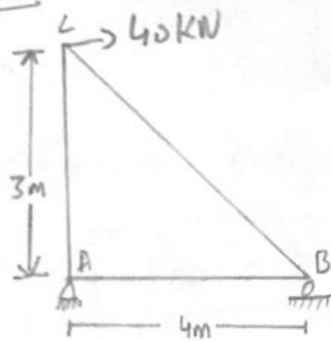


SHAH HASSAN (7978)

Sec-B

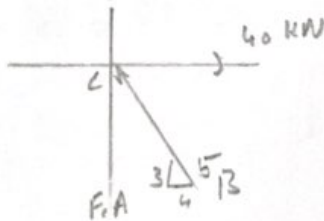
Assignment No-02 (Trusses)

Q-No-01



First of all analysis joint \ominus

So,



$$\Rightarrow \sum F_x = 0$$

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

$$\boxed{F_{CB} = 50.0 \text{ kN (c)}}$$

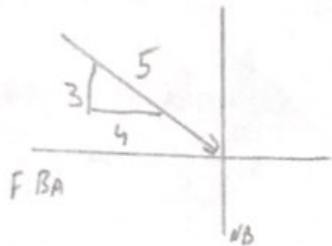
$$+\uparrow \sum F_y = 0$$

(2)

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

$$F_A = 30.0 \text{ KN (+)}$$

Now we apply joint (B)



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

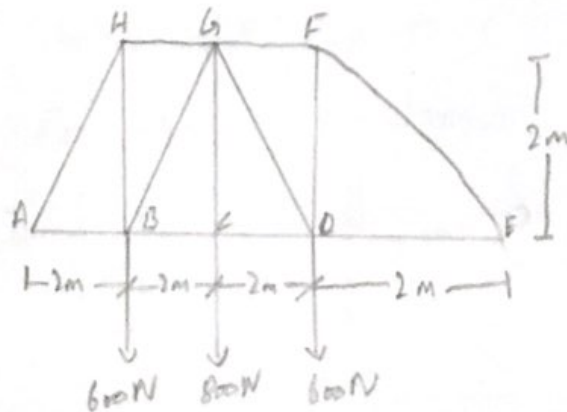
$$F_{BA} = 40 \text{ KN (+)}$$

$$\uparrow \sum F_y = 0$$

$$N_B = 50\left(\frac{3}{5}\right) = 30$$

$$N_B = 30 \text{ KN}$$

Q. No. 02



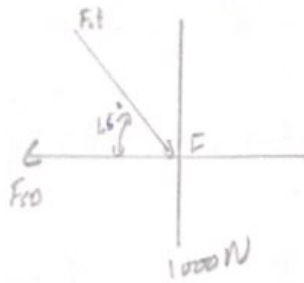
(3)

$$\sum M_A = 0$$

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

$$\boxed{\sum y = 1000 \text{ N}}$$

Now we Analyse joint (E)



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

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

$$\boxed{F_{EC} = 1414.21 \text{ N (c)}}$$

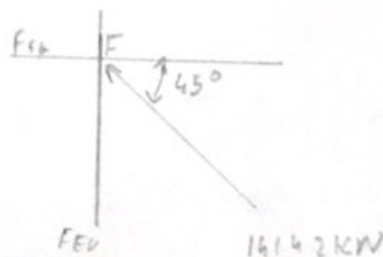
$$\Rightarrow 1.41 \text{ kW (c)}$$

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

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

$$F_{ED} = 1000 \text{ N (t)} = 1 \text{ kW (t)}$$

Joint (F)



(4)

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

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

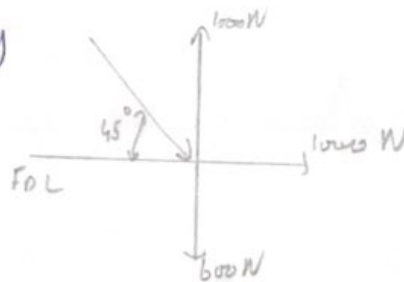
$$F_{FG} = 10000 \text{ N (C)} = 1 \text{ kN (C)}$$

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

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

$$F_{ED} = 10000 \text{ N (T)} = 1 \text{ kN (T)}$$

Joint (D)



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

$$10000 - 6000 - F_{DL} \sin 45^\circ = 0$$

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

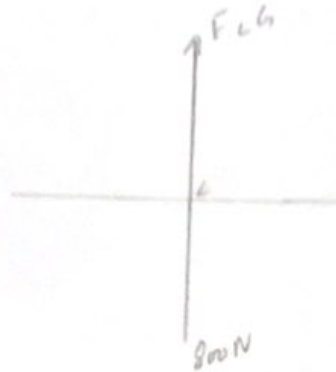
$$\pm \rightarrow \sum F_x = 0;$$

$$10000 + 565.69 \cos 45^\circ - F_{DC} = 0$$

$$F_{DC} = 14000 \text{ N (T)} = 14.0 \text{ kN (T)}$$

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Joint (c)



$$\uparrow \sum (y) = 0$$

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

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

Due to Symmetry

$$F_{CB} = F_{CL} = 1.4\text{ KN}(+)$$

$$F_{HB} = F_{HD} = 1.0\text{ KN}(+)$$

$$F_{BL} = F_{DL} = 566\text{ KN}(+)$$

$$F_{HG} = F_{GL} = 100\text{ KN}(+)$$

$$F_{AH} = F_{EF} = 1.4\text{ KN}(+)$$

$$F_{AB} = F_{ED} = 1.0\text{ KN}(+)$$