



College of Engineering & Technology

Department: Mechanical Engineering
Lecturer: Dr. Rola Afify
Course Code: ME356

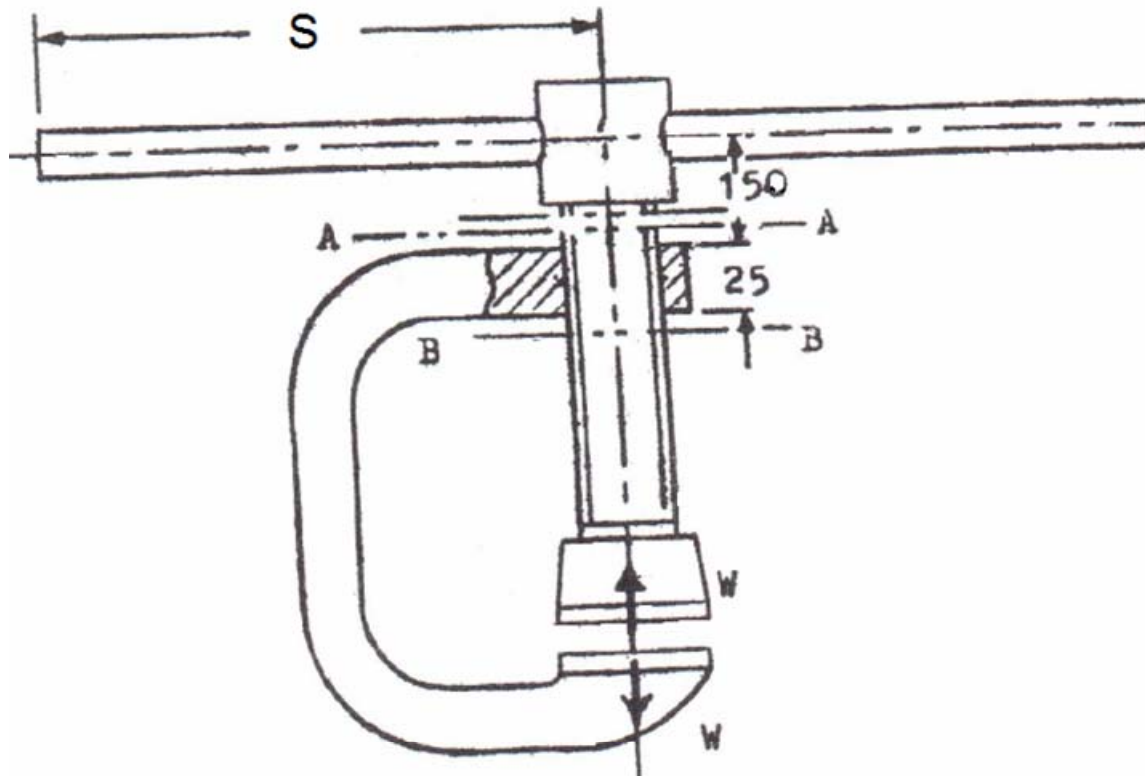
Marks: 20
Time: 3.00 - 4.00
Date: 16/12/2015

20

Name: _____

R.N.: _____

Answer the following question:



The 70 mm screw of a 10 kN shop press, shown in Figure, has a square thread. The operator's force may be taken 180 N for each hand but he is using only one hand. The mean diameter of collar is 60 mm. Determine:

- The length S assuming that the coefficient of friction is 0.12 in the threads and neglected at the collar. The inner diameter is 58 mm.
- The efficiency of the press.
- Is the screw self-locking? Explain.
- The maximum normal and shear Stresses in the screw.
- The shear stress on the screw and nut threads.
- The bearing stress in the threads.

You may use this

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