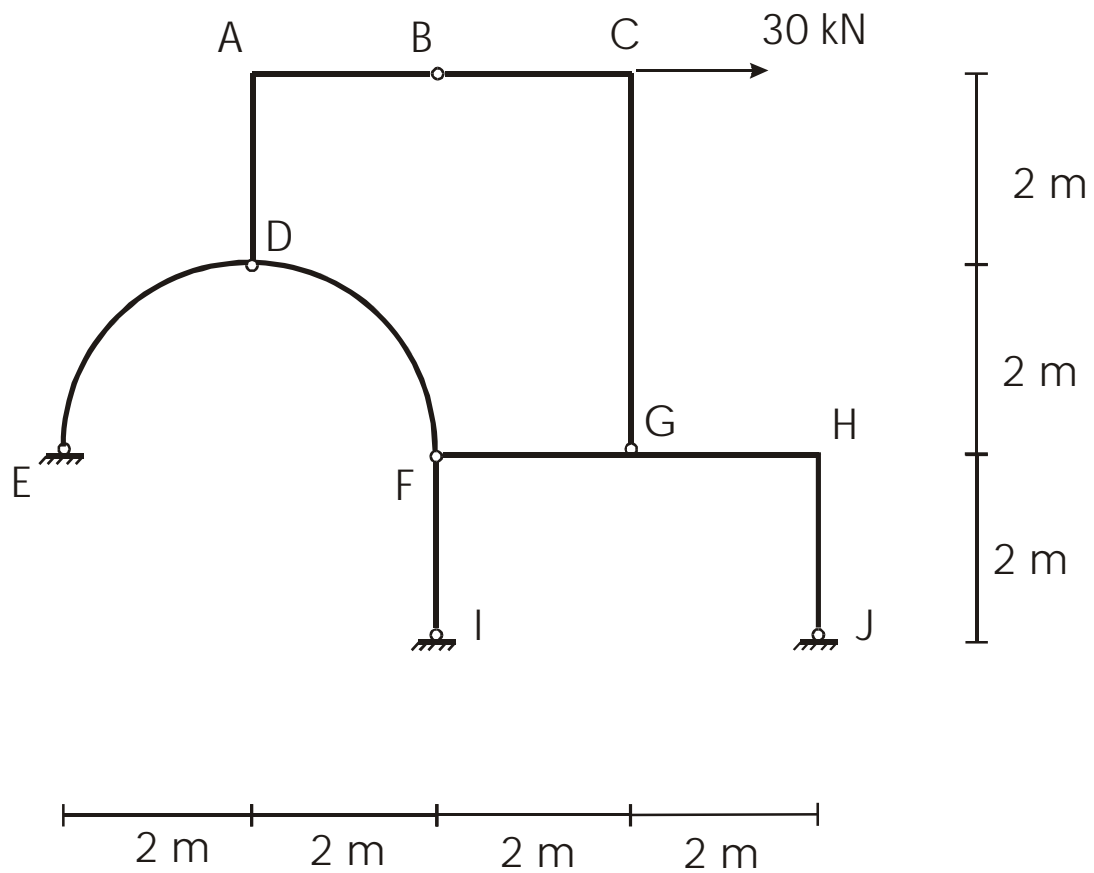


Nº USP: _____ Nome: _____

3ª Questão (3,5 pontos)

