NAME # SHAHKAR SALEEM

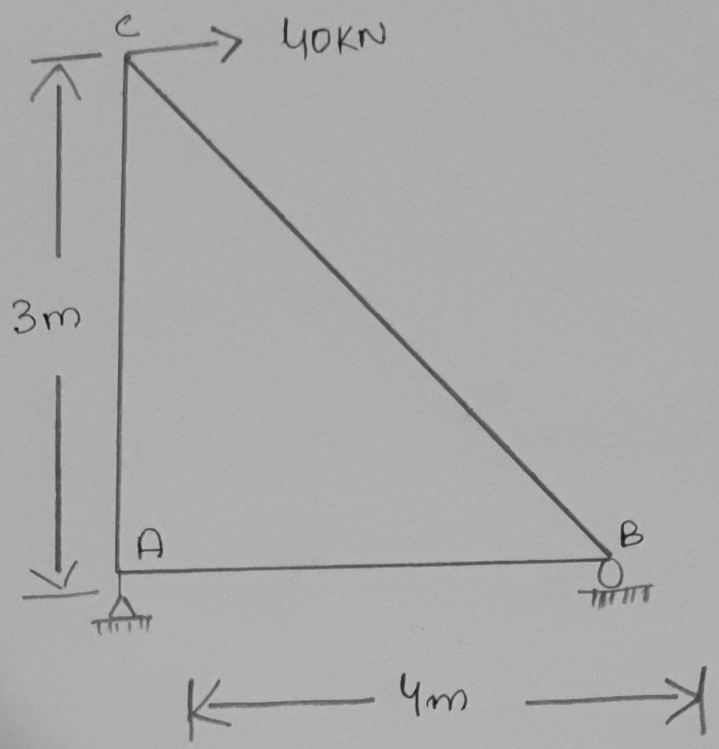
ID # 7943

SECTION # "B"

SUBJECT # STRUCTURAL ANALYSIS I

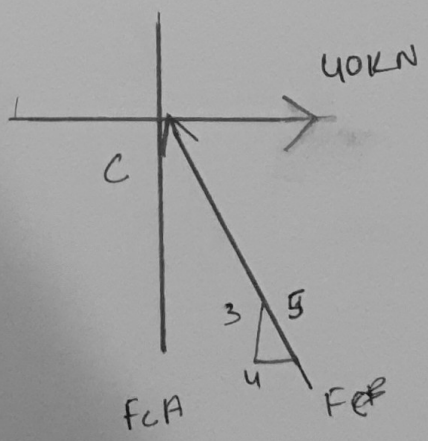
ASSIGNMENT # 02

Q1:-



First of all analysis Joint (C)

So



$\xrightarrow{+}$ $\Sigma F_x = 0$

$40 - F_{CB}(4/5) = 0$

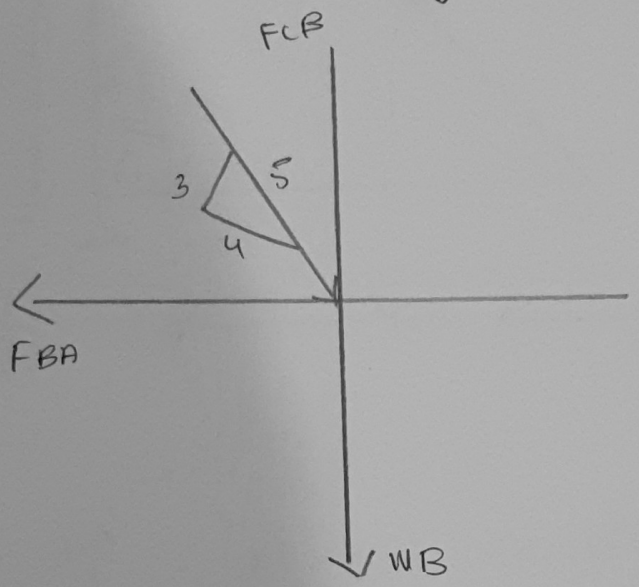
$$F_{CB} = 50.0\,KN\ (C)$$

$+\uparrow \quad \Sigma F_y = 0$

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

$F_{CA} = 30.0\,KN\ (T)$

Now we analyse Joint (B).



