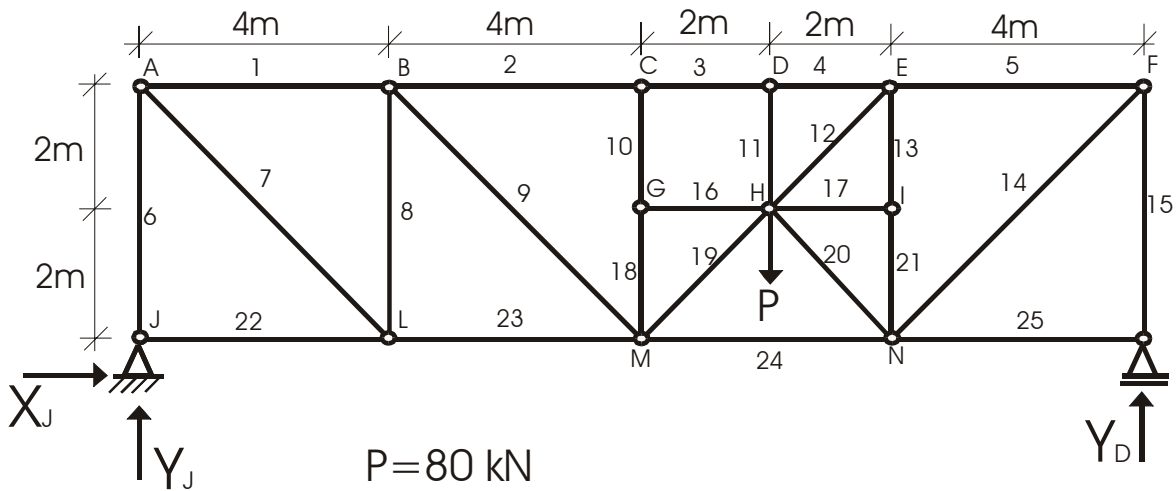


Nº USP: _____ Nome: _____

Questão 2 (3,5)

Para a treliça da figura, pedem-se:

- a) as reações de apoio;
- b) as forças normais N nas barras 2, 9 e 23, pelo método de Ritter;
- c) as forças normais N nas barras 10, 16, 19 e 24.

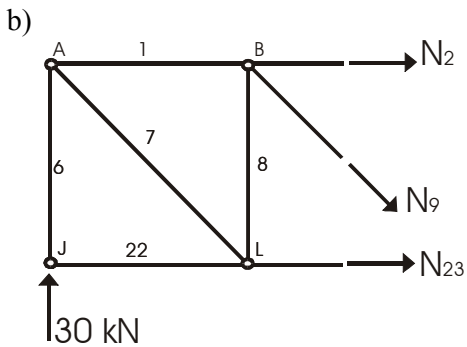


a) $\sum M_0 = 0 \Rightarrow 80 \cdot 6 - Y_J \cdot 16 = 0 \Rightarrow Y_J = 30 \text{ kN}$

$\sum V = 0 \Rightarrow 30 + Y_D - 80 = 0 \Rightarrow Y_D = 50 \text{ kN}$

$\sum H = 0 \Rightarrow X_J = 0$

(0.5)



$$\sum M_M = 0 \quad \Rightarrow \quad \boxed{N_2 = -60kN} \quad (0.5)$$

$$\sum V = 0 \quad \Rightarrow \quad \boxed{N_9 = 30\sqrt{2}kN} \quad (0.5)$$

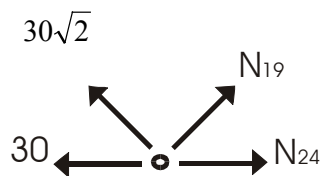
$$\sum M_B = 0 \quad \Rightarrow \quad \boxed{N_{23} = 30kN} \quad (0.5)$$

c) Nó C: $\sum V = 0 \quad \Rightarrow \quad \boxed{N_{10} = 0}$

Nó G: $\sum H = 0 \quad \Rightarrow \quad \boxed{N_{16} = 0}$

$$\sum V = 0 \quad \Rightarrow \quad \boxed{N_{18} = 0} \quad (0.5)$$

Nó M:



$$\sum V = 0 \quad \Rightarrow \quad \boxed{N_{19} = -30\sqrt{2}kN} \quad (0.5)$$

$$\sum H = 0 \quad \Rightarrow \quad \boxed{N_{24} = 90kN} \quad (0.5)$$