

INU

***: Assingnment: ***

Name: Musa Khan

ID : 7970

Sec # B

Subject: Structural Analysis

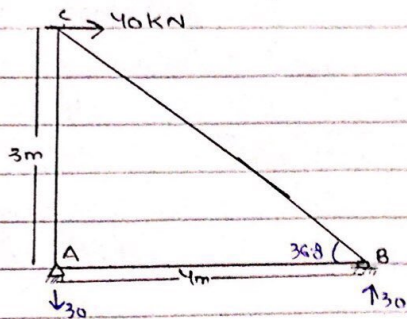
Submitted To: Sir Amjad Islam.

Date: 13 July, 2020.

Musa Khan

Question: 1

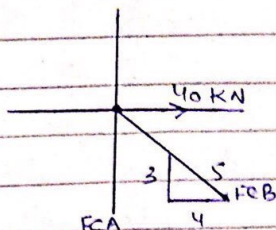
Determine the force in each member of truss. And state whether it is in Tension or Compression.



$$\tan \theta = \frac{3}{4}$$

$$\theta = 36.86^\circ$$

• Joint C ::



$$\rightarrow \sum F_x = 0$$

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

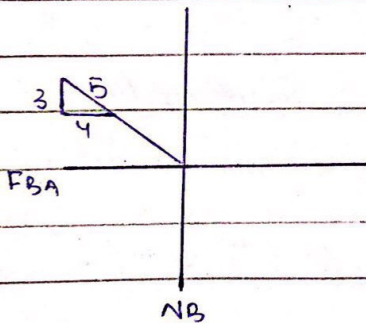
$$F_{CB} = 50.0 \text{ kN [C]}$$

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

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

$$F_{CA} = 30.0 \text{ kN [T]}$$

Analysis of joint CB.



$$+\rightarrow \sum F_x = 0 \quad \text{So, } \left(\frac{4}{5} \right) - F_{BA} = 0.$$

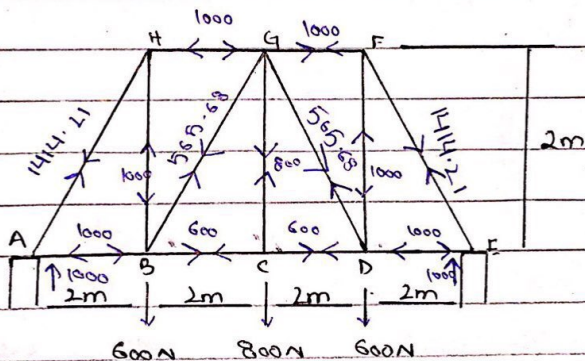
$$F_{BA} = 40.0 \text{ kN [T]}$$

$$+\uparrow \sum F_y = 0 \quad N_B - 50.0 \left(\frac{3}{5} \right) = 0.$$

$$N_B = 30.0 \text{ kN [C]}$$

Question: 02

Determine the forces in each member of the truss. Also indicate the members are in tension or compression.



As the given truss is symmetrical.

Joint A: -

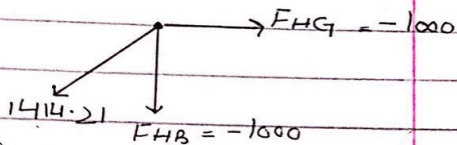
$$F_{AH} \sin 45 - 1000 = 0$$

$$F_{AH} = 1414.21 \text{ N [T]}$$

$$F_{AB} + F_{AH} \cos 45 = 0$$

$$F_{AB} = -1000 \text{ N [C]}$$

Joint H :-



$$1414.21 \sin 45 + F_{HB} = 0$$

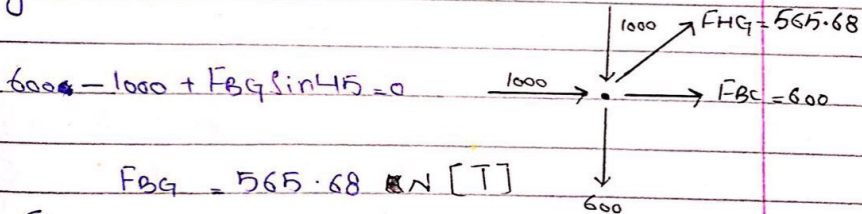
$$F_{HB} = -1000 \text{ kN [C]}$$

∑

$$1414.21 \cos 45 + F_{HG} = 0$$

$$F_{HG} = -1000 \text{ N [C]}$$

Joint B :-



$$600 - 1000 + F_{BG} \sin 45 = 0$$

$$F_{BG} = 565.68 \text{ N [T]}$$

∑

$$F_{BC} - 1000 + 565.68 \cos 45 = 0$$

$$F_{BC} = 600 \text{ N [T]}$$