

Name Attaullah Khan

ID 7933

Section B

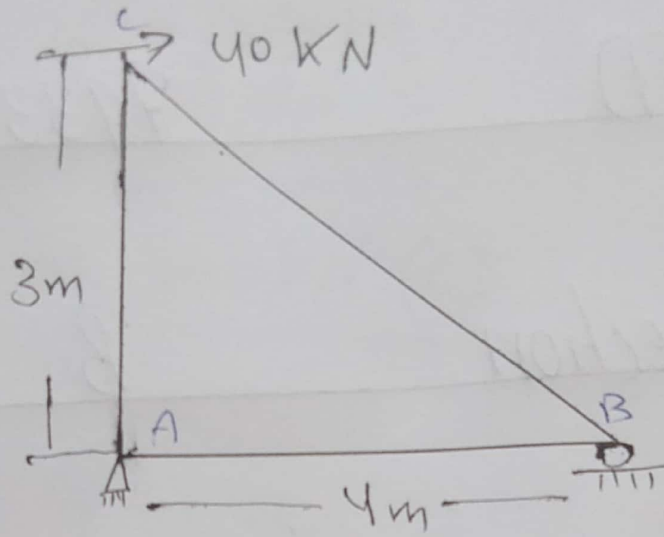
Subject Structure

Assignment 02

17

# Question No # 01

Given

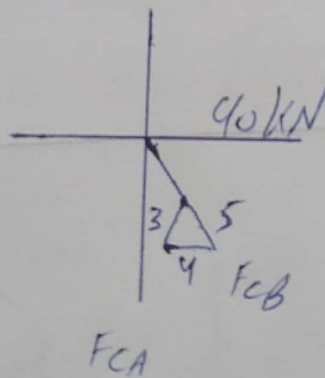


Soln.

First of all we analysis

joint (C)

So,



(2)

$$\rightarrow \sum F_x = 0$$

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

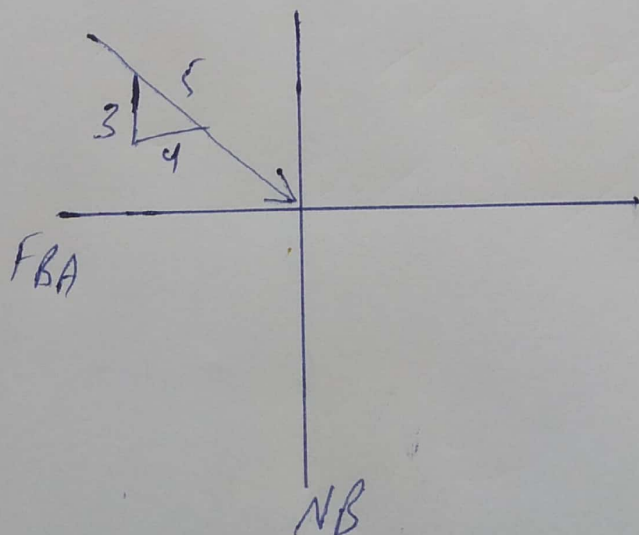
$$F_{CB} = 50.0 \text{ kN (C)}$$

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

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

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

Now we analysis joint (B)



(3)

$$\rightarrow \sum F_x = 0$$

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

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

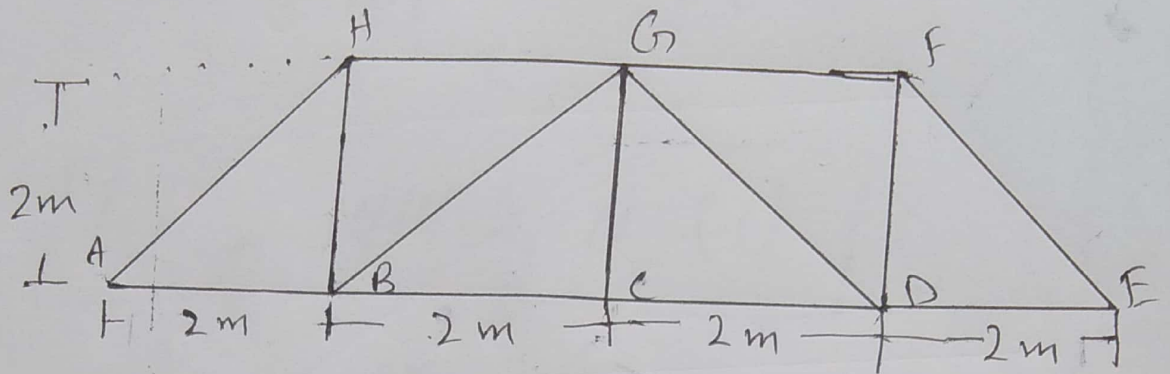
$$\uparrow \sum F_y = 0$$

$$N_B - 50.0 \left( \frac{3}{5} \right) = 0$$

$$N_B = 30.0 \text{ KN}$$

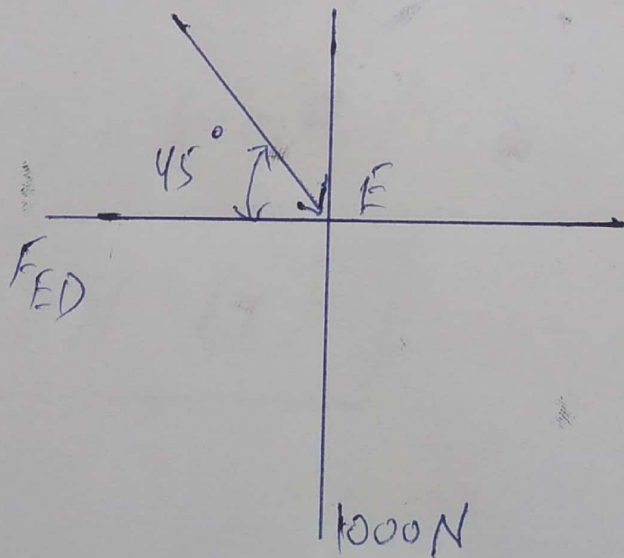
(4)

