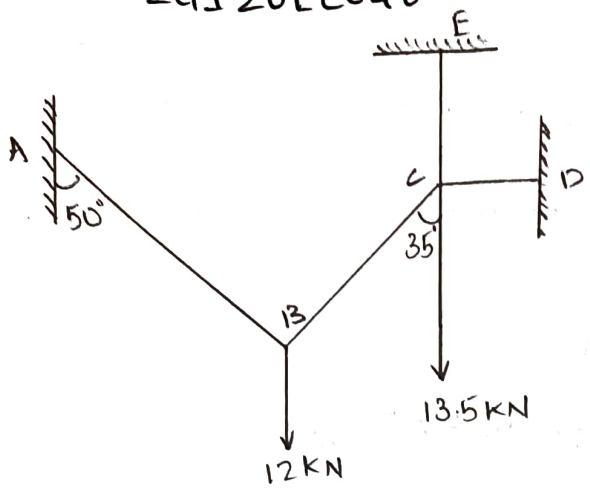
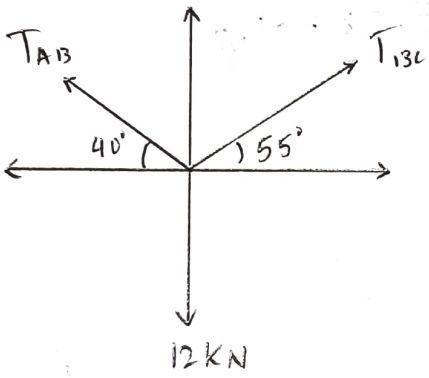
NAME: HARSHEL. D. MALAWADE
ROLL NO: I36
USN : 2GI20EC046




At point B.




$F_x = T_{BC}\cos 55^\circ \qquad F_x = -T_{AB}\cos 40^\circ$

$F_y = T_{BC}\sin 55^\circ \qquad F_y = T_{AB}\sin 40^\circ$

$\Sigma F_x = 0$

$T_{BC}\cos 55^\circ - T_{AB}\cos 40^\circ = 0$

$T_{BC}\cos 55^\circ = T_{AB}\cos 40^\circ$

$T_{BC} = \dfrac{T_{AB}\cos 40^\circ}{\cos 55^\circ}$

$T_{BC} = T_{AB}(1.3355) - (1)$

$\Sigma F_y = 0$

$T_{BC}\sin 55 + T_{AB}\sin 40^\circ - 12KN = 0$

$T_{AB}(1.3355)\sin 55 + T_{AB}\sin 40 = 12kN$

$T_{AB}(1.0939) + T_{AB}\sin 40^\circ = 12KN$

$T_{AB}(1.0939 + 0.6427) = 12kN$

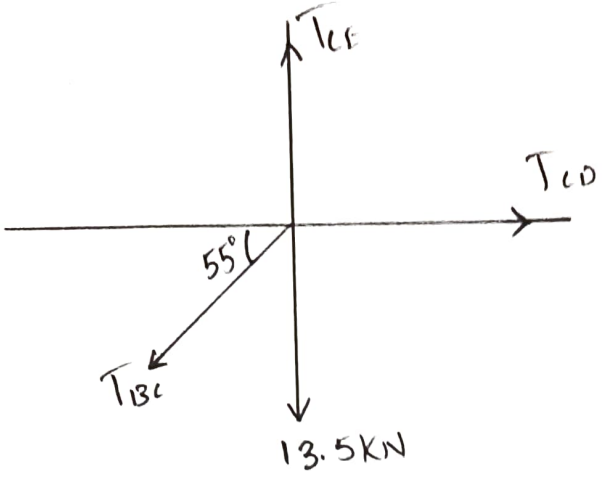
$T_{AB}(1.7366) = 12kN$

$T_{AB} = 6.91\,kN$ //

$T_{BC} = T_{AB}(1.3355) = 6.91(1.3355) = 9.22kN$ //

$\therefore T_{BC} = 9.22\,kN$ //

At point C.




$F_x = -T_{BC}\cos 55^\circ$

$F_y = -T_{BC}\sin 55^\circ$

$\Sigma F_x = 0$

$T_{CD} - T_{BC}\cos 55^\circ = 0$

$T_{CD} = T_{BC}\cos 55^\circ$

$T_{CD} = 9.22 \times \cos 55^\circ$

$T_{CD} = 5.28\,kN$ //

$\Sigma F_y = 0$

$T_{CE} - T_{BC}\sin 55 - 13.5 = 0$

$T_{CE} = T_{BC}\sin 55 + 13.5$

$= (9.22 \times \sin 55) + 13.5$

$T_{CE} = 21.05\,kN$ //