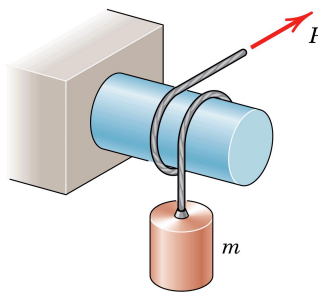
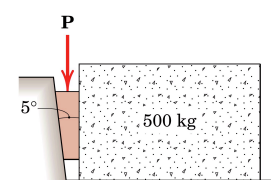


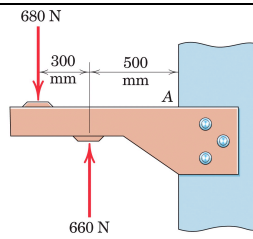


National Institute of Technology Andhra Pradesh
Department of Civil Engineering
B.Tech. Ist year IInd Semester
Engineering Mechanics (CE 101)

Assignment

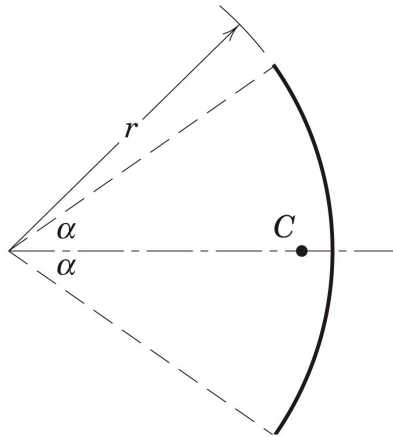
Note: 1. Answer all the questions and refer to the NPTEL lectures as specified with the question
 2. Units and Directions to be specified wherever required

QNo.	Question
1.	Derive the belt friction relation by referring NPTEL Module 2 Lecture 7 by Prof. Manoj Harbola, IIT Kanpur: Topic- Friction
2.	<p>A force $P=mg/6$ is required to lower the cylinder at a constant slow speed with the cord making $1\frac{1}{4}$ turns around the fixed shaft. Calculate the coefficient of friction μ between the cord and the shaft. Refer NPTEL Module 2 Lecture 7 by Prof. Manoj Harbola, IIT Kanpur: Topic- Friction</p> 
3.	<p>The horizontal position of the 500-kg rectangular block of concrete is adjusted by the 5° wedge under the action of the force P. If the coefficient of static friction for both wedge surfaces is 0.30 and if the coefficient of static friction between the block and the horizontal surface is 0.60, determine the least force P required to move the block. Neglect the weight of the wedge.</p> 
4.	Where does the resultant of the two forces act, with respect to A as shown in the figure?



5. Derive the centroid of a the following basic shapes (a) Rectangle of width b , and length l ; (b) triangle of base width b , height h ; (c) semi-circle of radius, r . **Refer NPTEL Module 3 Lecture 8 by Prof. Manoj Harbola, IIT Kanpur: Topic- Properties of Surfaces-I**

6. Locate the centroid of the circular arc with respect to 'O'.



7. Using the **method of joints**, compute the force in each member of the loaded cantilever truss.