$\xrightarrow{+} \quad \Sigma F_x = 0 \quad 50\left(4/5\right) - F_{BA} = 0$

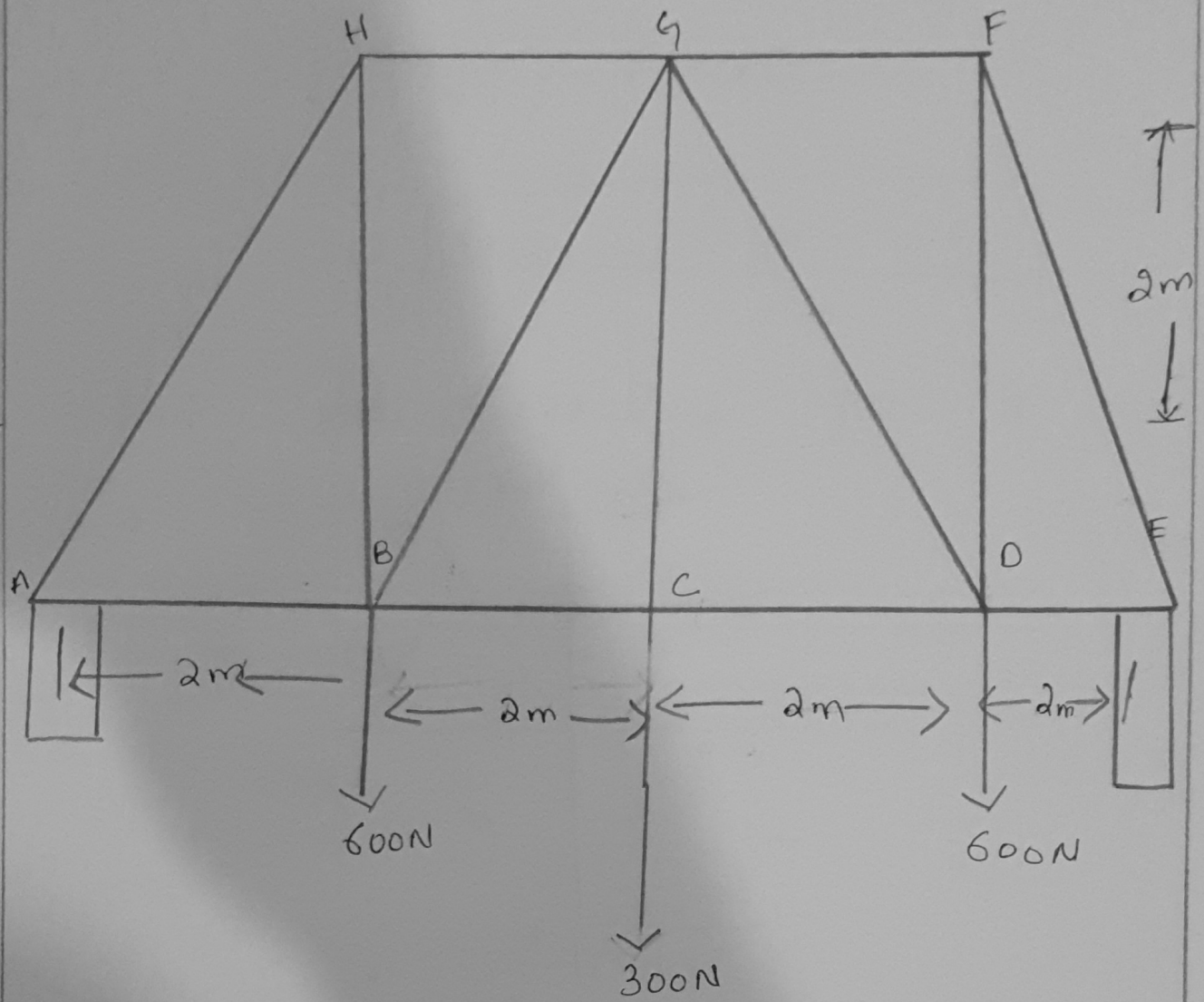
$F_{BA} = 40.0\,KN\ (T)$

$+\uparrow \quad \Sigma F_y = 0$

$N_B - 50.0\left(3/5\right) = 0$

$N_B = 30.0\,KN$

Q2 :-

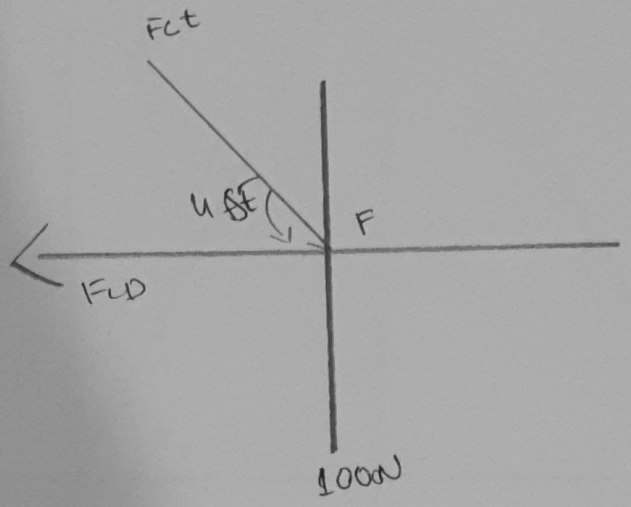


$$\circlearrowleft_+ \Sigma M_A = 0$$

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

$$\boxed{\Sigma y = 1000N}$$

Now we Analyse Joint (b).



$+\uparrow \Sigma F_y = 0;$

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

$F_{EF} = 1414.21\ N\ (T)$

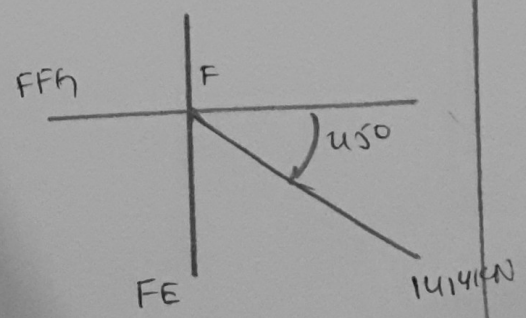
$F_{EF} = 1.41KN\ (T)$

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

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

$F_{ED} = 100N\ (T) = 1KN\ (T).$

Joint (F)



(5)

$\xrightarrow{+} \Sigma F_x = 0;$

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

