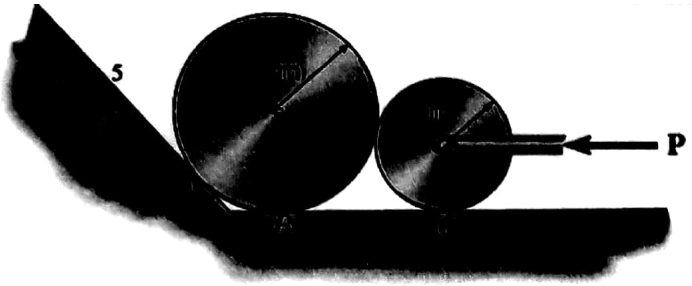
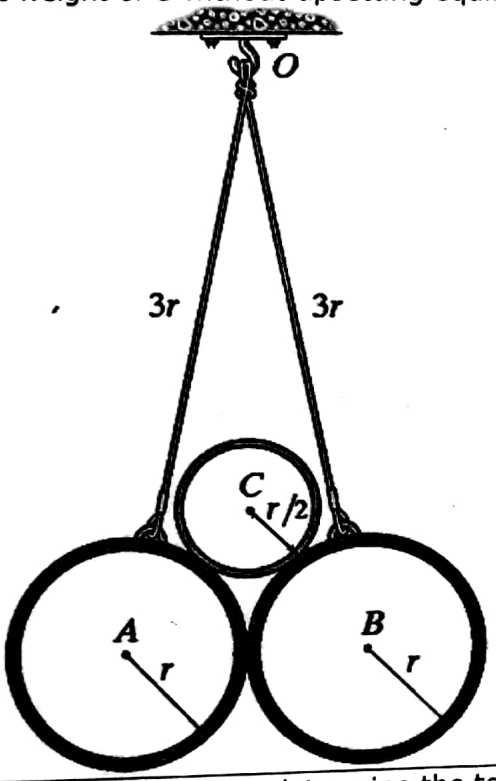
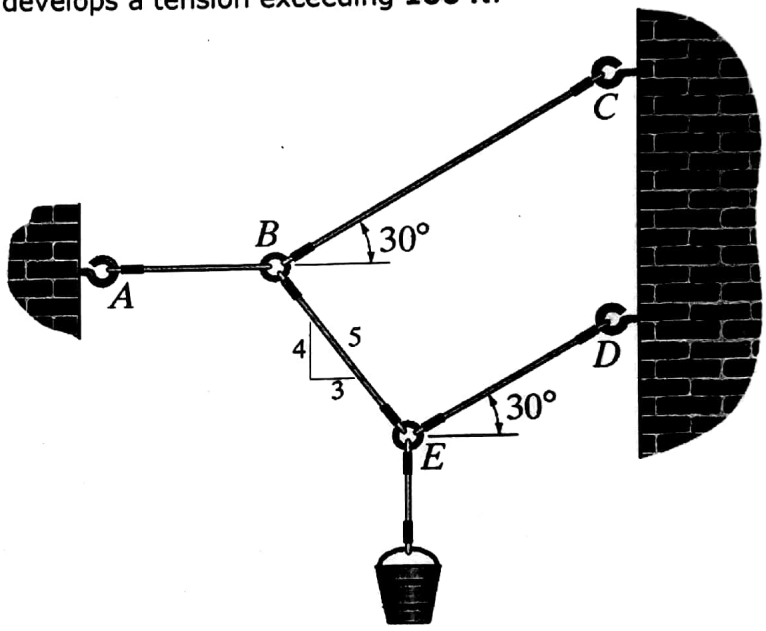


Q1) The smooth disks ***D*** and ***E*** have a weight of **200 N** and **100 N**, respectively. Determine the **largest** horizontal force ***P*** that can be applied to the center of disk ***E*** without causing the disk ***D*** to move up the incline.

