



## College of Engineering & Technology

Department: Mechanical Engineering

Marks: 15

Lecturer: Dr. Rola Afify

Time: 3.00 - 4.00

Course Code: ME356

Date: 11/11/2015

Name:

R.N.:

**Answer the following questions:**

### **Question one (6 marks)**

A shaft 40 mm diameter is made from steel and the maximum allowable shear stress for the material is 50 MPa. Calculate the maximum torque that can be safely transmitted by the shaft. Take  $G = 90$  GPa.

### **Question two (9 marks)**

Determine the maximum stresses at section a-a shown in Figure.

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