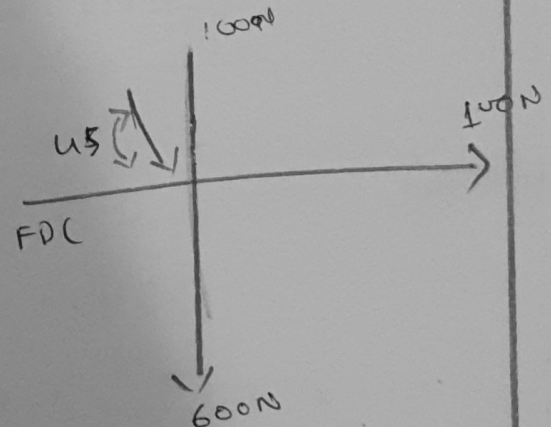
$F_{FG} = 1000N(C) = 1KN(C)$

$+\uparrow \Sigma F_y = 0;$

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

$F_{ED} = 1000N(T) = 1KN(T).$

Join (D).



$+\uparrow \Sigma F_y = 0;$

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

$F_{DG} = 565.69 N(C)$

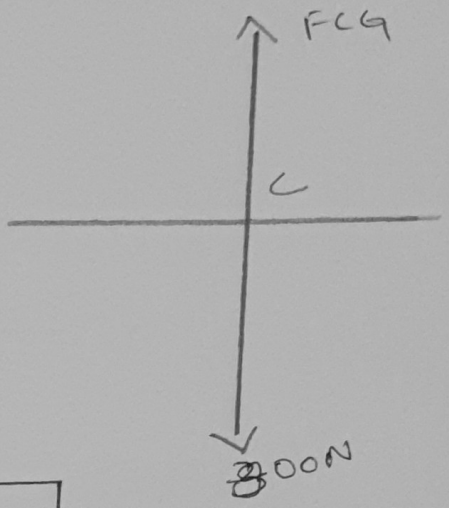
$\boxed{F_{DG} = 566 N(C)}$

$\xrightarrow{+}$ $\Sigma F_x = 0$;

$1000 + 565.69 \cos 45° - F_{DL} = 0$

$\boxed{F_{DL} = 1400\,N\,(T) = 1.4\,KN\,(T)}$

Joint (C)



$+\uparrow \Sigma F_y = 0$

$F_{CG} = -800 = 0$

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

Due to symmetry

$F_{BL} = F_{DC} = 1.4KN\,(T)$

$F_{HB} = F_{EG} = 1.0KN\,(T)$

$F_{BG} = F_{DG} = 5.66\,KN\,(T)$

$F_{HG} = F_{CG} = 1.0KN\,(T)$

$F_{AH} = F_{EF} = 1.41\,KN(T)$

$F_{AB} = F_{ED} = 1.0KN\,(T).$