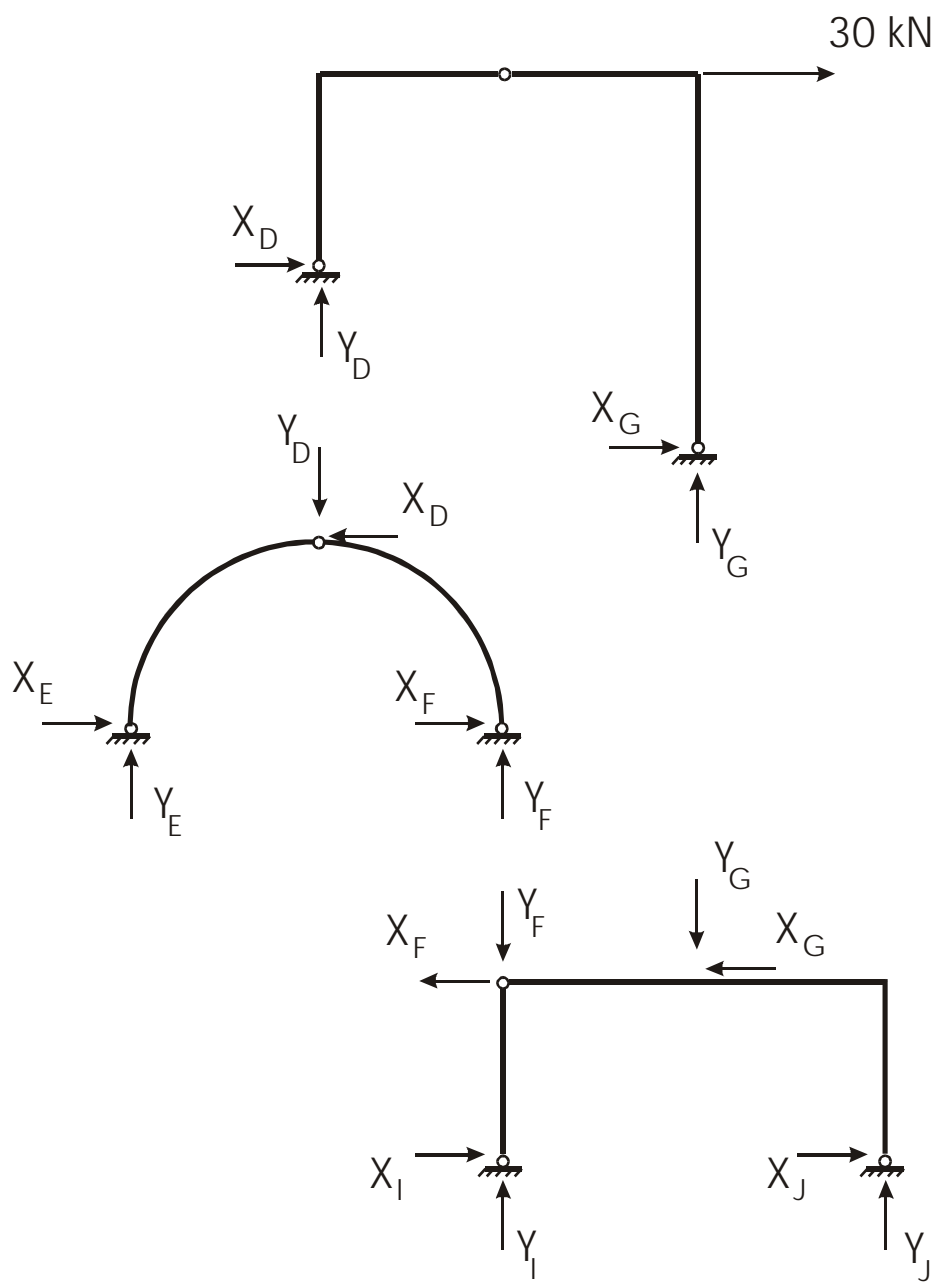
Para a estrutura associada da figura, determinar:

- As subestruturas que a compõem;
- As reações de apoio de cada uma destas subestruturas;
- O diagrama de momentos fletores **do trecho IFGHJ**.

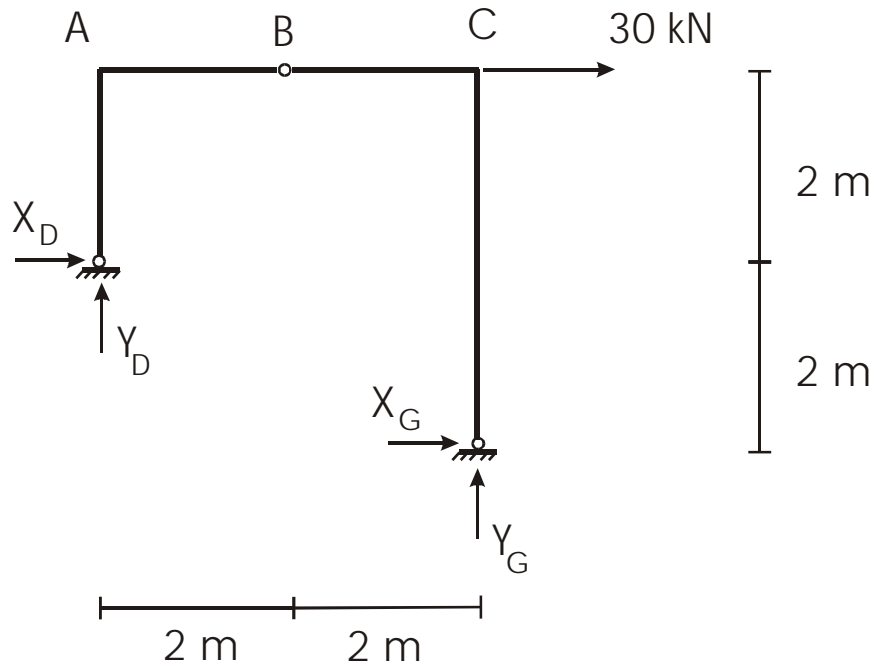


Solução:

a)



b)



$$\Sigma X = 0 \quad X_D + X_G + 30 = 0$$

$$\Sigma Y = 0 \quad Y_D + Y_G = 0$$

$$\Sigma M_G = 0 \quad -X_D \cdot 2 - Y_D \cdot 4 - 30 \cdot 4 = 0$$

$$M_{\text{fleitor em B}} = 0 \quad Y_D \cdot 2 - X_D \cdot 2 = 0$$

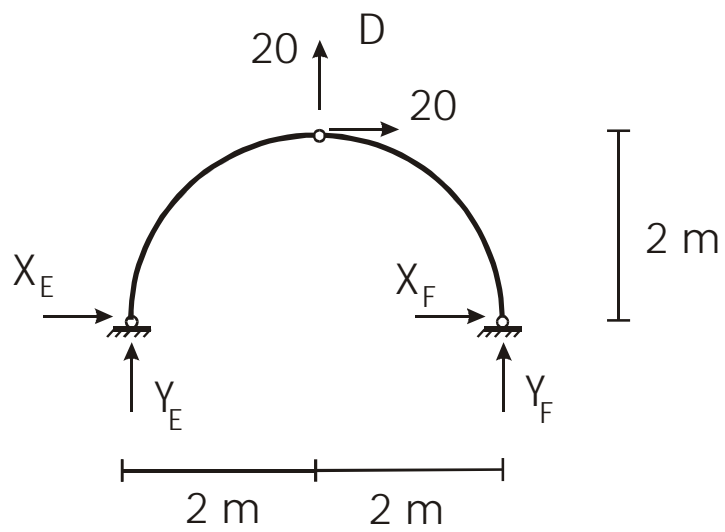
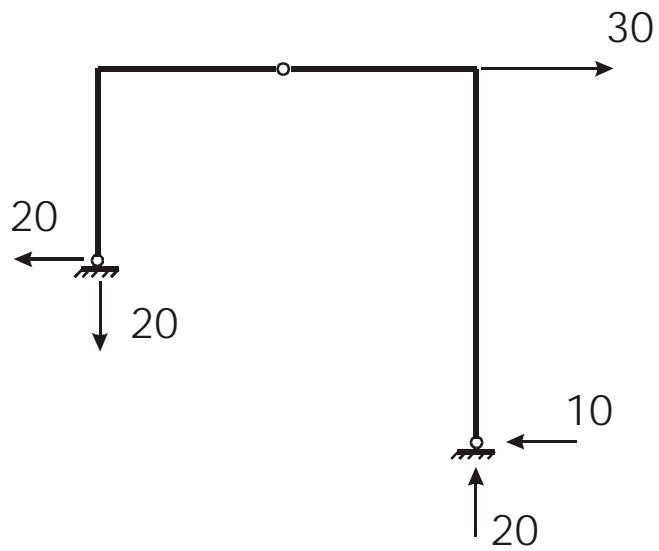
$$Y_D = X_D$$

