



College of Engineering & Technology

Department: Mechanical Engineering

Marks: 10

Lecturer: Dr. Rola Afify

Time: 3.00 - 4.00

Course Code: ME356

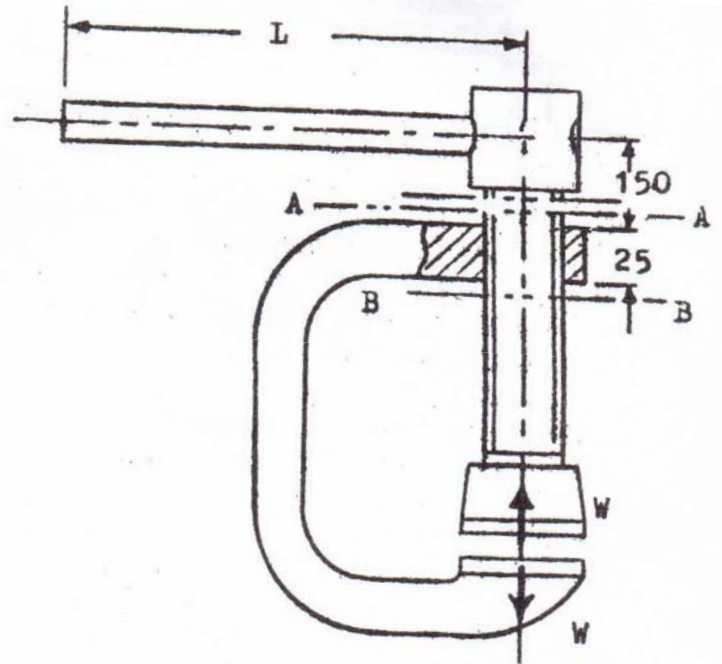
Date: 11/12/2012

Answer the following question:

Question one (10 marks)

The following data apply to the C-clamp show in figure:

- Pitch = 1.75 mm.
- Single Square threaded.
- Outside diameter = 12 mm.
- Inner area = 76.25 mm².
- Coefficient of thread friction = 0.12
- Coefficient of collar friction = 0.25
- Mean collar radius = 6mm
- Load $W = 4$ kN
- Operator can comfortably exert a force of 80 N at the end of the handle.



1. What is the needed length of handle?
2. What is the maximum shear stress in the screw body?
3. What is the bearing stress on the threads?

You may use this

$$T = W \frac{dm}{2} \left[\frac{\pi \mu dm \sec \alpha + L}{\pi dm - \mu L \sec \alpha} \right] + \frac{\mu_c W dm_c}{2}$$