

SMS-204: Integrative marine sciences, physics.

Quiz Lab 3.

- 1. An empty plastic balloon is attached to a SCUBA (pressurized air) bottle under water. You release some air from the SCUBA 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. The combined buoyancy of the bottle and balloon will increase.**
 - c. The combined buoyancy of the bottle and balloon will decrease**
 - d. There is not enough information to answer this question.**

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

- 3. 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. a & b.**
 - d. None of the above.**

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

- 5. A Pitot tube:**
 - a. Measures velocity by measuring the speed of the fluid.**
 - b. Measures velocity by comparing static and dynamic pressures.**
 - c. Is a device to measure atmospheric pressure.**
 - d. Measures the density of moving air.**

6. **The weight of an object in air compared to when it is completely immersed in water is:**
 - a. **More in air than when it is immersed.**
 - b. **Less in air than when it is immersed.**
 - c. **The same as when it is immersed.**
 - d. **Proportional to the depth of submersion.**

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

8. **An object will feel an increase in the buoyancy force acting on it if**
 - a. **its volume decreased.**
 - b. **its volume increased.**
 - c. **its mass decreased.**
 - d. **its mass increased.**

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

10. **Icebergs are mostly submerged when in water because**
 - a. **Ice is significantly less dense than water**
 - b. **Ice is significantly more dense than water**
 - c. **Ice is slightly less dense than water**
 - d. **Ice is slightly more dense than water**