$$-2 \cdot Y_D - 4 \cdot Y_D = 120$$

$$Y_D = -20 = X_D$$

$$Y_G = 20$$

$$-20 + X_G + 30 = 0 \quad X_G = -10$$



$$\Sigma X = 0 \quad X_E + X_F + 20 = 0$$

$$\Sigma Y = 0 \quad Y_E + Y_F + 20 = 0$$

$$\Sigma M_G = 0 \quad 20 \cdot 2 - 20 \cdot 2 + Y_F \cdot 4 = 0$$

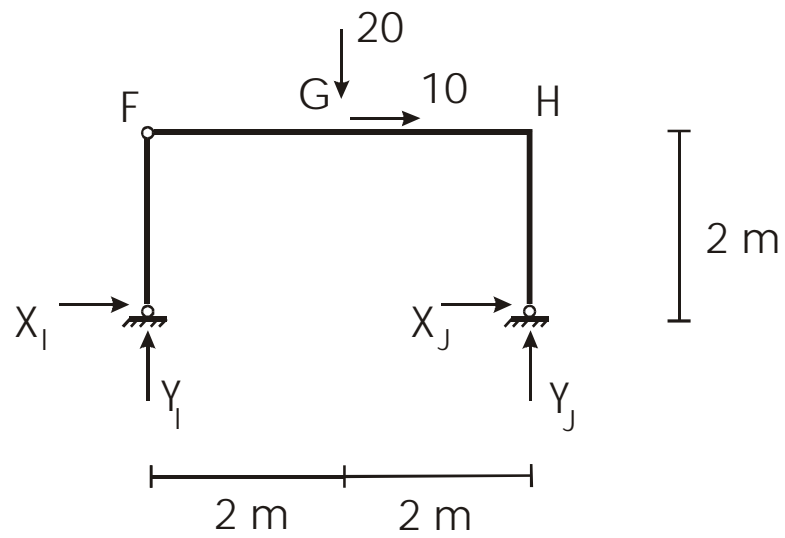
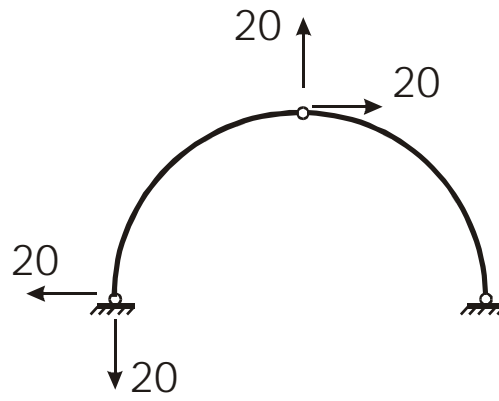
$$M_{\text{fleitor em D}} = 0 \quad Y_F \cdot 2 + X_F \cdot 2 = 0$$

$$Y_F = 0$$

$$X_F = 0$$

$$Y_E = -20$$

$$X_E = -20$$



$$\Sigma X = 0 \quad X_I + X_J + 10 = 0$$

$$\Sigma Y = 0 \quad Y_I + Y_J - 20 = 0$$

$$\Sigma M_G = 0 \quad -20 \cdot 2 - 10 \cdot 2 + Y_J \cdot 4 = 0$$

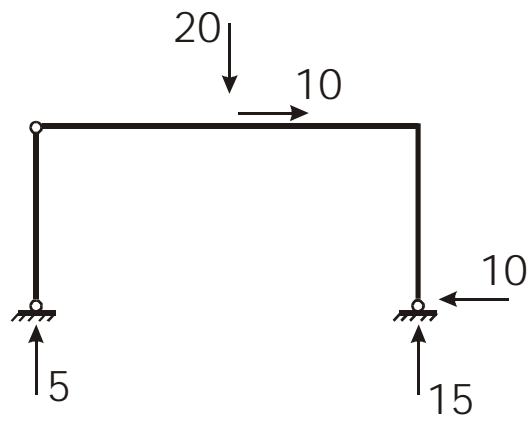
$$M_{\text{fleitor em F}} = 0 \quad -X_I \cdot 2 = 0$$

$$X_I = 0$$

$$Y_J = 15$$

$$Y_I = 5$$

$$X_G = -10$$



c)

