



College of Engineering & Technology

Department: Mechanical Engineering
Lecturer: Dr. Rola Afify
Course Code: ME464

Marks: 15
Time: 11:15 – 12:00
Date: 19/3/2013

Name: Model Answer

Answer the following questions:

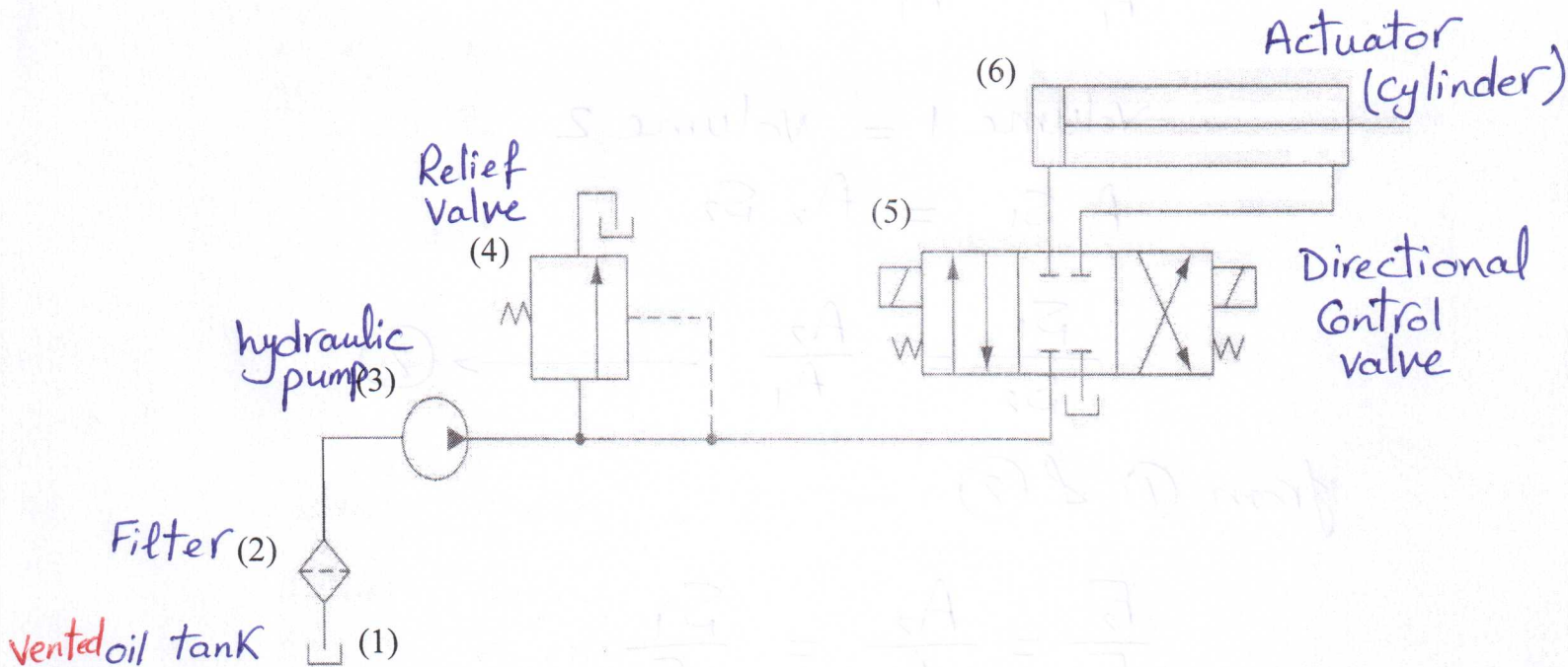
Question one (3 marks)

What are the advantages of using Fluid Power? (mention three of them)

- 1- Ease and accuracy of control.
- 2- Multiplication of force.
- 3- Constant force or torque.
- 4- simplicity, safety and economy
- 5- protection against overloads.
- 6- Infinitely variable speed control.
- 7- Have the highest horsepower-per-weight ratio.

Question two (6 marks)

Write the name of each component in the following Hydraulic circuit



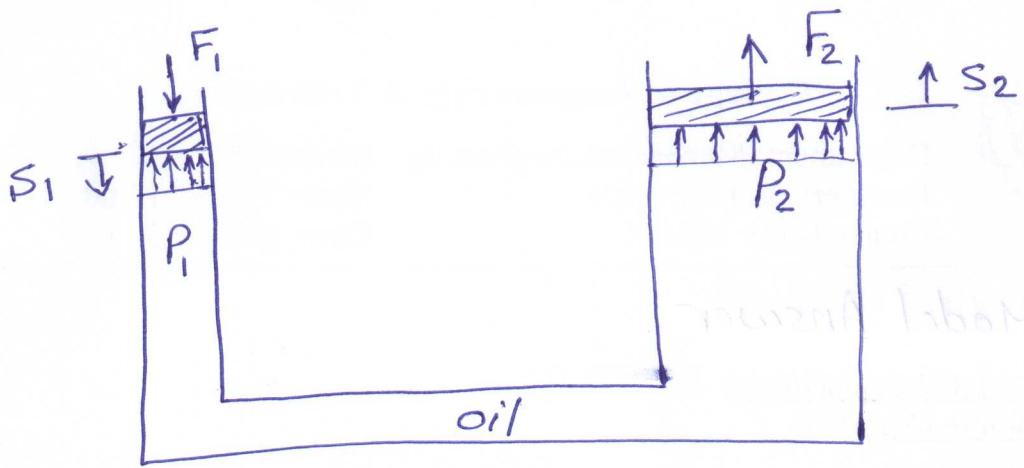
Question three (6 marks)

Does a Hydraulic Jack produce More Energy than it receives?

No, The energy input to the hydraulic jack equals the energy output from the jack.

Good Luck 1/1

prove



$$P_1 = P_2$$

$$\frac{F_1}{A_1} = \frac{F_2}{A_2}$$

$$\frac{F_2}{F_1} = \frac{A_2}{A_1} \longrightarrow \textcircled{1}$$

$$\text{Volume 1} = \text{Volume 2}$$

$$A_1 S_1 = A_2 S_2$$

$$\frac{S_1}{S_2} = \frac{A_2}{A_1} \longrightarrow \textcircled{2}$$

from $\textcircled{1}$ & $\textcircled{2}$

$$\frac{F_2}{F_1} = \frac{A_2}{A_1} = \frac{S_1}{S_2}$$

$$\boxed{F_1 S_1 = F_2 S_2}$$