

Practice Exam Water

- Water is
 - polar molecule with polar covalent bonds between H and O
 - non-polar molecule with polar covalent bonds between H and O
 - polar molecule with non-polar bonds between H and O
 - non-polar molecule with non-polar bonds between H and O
- Iodine is a solid and bromine is a liquid at STP because of
 - vander Waal's forces
 - hydrogen bonding
 - dispersion forces
 - glue
- It takes more energy to turn water into steam than ice into water because:
 - hotter work requires more energy
 - higher temperatures make Joules less efficient
 - making steam requires breaking some hydrogen bonds
 - making steam requires breaking all of the hydrogen bonds
- You melt a 9.000 gram hunk of ice at 273K in your hand without temperature change. You used how many joules to melt this ice this?
 - 273.0 joules
 - 9.000 joules
 - 2457 joules
 - 3006 joules
- Surface tension in water can be broken by
 - electricity
 - heat
 - surfactants
 - bases
- How many grams of NaCl can dissolve into 50 mL of water at 90°C?
 - 40 grams
 - 20 grams
 - 50 grams
 - 90 grams
- When CaCl_2 dissolves in water
 - it is a covalent compound so it is NOT an electrolyte
 - it is an ionic compound, so it is an electrolyte
 - it is a covalent compound so it is an electrolyte
 - it is an ionic compound so it is NOT an electrolyte
- Which compounds show a decrease in solubility as temperature rises in an aqueous solution?
 - KI & KCl
 - NaNO_3 & NaCl
 - SO_2 & HCl
 - NH_4Cl & KClO_3
- Oil and vinegar do not mix. That's because
 - they are miscible
 - they are immiscible
 - they are both polar covalent liquids
 - neither is a non-polar solvent
- A solution that contains more solute than theoretically possible is called:
 - saturated
 - unsaturated
 - immiscible
 - super-saturated

11. Why does CH_4 have a much lower boiling point (-164°C) than NH_3 (-33°C)?
- A. methane has many hydrogen bonds
 - B. ammonia has many hydrogen bonds
 - C. methane has a greater molecular mass than ammonia
 - D. methane has more bonds to the central atom (4 vs. 3) than ammonia
12. Like dissolves like would account for:
- A. oil not dissolving in water
 - B. HCl dissolving well in water
 - C. LiCl dissolving well in water
 - D. all three of the above
13. Skip this one
14. When you add salt to water...
- A. boiling point increases, freezing point decreases
 - B. boiling point decreases, freezing point decreases
 - C. boiling point increases, freezing point increases
 - D. boiling point decreases, freezing point increases
15. CaCl_2 is used rather than NaCl to melt ice because
- A. CaCl_2 ionizes into three moles of particles, NaCl into only 2 moles
 - B. it's cheaper and cheaper is better
 - C. it does not mess up rugs as much
 - D. it tastes better after it runs off into our rivers in spring time
16. Hydrogen bonding will:
- A. cause a lower vapor pressure in water compared to rubbing alcohol
 - B. cause a high boiling point in water compared to C_2H_6 .(ethanol)
 - C. cause surface tension to be great enough for bugs to stand on water
 - D. all of the above
17. The amount of joules it will take to melt 60.0 grams of ice at zero centigrade to water at the same temperature is
- A. 60 joules B. 334 joules C. 20040 joules D. 135,600 joules
18. The energy required to heat 100.0 grams of water from 3°C to 17°C is
- A. 100 joules B. 3340 joules C. 1400 joules D. 5852 joules

19. Gases generally have lower solubility as solution temperature increases. This might explain why people tend to burp after gulping cold soda. Why does this happen?
- A. gluttony will get you every time
 - B. cold soda holds more CO_2 than the soda that warms in your belly
 - C. the carbon dioxide is a time released gas in the soda
 - D. it's really hydrogen gas from the reaction between soda and the HCl in your stomach
20. Water freezes at STP at A. 373K B. 100°C C. 273K
D. cannot be determined from the information given
21. Water has a low vapor pressure due to its many hydrogen bonds. What is low vapor pressure?
- A. water gas remains close to the ground
 - B. water doesn't evaporate much under glass in a sealed system
 - C. water and water gas cannot reach dynamic equilibrium, it tends to condense more than evaporate
 - D. water evaporates well, just most other liquids evaporate less well
22. What is the reason that ice floats on water?
- A. hydrogen bonds force water into a six sided shape with space in the center
 - B. van der Waal's forces (you don't have to know van der Waal)
 - C. ice (solid water) has a greater density than liquid water
 - D. ice has a higher kinetic energy than liquid water
23. When you dissolve ammonium nitrate into water
- A. the compound dissociates and the reaction is exothermic
 - B. the compound dissociates and the reaction is endothermic
 - C. the compound does not dissolve & the reaction is thermochemically neutral
 - D. the compound does not dissolve but the reaction is extremely exothermic
24. 522.0 grams of water has...
- A. 29 moles and a mass of one kilogram
 - B. 29 moles and a boiling point of 273K
 - C. 29 moles and a mass of 522.0 grams
 - D. a boiling point of 100°C and a Molarity of 1.0
25. If you have a saturated solution of ammonia at 10°C of 1500.0 mL, and you heat it to a temperature of 90°C, and you are told that this solution cannot be supersaturated, how many grams of ammonia will come out of solution by the time it reaches the final temperature?
- A. 90 g B. 1500.0 g C. 900 g D. 1050 g