1. The motor at $B$ winds up the cord attached to the 65-lb crate with a constant speed. Determine the force in rope $CD$ supporting the pulley and the angle $\theta$ for equilibrium. Neglect the size of the pulley at $C$.

This relation may be helpful: $\tan \theta = \sin \theta / \cos \theta$
2. Determine the magnitudes of $F_1$, $F_2$, and $F_3$ for equilibrium of the particle.
3. Determine the moment of the force $F$ about point $O$. The force has coordinate direction angles of $\alpha = 60^\circ$, $\beta = 120^\circ$, $\gamma = 45^\circ$. Express the result as a Cartesian vector.
4. Replace the loading on the beam by an equivalent resultant force and specify its location, measured from point \(A\).