

70 1. The global ocean covers approximately ____% of the Earth's surface.

SUN/Solar

2. What is the primary source of energy driving circulation of water in the Earth's hydrosphere?

SOLUTE

3. The substance being dissolved is referred to as the ____.

SOLVENT

4. The substance doing the dissolving is called the ____.

FALSE

5. "True or False: water is a monopolar molecule, which makes it a very good solvent."

CONCENTRATION

6. The measurement of the quantity of solute in a given quantity of solution is termed ____

5%

7. Calculate the mass percent of sodium chloride in a solution in which 10 grams of NaCl is dissolved in 190 grams of water. $10g NaCl + 190g H_2O = 200g$ with $\frac{10g}{200g} \times 100\% = 5\%$

TRUE

8. True or False: warm water is less dense than cold water due to volume and density changes.

TRUE

9. "True or False: the difference between ice, liquid, and water vapor is one of temperature and molecular kinetic energy."

HYDROLOGIC

10. The transfer of water from the oceans to the atmosphere to the surface of the Earth and back to the oceans is referred to as the ____ cycle.

THERMOHALINE

11. Density-driven vertical circulation of ocean water due to salinity and temperature contrasts is referred to as Answer circulation.

B 2500 kg/m³

12. A metal block has a mass of 5000 kg and a volume of 2 cubic meters. What is the block's density?

A) 1000 kg/m³ B) 2500 kg/m³ C) 5000 kg/m³ D) 10,000 kg/m³ E) none of these

FALSE

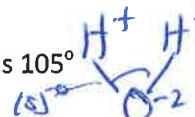
13. In an ocean system, an increase of water temperature will most likely result in strong down-welling currents, carrying water to the ocean floor. A. True B. False Rise

CONVECTION

14. Heat transfer with a transfer of mass (e.g. movement of air or water) is referred to as ____.

TRUE

15. True or False: the bond angle between hydrogen atoms and oxygen in the water molecule is 105°



70

16. The global ocean covers approximately ____% of the Earth's surface (use only numeric answers).

855.6 lb

17. Given that the weight density of water is 62.4 lb/cu. ft. and that there are 7.48 gallons in 1 cubic foot, how much does 100 gallons of water weigh? $100 \text{ GAL} \left(\frac{1 \text{ FT}^3}{7.48 \text{ GAL}} \right) \left(\frac{62.4 \text{ lb}}{\text{FT}^3} \right) = 835.6 \text{ lb}$

B

18. The density of a material increases with increasing temperature, due to volume expansion relative to its mass.

A. True

B. False

B

19. Heat transfer in the ocean and atmosphere is primarily by which of the following processes:

A. Radiation

B. Convection

C. Reflection

D. Refraction

E. None of the above

B

20. A metal block has a density of 500 kg per cubic meter and a volume of 3 cubic meters. What is the block's mass?

A) 1000 kg

B) 1500 kg

C) 5000 kg

D) 10,000 kg

E) none of these

$$D = \frac{m}{V} \quad m = D \cdot V = 500 \frac{\text{kg}}{\text{m}^3} (3 \text{ m}^3) = 1500 \text{ kg}$$

FALSE

21. 100 grams of sodium chloride dissolved in 1 Kg of water results in a concentration of 1000 parts per thousand. A. True

B. False

$$\text{PPT} = \frac{g}{L} = \frac{100g NaCl}{1L H_2O} = \frac{100}{100} = 100 \text{ PPT}$$

CONVECTION

22. List the three mechanisms of heat transfer, in alphabetical order.

CONVECTION
RADIATION

16,580 m

23. Given that 1 km = 1000 m, 1 m = 3.28 ft, and that 1 mile = 5280 ft; how many meters are contained in 10.3 miles? SHOW ALL OF YOUR UNIT ALGEBRA.

$$(10.3 \text{ mi}) \left(\frac{5280 \text{ ft}}{1 \text{ mi}} \right) \left(\frac{1 \text{ m}}{3.28 \text{ ft}} \right) = 16,580 \text{ m}$$

24. In the space provided at left, draw a diagram of the water molecule, include the bond angle.

