

SMS-204: Integrative marine sciences, physics.

Quiz Lab 3.

- 1. An object is unstable when:**
 - a. Its center of gravity and buoyancy are close.**
 - b. Its center of gravity and buoyancy are far.**
 - c. Its center of buoyancy is above its center of gravity.**
 - d. Its center of gravity is above its center of buoyancy.**

- 2. Forces acting on an object at rest in a fluid:**
 - a. Gravity, buoyancy and drag.**
 - b. Gravity and buoyancy.**
 - c. Drag and gravity.**
 - d. Buoyancy and drag.**

- 3. Energy, work, force and pressure.**
 - a. Energy equals force times pressure.**
 - b. Force is the capacity to apply pressure (same units).**
 - c. Work equals pressure times distance.**
 - d. Energy is the capacity to do work (same units).**

- 4. A consequence of Bernoulli's principle:**
 - a. Fluid accelerates as it moves from low to high pressure.**
 - b. Fluid decelerates as it moves from low to high pressure.**
 - c. Mass is conserved along fluid flows.**
 - d. Friction is not important.**

- 5. Friction:**
 - a. Causes velocity to be reduced relative to what it would be based on Bernoulli's principle.**
 - b. Causes kinetic energy to be converted to heat.**
 - c. Its impact increases as we get closer to a boundary (no-slip).**
 - d. All of the above.**

- 6. An empty plastic balloon is attached to a SCUBA (pressurized air) bottle under water. You release some air from the bottle and fill the balloon with air (without any leak to the water). Then:**
- a. The combined buoyancy of the bottle and balloon will not change.**
 - b. There is not enough information to answer this question.**
 - c. The combined buoyancy of the bottle and balloon will decrease**
 - d. The combined buoyancy of the bottle and balloon will increase**
- 7. The weight of an object in air compared to when it is completely immersed in water is:**
- a. The same as when it is immersed**
 - b. Less in air than when it is immersed.**
 - c. More in air than when it is immersed**
 - d. Proportional to the depth of submersion.**
- 8. Icebergs are mostly submerged when in water because**
- a. Ice is half as dense as water**
 - b. Ice is slightly less dense than water**
 - c. Ice is much more dense than water**
 - d. Ice is slightly more dense than water**
- 9. A Pitot tube:**
- a. Is a device to measure atmospheric pressure.**
 - b. Measures velocity by measuring the speed of the fluid.**
 - c. Measures velocity by comparing static and dynamic pressures.**
 - d. Measures the density of moving air.**
- 10. An object will have an increase in the buoyancy force acting on it if**
- a. its volume decreased.**
 - b. its mass increased.**
 - c. its mass decreased.**
 - d. its volume increased.**