ME21BTECH11001

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Along x axis $\Sigma F_x=0$

R_{Ax} +5kN=0

=> **R_{Ax}=-5kN**

Along y axis $\Sigma F_y=0$

R_{Ay} +R_{Cy}-5kN=0 ……..(1)

Moment along A $\Sigma M_A=0$

5kN*2cos(30^0) +5kN*1- R_{Cy} *2=0

=> **R_{Cy} =6.83kN** …….(2)

R_{Ay}=-1.83kN {putting (2) in (1)}

At A balancing forces:-

Along y axis $\Sigma F_y=0$

F_{AB}sin(60^0)+V_a=0

=> F_{AB}=- R_{Ay} /sin(60^0) =2.11kN

=> **F_{AB}=2.11kN**

Along x axis $\Sigma F_x=0$

F_{AB}cos(60^0) +F_{AD}+ R_{Ax} =0

=> **F_{AD}=-3.945kN**

At C balancing Forces:-

Along y axis $\Sigma F_y=0$

F_{BC}sin(60^0) + R_{Cy} =0

=> F_{BC}=- R_{Cy} /sin(60^0) =-7.88kN

=> **F_{BC}=-7.88kN**

Along x axis $\Sigma F_x=0$

F_{BC}cos(60^0)+F_{DC}=0

=> F_{DC}=-F_{BC}/2=3.94kN

=> **F_{DC}=3.94kN**