College of Engineering & Technology

Department: Mechanical Engineering Marks: 15
Lecturer: Dr. Rola Afify   Time: 11.15 - 12.00
Course Code: ME276   Date: 5/11/2014
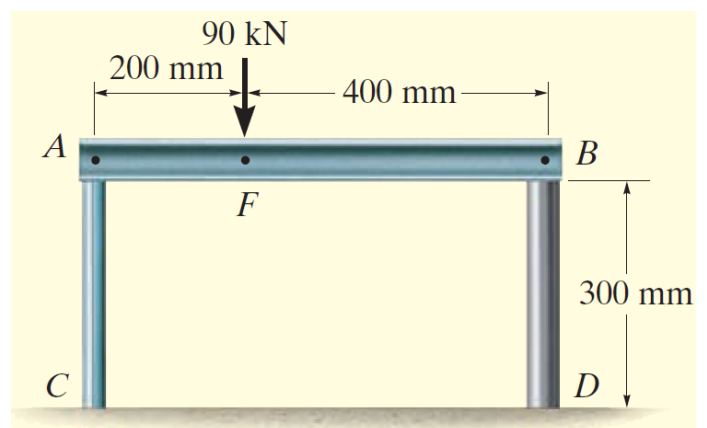
Name: R.N.:

Answer the following questions:
Question one (5 marks)

Calculate the force needed to punch a hole 25 mm diameter in a sheet of metal 4 mm thick given that the ultimate shear stress is 60 MPa.

Question two (10 marks)

Rigid beam AB rests on the two short posts shown in the figure. AC is made of steel and has a diameter of 20 mm, and BD is made of aluminum and has a diameter of 40 mm. Determine the displacement of point F on AB if a vertical load of 90 kN is applied over this point. Take $E_{steel} = 200$ GPa, $E_{alum} = 70$ GPa.

Dr. Rola Afify