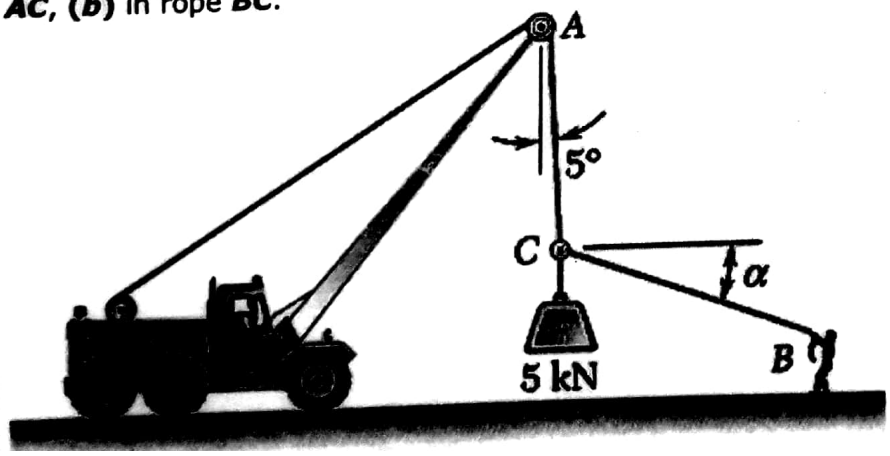
Q2) Two smooth tubes ***A*** and ***B***, each having the same weight ***W***, are suspended from a common point ***O*** by means of **equal-length** cords. A third tube ***C***, is placed between ***A*** and ***B***. Determine the **greatest** weight of ***C*** without upsetting equilibrium.



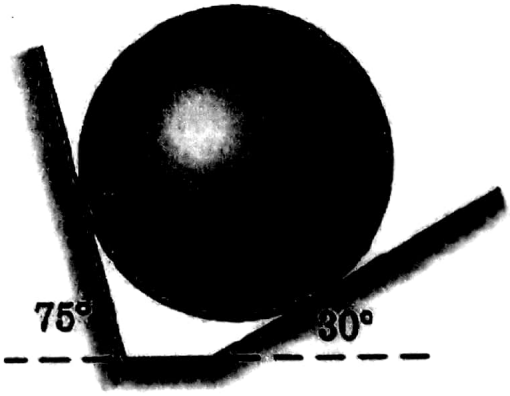
Q3) Determine the **maximum** weight of the bucket that the wire system can support so that no single wire develops a tension exceeding **100 N**.



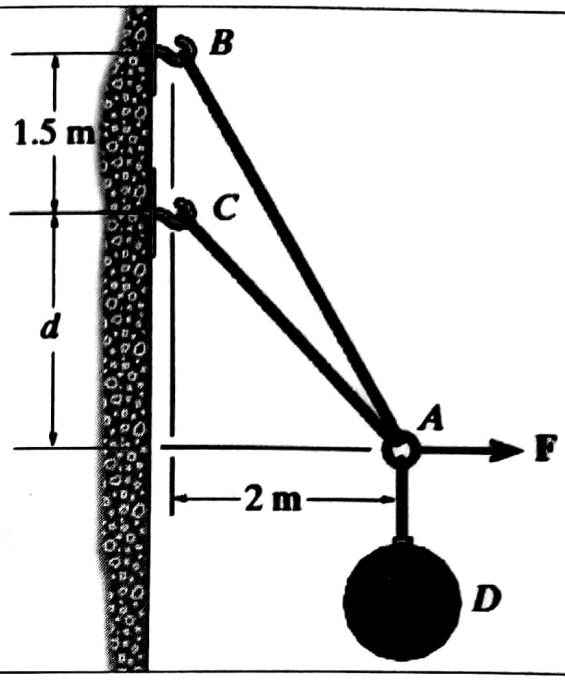
Q4) Knowing that $\alpha = 25°$, determine the tension (***a***) in cable ***AC***, (***b***) in rope ***BC***.



