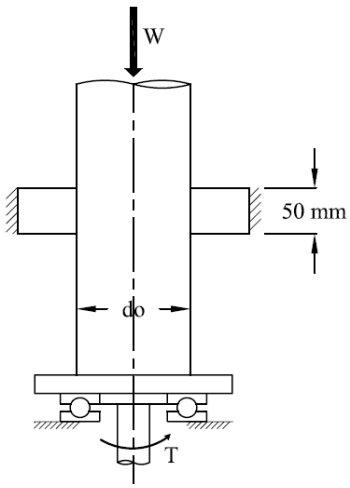
College of Engineering & Technology

Department: Mechanical Engineering Marks: 20
Lecturer: Dr. Rola Afify Time: 3.00 - 4.00
Course Code: ME356 Date: 10/12/2013

Answer the following questions:

Question one (8 marks)

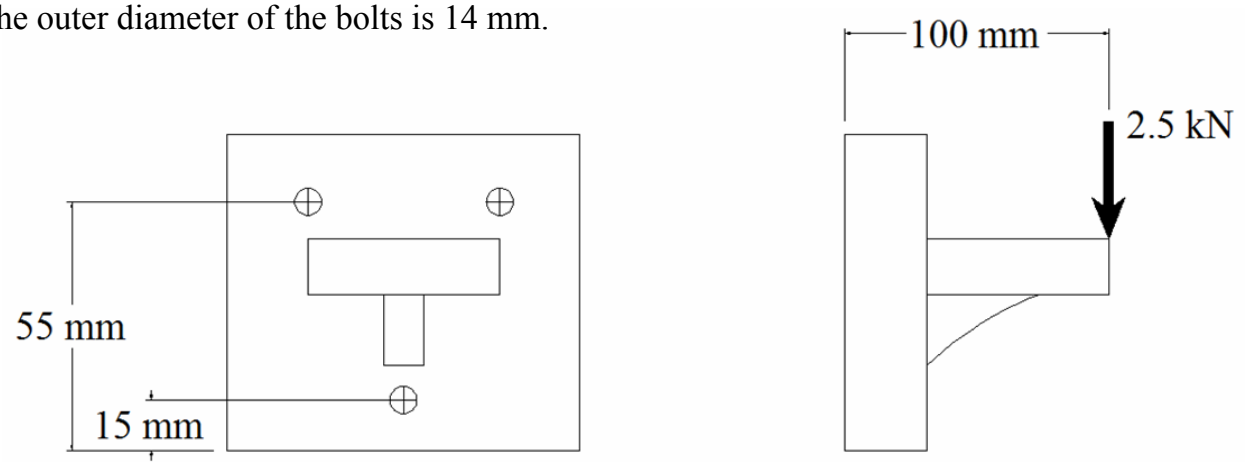


If it is required to lower a car (W) using Double Square threads with inner and outer diameters of 50 mm and 58 mm, respectively. The friction coefficient between screw and the nut is 0.2 and the car weight 15 kN, determine:

a) The lowering Torque (T).
b) Is the screw self locking, Why?
c) Find the bearing stress between the screw and the nut teeth.

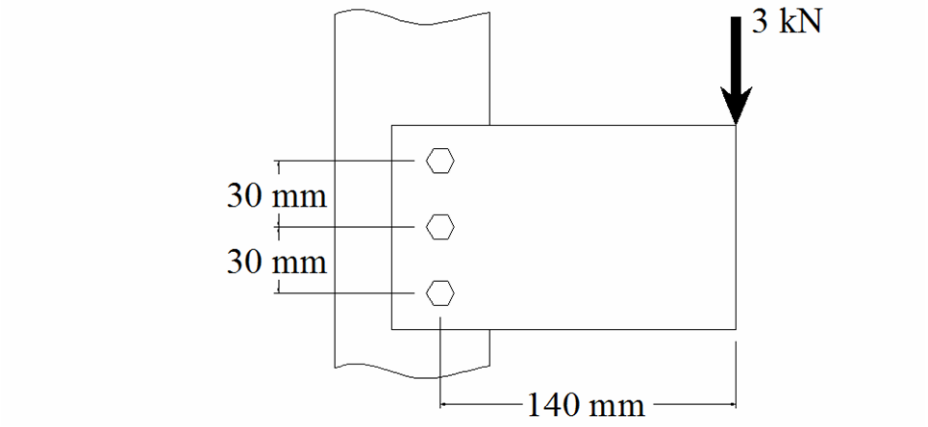
Question two (6 marks)

For the bolted Joint shown in following figure, find the maximum normal and shear stresses if the outer diameter of the bolts is 14 mm.



Question three (6 marks)

For the bolted Joint shown in following figure; find the outer diameter of the bolts if the Yield strength 350 MPa and factor of safety 2.



Good Luck

Dr. Rola Afify