



College of Engineering & Technology

Department: Mechanical Engineering

Lecturer: Dr. Rola Afify

Course Code: ME276

Marks: 15

Time: 12.30 - 2.00

Date: 10/12/2014

Name:

Reg. No.:

Answer the following questions:

Question one (10 marks)

The splined ends and gears attached to the solid steel shaft shown in Fig.1 are subjected to the torques shown. Determine the angle of twist of end *B* with respect to end *A*, maximum shear stress in the shaft and draw the torque diagram. The shaft has a diameter of 40 mm and modulus of Rigidity 80 GPa.

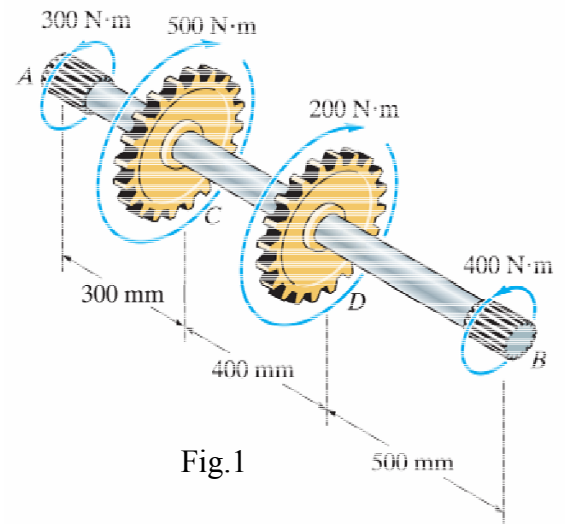


Fig.1

Question two (10 marks)

The solid rod shown in Fig. 2 has a diameter of 2 cm. If it is subjected to the force of 500 N, determine the state of stress and the principal stresses at point A.

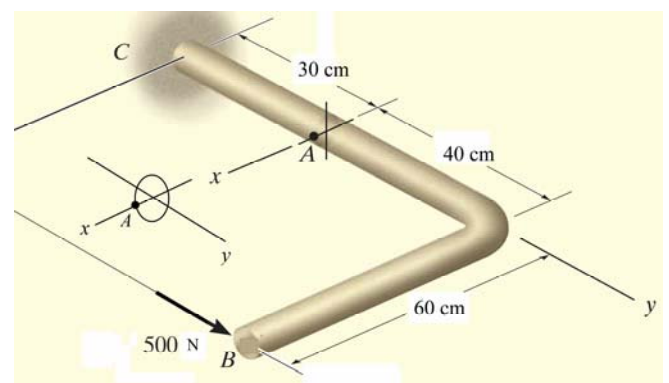


Fig. 2

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Dr. Rola Afify