College of Engineering & Technology

Department: Mechanical Engineering   Marks: 15
Lecturer: Dr. Rola Afify   Time: 10.30 - 12.00
Course Code: ME356   Date: 29/10/2013

Name:

Answer the following questions:
Question one (6 marks)

A) Define:

   i) Strength:

   ii) Ductility:

B) What are the general procedures in Machine Design?

Question two (9 marks)

During the conversion of a ship's propelling machinery, it is decided to replace an existing 250 mm diameter solid propeller shaft, transmitting 950 kW at 80 rev/min, by a hollow steel shaft, the internal diameter of which is to be one-half of its external diameter. The hollow shaft is to be capable of transmitting 1500 kW at 80 rev/ min, with the same maximum shear stress as for solid shaft. Calculate this maximum shear stress, and use the value obtained to determine the dimensions of the hollow shaft.