

SMS-303: Integrative marine sciences, physics (5544).

Quiz Lab 1.

- 1. Group and phase speeds of waves:**
 - a. always have the same value.**
 - b. Can have the same value.**
 - c. never have the same value.**
 - d. None of the above.**

- 2. Deep water waves:**
 - a. Are waves with small wavelengths compared to the depth of the fluid.**
 - b. Tsunami are deep water waves.**
 - c. All propagate at the same speed.**
 - d. Are waves of large amplitude.**

- 3. Shallow water waves:**
 - a. Are waves with small wavelengths compared to the depth of the fluid.**
 - b. Tsunami are shallow water waves.**
 - c. Suffer dispersion.**
 - d. Are waves of large amplitude.**

- 4. Neutrally buoyant particles in a wave:**
 - a. Have circular trajectory.**
 - b. Have smaller trajectories at depth compared to near the surface.**
 - c. Do not move with the speed of the wave.**
 - d. All of the above.**

- 5. Refraction occurs when:**
 - a. The wave gets steeper.**
 - b. When the ratio of amplitude to wavelength is $1/7$.**
 - c. When a wave front encounter a medium where it has a different wave speed.**
 - d. When a wave encounter a bluff.**

6. Wave energy:

- a. Propagates with the group speed.**
- b. Is proportional to the square of the amplitude.**
- c. Can be both potential and kinetic.**
- d. All of the above.**

7. A seich:

- a. Refers to water oscillation in a basin at the natural frequency of the basin (lake, bay).**
- b. Is the same for basins of variable depths but the same horizontal size.**
- c. Replaces water from one side of the lake with that of the other.**
- d. All of the above.**

8. Doppler shift:

- a. Occurs only for sound waves.**
- b. Changes the frequency of a wave to a higher frequency.**
- c. Refers to a change in frequency of a wave due to the relative motion of the receiver and/or the wave source.**
- d. All of the above.**

9. Hull speed:

- a. Relates the speed of a boat or an animal riding on the surface of water to that of gravity waves having the same length.**
- b. Explains why longer boat can go faster.**
- c. Both a and b.**
- d. Is a function of viscosity.**

10. Resonance

- a. Is the principle whereby we use reasoning to study science.**
- b. Is a concept from acoustics linking different waves.**
- c. Is what happens when wind piles water on one side of a lake.**
- d. Occurs when we force a system at its natural frequency.**