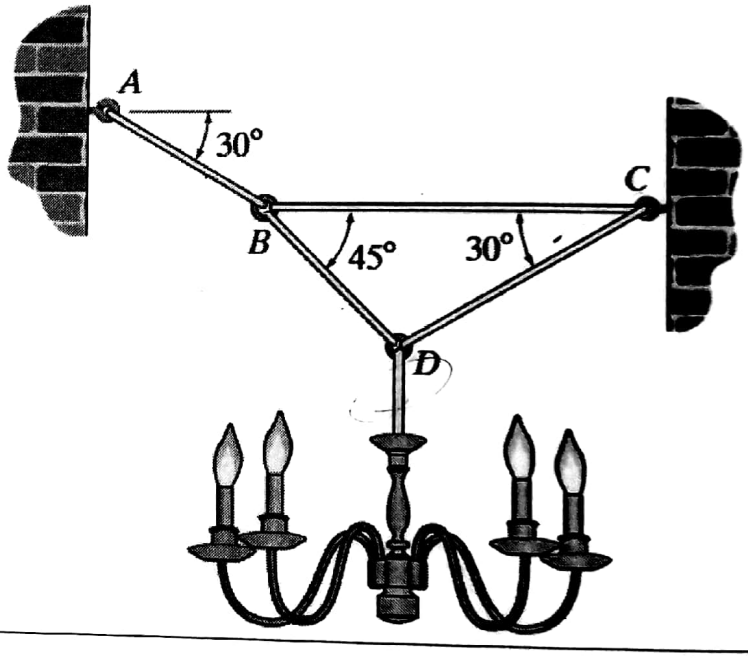
Q5) The **20kg** homogeneous smooth sphere rests on two inclines as shown in **Figure**. Determine the contact forces at **A** and **B**.



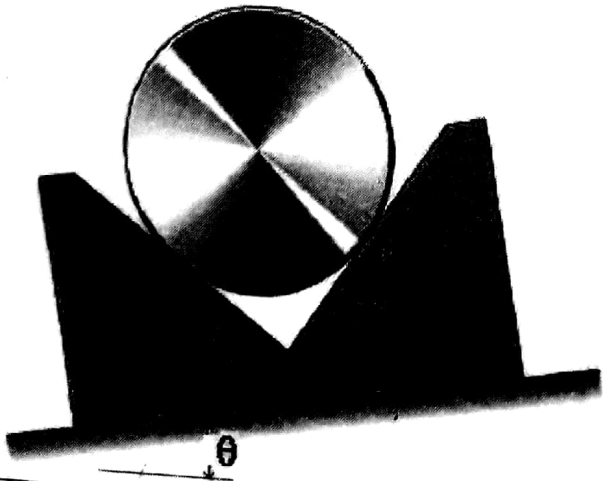
Q6) The ball **D** shown in **Figure** has a weight of **196.2N**. If a force of **F=100N** is applied horizontally to the ring at ***A***, determine the dimension ***d*** so that the force in cable ***AC*** is **zero**. **(marks 10)**

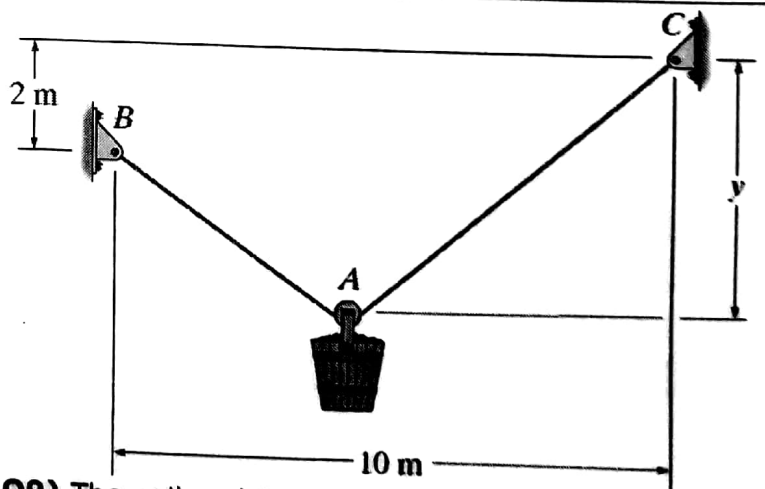


Q7) If the tension developed in **each** of the **four wires** is not allowed to **exceed 600N**, determine the **maximum mass** of the chandelier that can be supported as shown in figure. *[A **chandelier** is a branched, decorative ceiling-mounted light fixture]*



Q8) Find the angle of tilt '**θ**' with the horizontal so that contact force at '**B**' will be one-half that of '**A**' for the smooth cylinder setup shown in Figure.





Q9) The pail and its contents have a mass of **60 kg**. If the cable **BAC** is **15m** long, determine the distance **y** to the pulley at **A** for equilibrium. Neglect the size of the pulley.