

SMS-204: Integrative marine sciences, physics.

Quiz Lab 5.

- 1. When an object of constant density is sinking in a stratified fluid:**
 - a. As the density of the fluid increases sinking speed decreases.**
 - b. As the density of the fluid increases sinking speed increases.**
 - c. As the density of the fluid increases sinking speed stays the same.**
 - d. As the density of the fluid increases sinking accelerates.**

- 2. The Re number associated with 1m long Tuna swimming at one body-length per second in sea water is:**
 - a. Much larger than 1.**
 - b. Can be computed only if the Tuna is sinking.**
 - c. Much less than 1.**
 - d. About 1.**

- 3. Why do we care about Re ?**
 - a. It helps us classify swimmers into fast and slow**
 - b. It helps us classify organisms into groups**
 - c. It helps us classify swimmers with similar swimming appendages**
 - d. It helps us classify flows of similar characteristics**

- 4. The drag force on a settling particle at low Re :**
 - a. Is similar to that of high Re .**
 - b. is linearly proportional to its velocity².**
 - c. is linearly proportional to its velocity.**
 - d. is linearly proportional to the fluids diffusivity.**

- 5. A flagellated bacterium, 2 micrometers in size, stops swimming after swimming 30body length per second. It will then:**
 - a. glide less than one body length before stopping.**
 - b. glide ten body lengths before stopping.**
 - c. glide about five body lengths before stopping**
 - d. glide about one body length before stopping.**

6. Reynold's experiment:

- a. Proved that turbulence exists.**
- b. Showed a new way to mix fluids.**
- c. Proved viscosity exists.**
- d. Showed how turbulence is a threshold phenomenon.**

7. The shape of a sinking particle:

- a. Does not affect sinking velocity.**
- b. Affects sinking velocity.**
- c. Provide thrust.**
- d. Changes the no-slip condition.**

8. One of the 'tricks' of low Re swimmers is to:

- a. Break symmetry between stroke and recovery stroke (ciliates)**
- b. Break left right symmetry (corkscrew motion, flagellates).**
- c. Both a and b.**
- d. None of the above.**

9. Turbulence:

- a. Is a property of the flow.**
- b. Is the property of the fluid.**
- c. Is the property of the particle in a fluid.**
- d. All of the above.**

10. Size of a marine organism, in general,

- a. correlates with their own swimming velocity.**
- b. correlates with their prey swimming velocity.**
- c. correlates with their predators swimming velocity.**
- d. correlates with their swimming direction.**