



College of Engineering & Technology

Department: Mechanical Engineering

Marks: 15

Lecturer: Dr. Rola Afify

Time: 2:00 – 2:30

Course Code: ME276

Date: 24/12/2014

Name: _____

R.N.: _____

Answer the following questions:

Question one (5 marks)

Calculate the force needed to punch a hole 30 mm diameter in a sheet of metal 3 mm thick given that the ultimate shear stress is 60 MPa.

Question two (10 marks)

The two members, shown in Figure 2, are pinned together at B . If the pins have an allowable shear stress of $\tau_{\text{allow}} = 90$ MPa, and allowable tensile stress of rod CB is $(\sigma_t)_{\text{allow}} = 115$ MPa. Determine to nearest mm the smallest diameter of pins A , B and C and the diameter of rod CB necessary to support the load.

