# Chapter 8 Physics Pretest

# Part 1. Essay questions

* Be ready to use complete sentences in answering the following questions and use diagrams to support or enhance your answers.
* Know how buoyant force works, what it depends upon, classroom examples and formulas used for solving problems
* Archimedes’ principle and examples
* Be able to describe how pressure changes in a fluid. Vertically and horizontally
* Be able describe Bernoulli’s principle using examples from class
* Continuity equations and Bernoulli’s
* Viscosity
* Properties of an ideal fluid

1. What happens to a helium-filled balloon released into the air? Does it expand or contract? Does it stop rising at some point? (10 points).

2. Describe Archimedes’ principle. (5 points)

3. Describe how pressure changes in a fluid as you move horizontal and vertical. (5 points)

4. Describe Bernoulli’s principle using one of the examples used in class. (10 points)

5. What is viscosity? Include examples. (5 points)

6. What is an ideal fluid? What three properties are they assumed to have? (6 points)

**Part 2. Problems.**

Show your work and include the formula used to solve each problem.

Givens: Density of water equals 1.00 x 103 kg/m3. Area of a circle = Π r 2. The density of sea water is 1.025x103 kg/m3. Atmospheric pressure =1.01 x 105 Pa

1. The Hulk has a volume of 4.91 x 10-1 m3. What is The Hulk's mass if his apparent weight is 3.14 x 102 N as he is walking, completely submerged, on the bottom of a lake?
2. A large piston can lift a mass of 3.50 x 10 5 kg. A force of 3.30 x 103 N is applied to a smaller piston with an area of .55 m2, what must be the large piston’s area be?
3. A fresh water supply tunnel, that the Lizard (one of Spiderman's enemies) is hiding in is level. The circular tunnel has a diameter of 8.25 m. Suppose water flows through the tunnel at a speed of 3.5 m/s until it reaches a narrow section where the tunnel’s diameter is 3.50 m. The pressure in the narrow section is 92 kPa. Use the continuity equation to find the water’s speed in the narrow section of the tunnel. Then find the pressure in the wide portion of the tunnel.