



College of Engineering & Technology

Department: Mechanical Engineering

Marks: 15

Lecturer: Dr. Rola Afify

Time: 11.00 - 12.00

Course Code: ME356

Date: 11/11/2015

Name:

R.N.:

Answer the following questions:

Question one (6 marks)

A shaft 50 mm diameter and 0.7 m long is subjected to a torque of 1200 N.m. Calculate the shear stress and the angle of twist. Take $G = 90 \text{ GPa}$.

(Hint: $\frac{T}{J} = \frac{G\theta}{L} = \frac{\tau}{r}$)

Question two (9 marks)

The 50 mm diameter rod, shown in figure, is subjected to the loads shown. Determine the maximum stress at the surface containing A and B.

You may use this $\sigma_{\max} = \frac{\sigma}{2} + \sqrt{\left(\frac{\sigma}{2}\right)^2 + \tau^2}$

