^{-12} \text{ m}^4$$

$$I_{xx} = 6.66 \times 10^{-5} \text{ m}^4$$

$$y = 100 \text{ mm} = 100 \times 10^{-3} \text{ m}$$

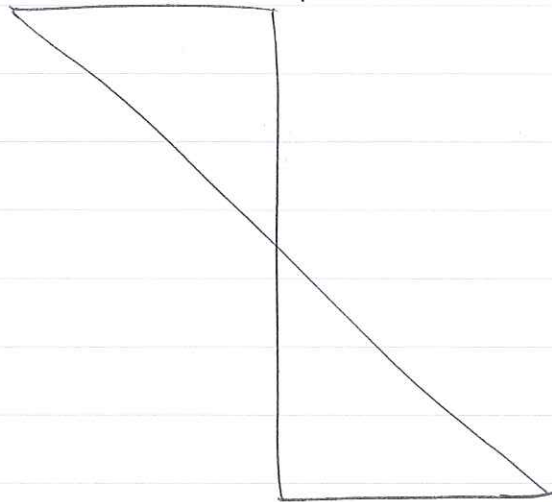
$$\frac{M}{I} = \frac{\sigma}{y} \quad \text{so} \quad \sigma = \frac{My}{I}$$

$$\sigma = \frac{8.34 \times 100 \times 10^{-3}}{6.66 \times 10^{-5}}$$

$$= 1.25 \text{ MNm}^{-2}$$

2. c)

8.34 MNm^{-2} (Compression)



8.34 MNm^{-2} (Tension)