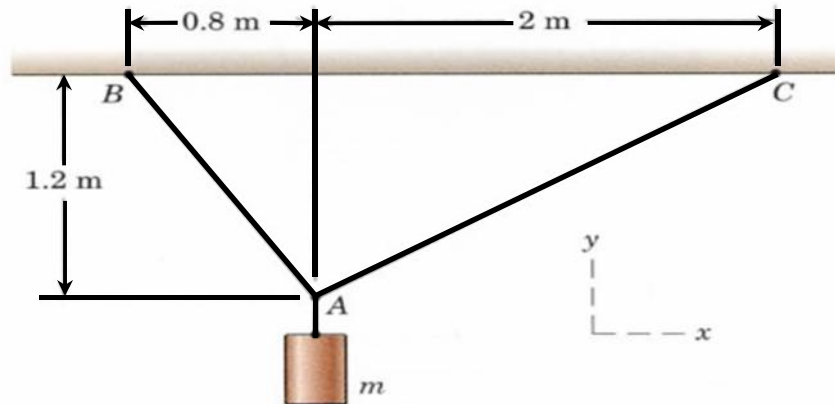


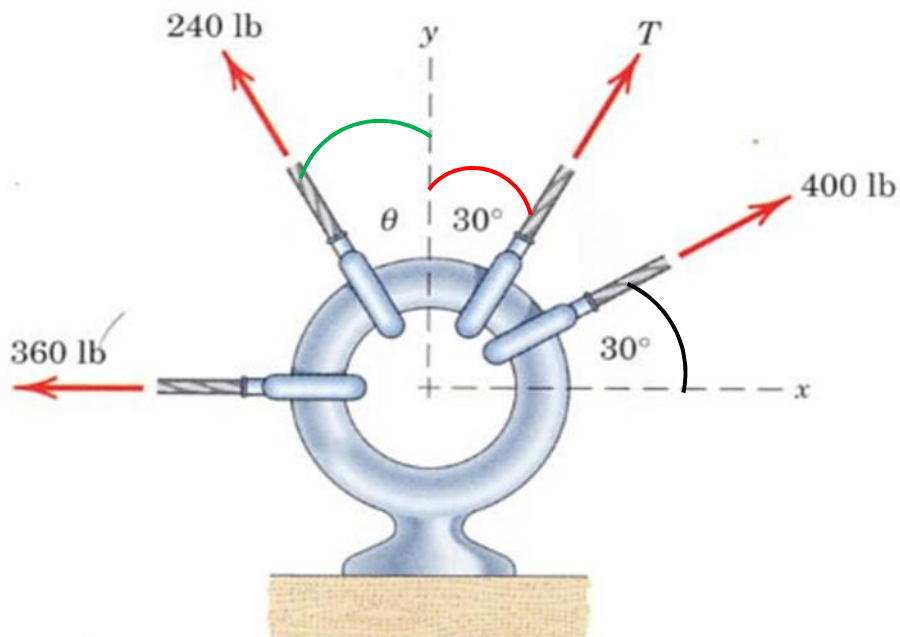
Note: Attempt all questions.

**Q1: Part-(a)** two high strength flexible steel cables AB and AC are fastened to the ceiling of a building through high carbon steel hooks at point B & C. These cables are knotted together to a 3<sup>rd</sup> cable at point A which is holding a thick wall water tank weighting 400 pounds and is full of 3000 liters of water volume. What percentage of the whole weight is being held by cable AB alone? What amount of tensions must be there in both the cables to maintain the static equilibrium of the system? (7)

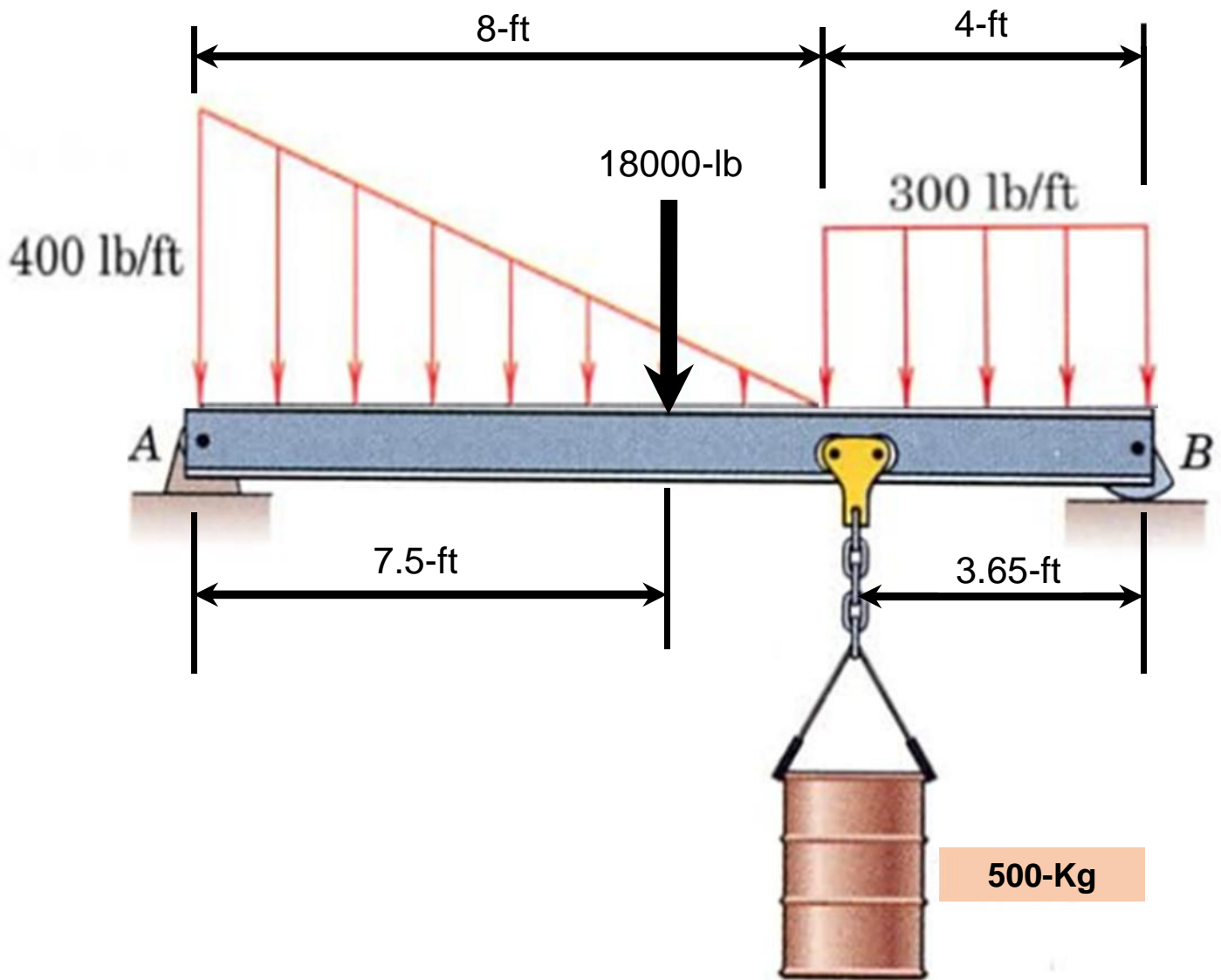
**Part-(b)** if the water tank weight and volume of water are increased 15% and 35% respectively what effects will occur on results of Part-a. (3)



**Q2:** Four forces are exerted on the eyebolt as shown below. If the net effect on the bolt is a direct pull of 600 pounds in the y-direction, determine the values of T and (Marks=10)



**Q3:** Calculate the reactions at supports (Marks=10)



Note: All questions are from CLO-01 mapped with PLO-1

Reference Material:

1. Class Lectures & Videos
2. Engineering Mechanics-Statics by Meriam and Kraige (5th Edition)
3. Engineering Mechanics – Statics by R.C. Hibbeler, 12th Edition