

SMS-204: Integrative marine sciences, physics

Quiz Lab 4.

- 1. Which of the cases below require the largest investment of heat into the water?**
 - a. Warm 1g of water by 1°C from 14 to 15°C.**
 - b. Cool 1g of water by 1°C from 15 to 14°C.**
 - c. Melt 1g of ice at 0°C.**
 - d. Evaporate 1g of water at 100°C.**

- 2. Conversion of kinetic energy to heat:**
 - a. Occurs due to turbulence.**
 - b. Occurs due to friction/viscosity.**
 - c. Occurs due to pressure.**
 - d. Occurs due to waves.**

- 3. The 'greenhouse' effect:**
 - a. Is mostly due to reflection/emission of visible radiation by the atmospheric greenhouse gases to the Earth's surface.**
 - b. Is mostly due to absorption of visible radiation by the atmosphere greenhouse gases**
 - c. Is mostly due to scattering of infrared radiation by the atmosphere greenhouse gases.**
 - d. Is mostly due to absorption and reflection/emission of infrared radiation by the atmosphere greenhouse gases to the Earth's surface.**

- 4. A sling psychrometer can be used to measure relative humidity because:**
 - a. When rotating it reaches the boiling point of water.**
 - b. The temperature of the wet bulb is colder than the dry one depending on humidity.**
 - c. The temperature of the wet bulb is warmer than the dry one depending on humidity.**
 - d. Evaporation occurs faster at high temperature.**

- 5. The ocean conveyor belt is primarily driven by:**
 - a. Warming of surface waters at the equator.**
 - b. Warming of bottom waters at hydrothermal vents.**
 - c. Cooling of bottom waters at deep cold spots.**
 - d. Cooling of surface waters at poles.**

6. **The coldest day of the year in the surface ocean in the northern hemisphere north of 35degree north is usually:**
 - a. **In September/October, when the daily averaged rate of heating changes from positive to negative.**
 - b. **In December, coincident with the shortest day of the year.**
 - c. **In June, coincident with the longest day of the year.**
 - d. **In February/March, when the daily averaged rate of heating changes from negative to positive.**

7. **In Galileo's thermometer:**
 - a. **Ball rise due to increased expansion of ball when warm.**
 - b. **Ball rise due to decrease in ball density when warmed.**
 - c. **Ball rise due to increased density of surrounding water when cooled.**
 - d. **Ball rise due to change in its mass with temperature.**

8. **The primary reason for the contrast of temperature between the poles and equator is:**
 - a. **Sun radiation spreads over a larger area at the equator.**
 - b. **Sun radiation spreads over a larger area at the poles.**
 - c. **Winds and current transport heat from equator to poles.**
 - d. **Winds and current transport heat from poles to equator.**

9. **Which of the following is associated with water movement:**
 - a. **Radiation.**
 - b. **Conduction.**
 - c. **Convection.**
 - d. **None of the above.**

10. **Which of the following processes releases heat from the water to the environment (assuming both environment and water are at the same T)?**
 - a. **Melting and condensing.**
 - b. **Melting and evaporating.**
 - c. **Freezing and evaporating.**
 - d. **Freezing and condensing.**