SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)

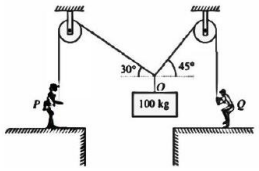
Department of Mechatronics Engineering

23MET101 – Engineering Mechanics

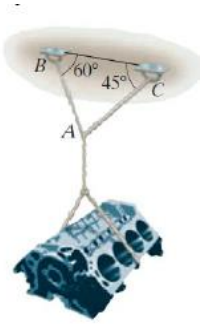
Assignment – 1

PROBLEMS ON BELOW TOPICS:

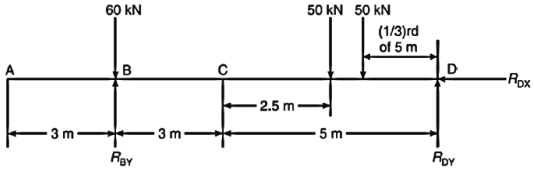
1. The 200 crate is suspended using the ropes AB & AC. Each rope camn withstand a maximum of 10KN before it breaks. AB Always remains horizontal. Determine the smallest angle to which the crate can be suspended before one of the ropes breaks.



2. The automobile engine block is suspended by a system of cables as shown in fig. The mass of the block is 200 kg. The system is stationary. What are the tensions in cables AB and AC?



3. Two beams AB & CD are shown in the Figure. A & D are hinged Supports. B & C are Roller Supports. Calculate the Resultant force & angle.



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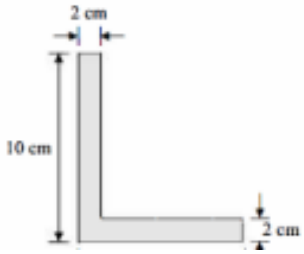
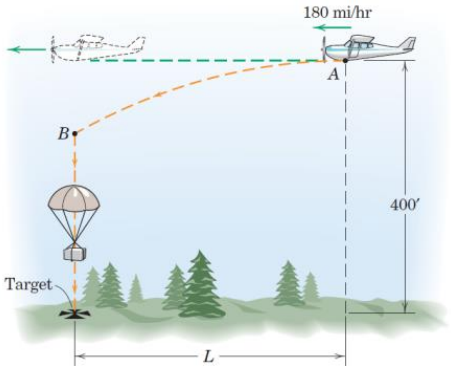
Assignment – 2

ANSWER THE FOLLOWING:

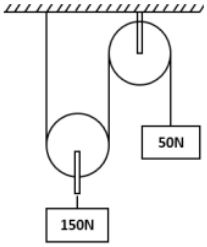
1. Find the moments of inertia of the angle section shown about centroidal axes. Also, find the radii of gyration about the same axes



2. A small airplane flying horizontally with a speed of 180 mi / hr at an altitude of 400 ft above a remote valley drops an emergency medical package at A. The package has a parachute which deploys at B and allows the package to descend vertically at the constant rate of 6 ft /sec. If the drop is designed so that the package is to reach the ground 37 seconds after release at A, determine the horizontal lead L so that the package hits the target. Neglect atmospheric resistance from A to B



3. Two blocks of weight 150N and 50N are connected by a string and passing over a frictionless pulley as shown in figure. Determine the acceleration of blocks A and B & the tension in the string.



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