College of Engineering & Technology

Department: Mechanical Engineering   Marks: 20
Lecturer: Dr. Rola Afify   Time: 1.00 - 2.10
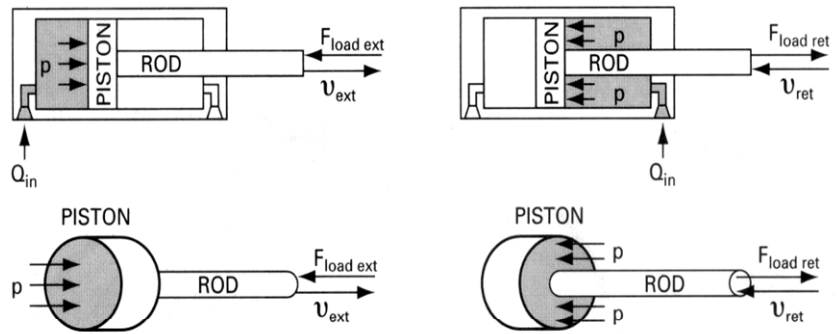Course Code: ME464   Date: 30/4/2013

Name:

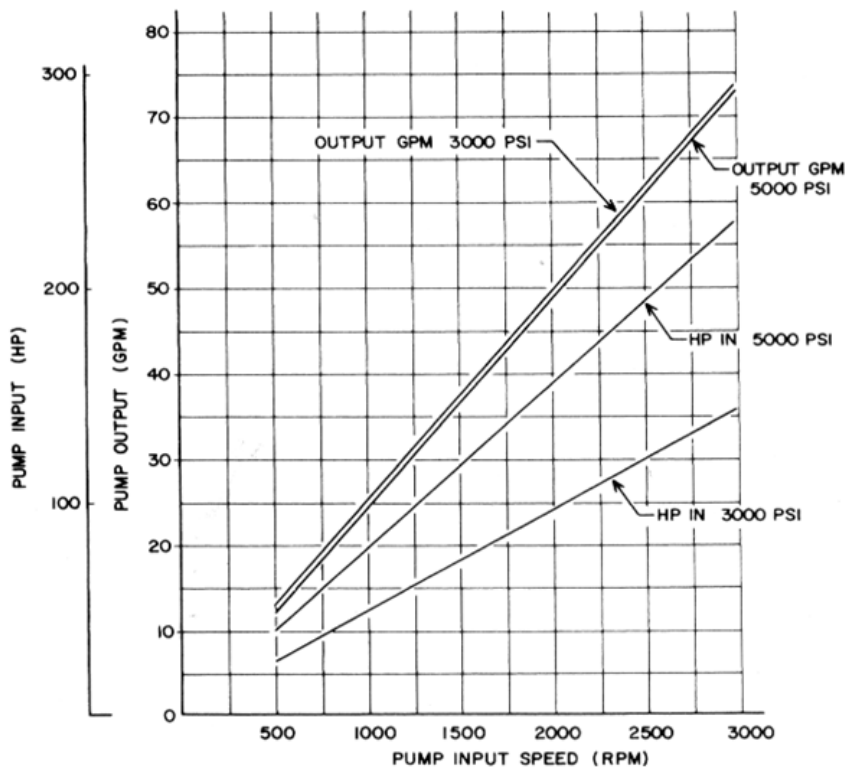**Answer the following questions:**
Question one (5 marks)

Prove that: $F_{ext} > F_{ret}$ & $V_{ext} < V_{ret}$

Question two (10 marks)

The shown graph gives the pump input horsepower (hp), and pump output flow (gpm) as a function of Pump speed, for pressure level of 3000 psi. The volumetric displacement of the pump is 6 in^3/rev.

i- Calculate the volumetric efficiency at the pressure level, at input power of 100 hp.

ii- Calculate the mechanical efficiency at the pressure level, at 2000 rpm.

Question three (5 marks)
Write down the words that represent each of the following: