1) The solid shaft is subjected to the distributed and concentrated terminal load shown. Determine the required diameter \( d \) of the shaft if the allowable shear stress for the material is \( \tau_{\text{allow}} = 60 \, \text{MPa} \).
2) If the gears are subjected to the torques shown, determine the maximum shear stress in the segment AB and BC of the A-36 steel shaft. The shaft had a diameter of 40 mm.
3) The link acts as part of the elevator control for a small airplane. If the attached aluminum tube has an inner diameter of 25 mm and a wall thickness of 5 mm, determine the maximum shear stress in the tube when the cable force of 600 N is applied to the cables. Also, sketch the shear-stress distribution over the cross-section.