Question No # 04



Soln

Now we analysis joint (E)



(5)

$$\uparrow \uparrow \sum E_y = 0 ;$$

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

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

OR

$$F_{EP} = 1.41 \text{ kN (C)}$$

$$\rightarrow \sum F_x = 0$$

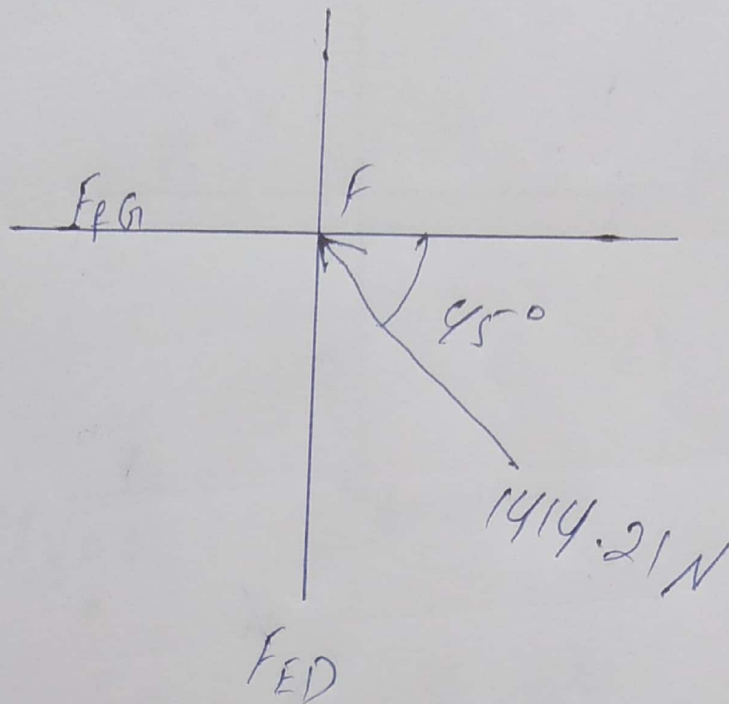
$$1414.21 \cos 45^\circ - F_{ED} = 0$$

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

$$\Rightarrow 1 \text{ kN (T)}$$

6

Joint (F)



$$\rightarrow \sum F_x = 0$$

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

$$F_{FG} = 1000 \text{ N (c)} \Rightarrow 1 \text{ kN (c)}$$

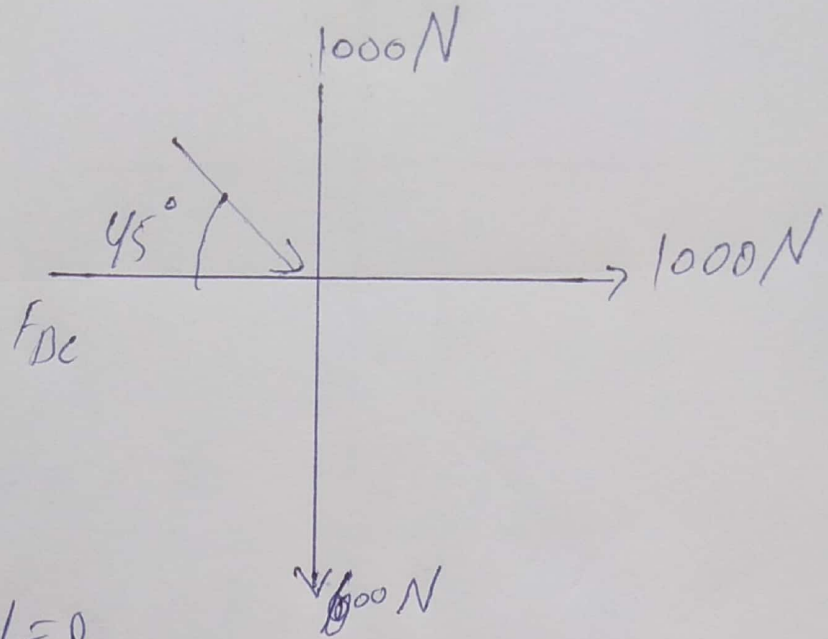
$$\uparrow \sum F_y = 0$$

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

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

(7)

Joint D



$$\uparrow \sum F_y = 0$$

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

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

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

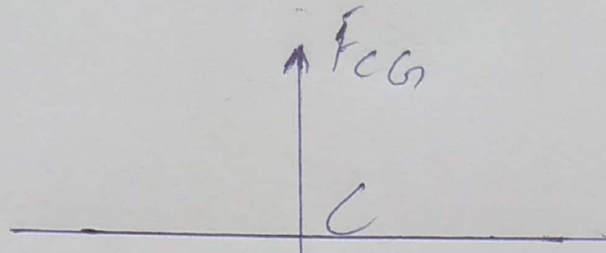
$$1000 + 566 \cos 45^\circ - F_{DC} = 0$$

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



(8)

Joint (C)



$$\sum F_y = 0$$

$$F_{CG} - 800 = 0 \quad \downarrow 800 \text{ N}$$

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

Due to Symmetry

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

$$F_{HB} = F_{HD} = 1.0 \text{ kN (T)}$$

$$F_{BG} = F_{DG} = 5.66 \text{ N (T)}$$

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

$$F_{AH} = F_{EH} = 1.41 \text{ kN (C)}$$

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