

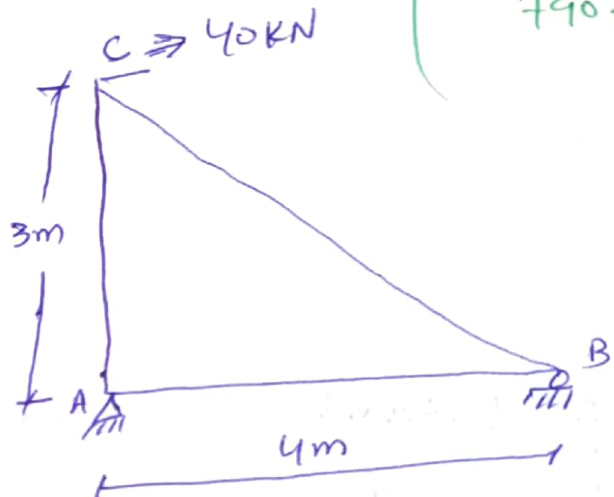
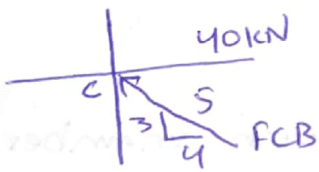
Q No 1: Determine the force in each member of the truss and state whether it is in tension or compression.

SOLUTION :-

GIVEN THAT

(SOHAIL AHMED  
7907, A)

We analysis Joint (C)



$$\rightarrow \sum F_x = 0$$

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

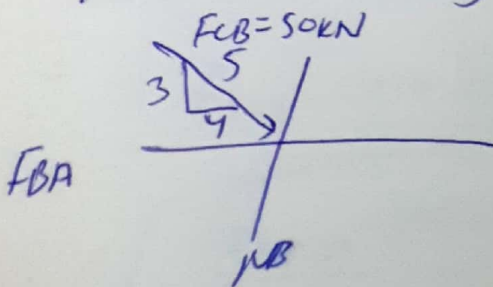
$$\underline{F_{CB} = 50.0 \text{ kN (C)}}$$

$$\uparrow \sum F_y = 0$$

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

$$F_{CA} = 30.0 \text{ kN (T)}$$

Now we analysis Joint (B)



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

$F_{BA} = 40.0 \text{ kN (T)}$

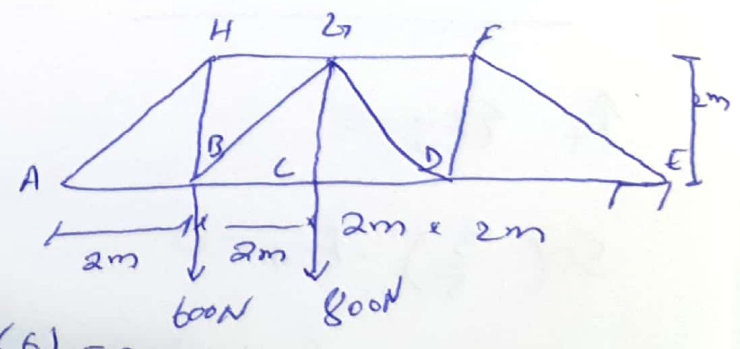
$\uparrow \sum F_y = 0 \quad N_B - 50.0(3/5) = 0$

$N_B = 30.0 \text{ kN}$



Q No 2: Determine the force in each member of the truss. Indicate if the members are in tension OR compression. Assume all members are pin connected.

SOLUTION:

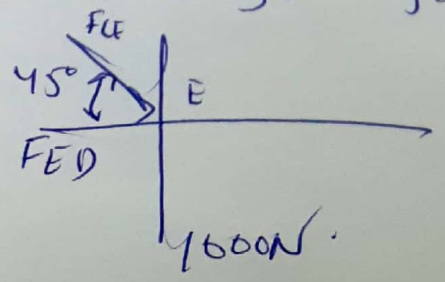


$\curvearrowright \sum M_A = 0$

$\sum y(8) - 600(2) - 800(4) - 600(6) = 0$

$E_y = 1000 \text{ N}$

Now we analyse joint E



$$\uparrow \sum F_y = 0;$$

$$1000 - F_{ED} \sin 45^\circ = 0$$

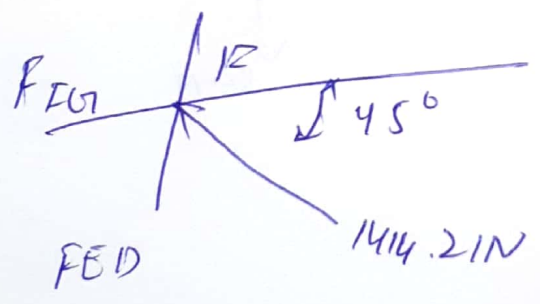
$$F_{ED} = 1414.21 \text{ N (C)} = 1.41 \text{ kN (C)}$$

$$\rightarrow \sum F_x = 0;$$

$$1414.21 \cos 45^\circ - F_{ED} = 0$$

$$F_{ED} = 1000 \text{ N (T)} = 1 \text{ kN (T)}$$

Joint (F)



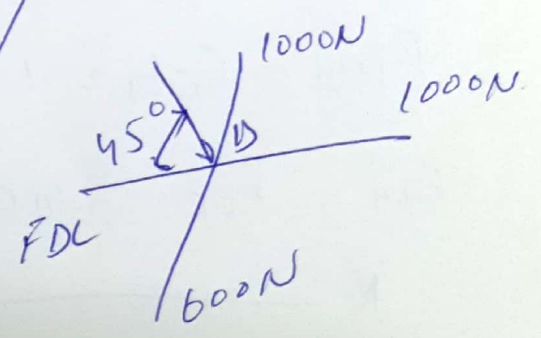
$$\rightarrow \sum F_x = 0;$$

$$F_{FD} - 1414.21 \cos 45^\circ = 0$$

$$F_{FD} = 1000 \text{ N (C)} = 1 \text{ kN (C)}$$

Joint (D)

$$\uparrow \sum F_y = 0;$$



$$1000 - 600 - F_{DG} \sin 45^\circ = 0$$

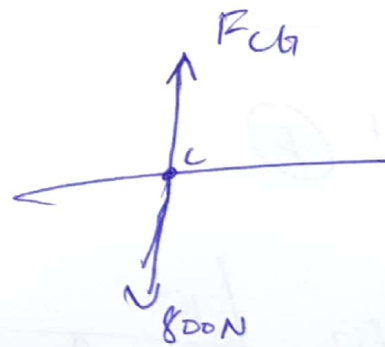
$$F_{DG} = 565.69 \text{ N (C)} \approx 566 \text{ N (C)}$$

$$\rightarrow \sum F_x = 0;$$

$$1000 - 565.69 \cos 45^\circ - F_{DC} = 0$$

$$F_{DC} = 1400 \text{ N (T)} \approx 1.4 \text{ kN (T)}$$

Joint (C) -



$$\uparrow \sum F_y = 0$$

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

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

Due to Symmetry;

$$F_{BC} = F_{DC} = 1.4 \text{ kN (T)}$$

$$F_{AB} = F_{AD} = 1.0 \text{ kN (T)}$$

$$F_{HG} = F_{CG} = 1.0 \text{ kN (C)}$$

$$F_{AH} = F_{EG} = 1.4 \text{ kN (C)}$$

X ————— Y