

Name

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ID

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Date

12/7/2026

Dept

Bs civil engin-  
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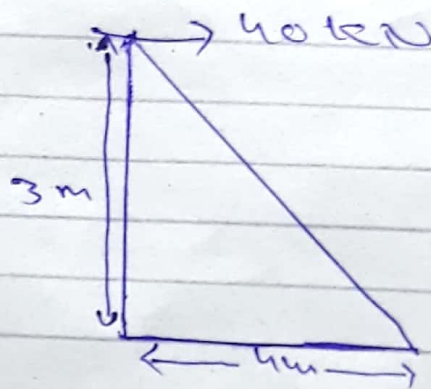
Assignment

②

Q = Determine the force on each member of the truss and state whether it is tension or compression.

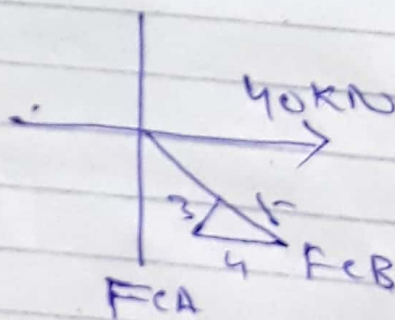
Sol.

Given data



First of all we analyze joint

So



$$\Rightarrow \sum F_x = 0$$

$$40 - F_{CB} \left(\frac{4}{5}\right) = 0$$

$$F_{CB} = 50 \cdot 0 \text{ kN (C)}$$

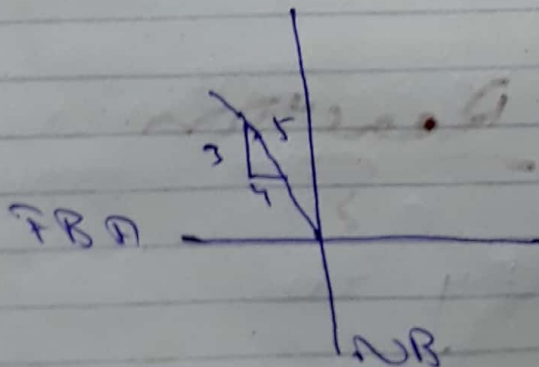
$$+\uparrow \sum F_y = 0$$

$$50 \left(\frac{3}{5}\right) - F_{CA} = 0$$

$$F_{CA} = 30 \cdot 0 \text{ kN (T)}$$

Now we Analyze joint

(B)



$$\rightarrow \sum F_x = 0 \quad 50 \left(\frac{4}{5}\right) - F_{BA} = 0$$

$$F_{BA} = 40 \cdot 0 \text{ kN (T)}$$

$$+\uparrow \sum F_y = 0$$

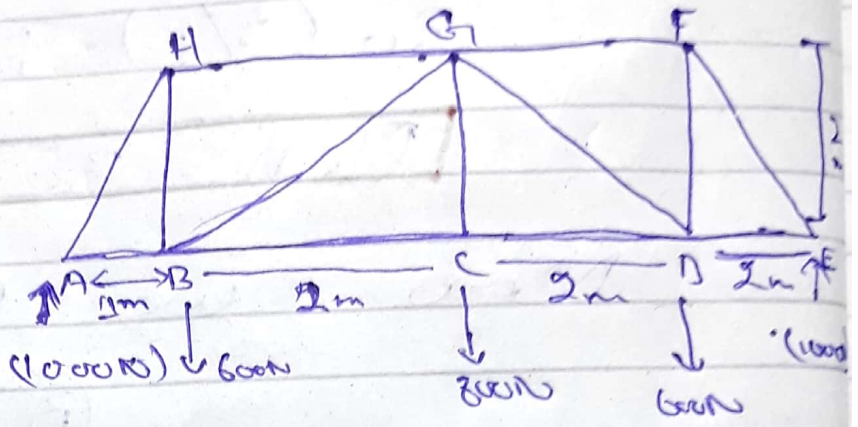
$$N_B - 50 \left(\frac{3}{5}\right) = 0$$

