College of Engineering & Technology

Department: Mechanical Engineering Marks: 15
Lecturer: Dr. Rola Afify Time: 9.15 - 10.00
Course Code: ME276 Date: 5/11/2014

Name: R.N.:

Answer the following questions:

Question one (5 marks)

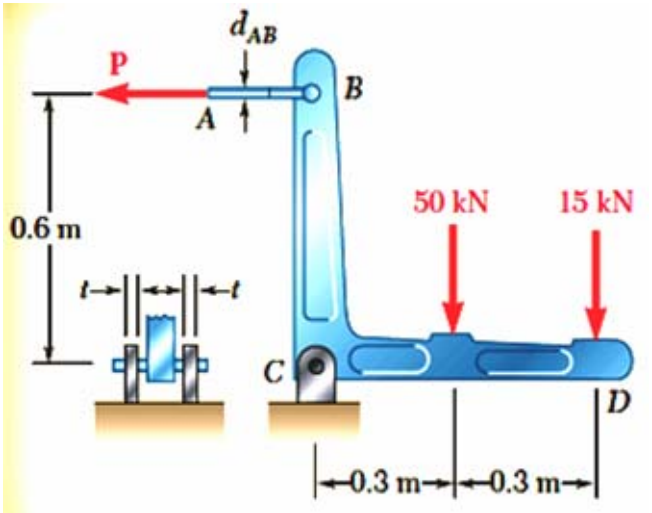
Calculate the force needed to shear a sheet of metal 6 mm thick and 0.7 m wide given that the ultimate shear stress is 50 MPa.

Question two (10 marks)

Two forces are applied to the bracket BCD as shown in the figure.

(a) Knowing that the control rod AB is to be made of a steel having an ultimate normal stress of 600 MPa, determine the diameter of the rod for which the factor of safety with respect to failure will be 3.3.

(b) The pin at C is to be made of a steel having an ultimate shearing stress of 350 MPa. Determine the diameter of the pin C for which the factor of safety with respect to shear will also be 3.3.



Good Luck

Dr. Rola Afify