$$N_B = 30 \cdot 0 \text{ kN (Comp)}$$



Q2

Given



Sol

Reaction

$$\sum F_y = 0$$

$$-6000 - 8000 - 6000 + A_y + E_y = 0$$

$$A_y + E_y = 20000 \text{ N}$$

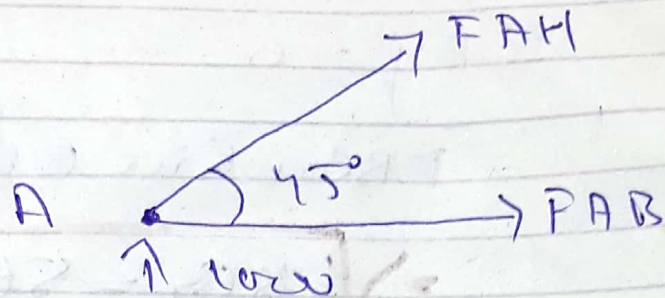
$$\therefore A_y = E_y = 10000 \text{ N}$$

Joint A

$$\sum F_y = 0$$

$$\Rightarrow 10000 - F_{AH} \sin 45^\circ = 0$$

$$F_{AH} = 1414.21 \text{ A (C)}$$

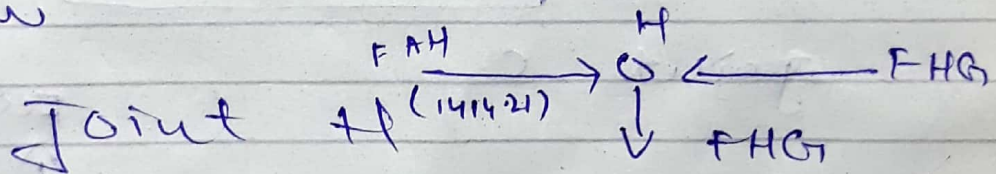


$$\sum F_x = 0$$

$$\Rightarrow F_{AB} = 1414.21 (\cos 45^\circ) = 1000$$

$$F_{AB} = 1000 \text{ N (T)}$$

Now



$$\sum F_x = 0$$

$$-F_{HG} + 1414.21 \sin(45^\circ) = 0$$

$\therefore$  ~~F\_{HG}~~

$$F_{HG} = 1000 \text{ N (C)}$$

$$\sum F_y = 0$$

$$-F_{HB} + 1414.21 \cos(45^\circ) = 0$$

$$F_{HB} = 1000 \text{ N (C)}$$



Joint B =

$$\sum F_y = 0$$

$$- F_{BC} \sin(45^\circ) + 1000 - 600 = 0$$

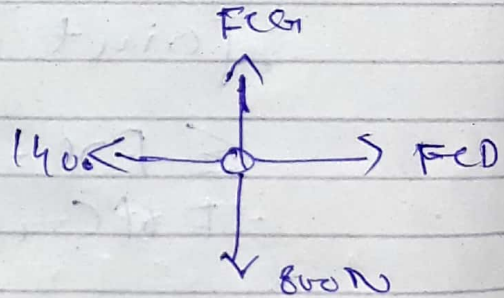
$$\Rightarrow F_{BC} = 565.68 \text{ N (C)}$$

$$\sum F_x = 0$$

$$F_{BC} - 1000 - 565.68 \cos(45^\circ) = 0$$

$$\Rightarrow F_{BC} = 1400 \text{ N}$$

Joint C



$$\sum F_x = 0$$

$$F_{CD} - 1400 = 0$$

$$F_{CD} = 1400 \text{ (T)}$$

$$\sum F_y = 0$$

$$F_{CG} - 800 = 0$$

$$F_{CG} = 800 \text{ N (T)}$$

Due to Symmetry

$$F_{BC} = F_{CD} = 1400 \text{ N (T)}$$

$$F_{DG} = F_{BG} = 565.68 \text{ N (C)}$$

$$F_{FD} = F_{HB} = 1000 \text{ N (T)}$$

$$F_{FG} = F_{HG} = 1000 \text{ N (C)}$$

$$F_{ED} = F_{AB} = 1000 \text{ N (T)}$$

$$F_{EF} = F_{AH} = 1414.21 \text{ N (C)}$$