

AP Biology Fall Semester Review: set 2

1. In a single molecule of water, the two hydrogen atoms are bonded to a single oxygen atom by
 - A. hydrogen bonds
 - B. ionic bonds
 - C. polar covalent bonds

2. Water is able to form hydrogen bonds because
 - A. oxygen has a valence of 2
 - B. the water molecule is shaped like a tetrahedron
 - C. the water molecule is polar
 - D. the oxygen atom in a water molecule has a strong positive charge

3. What do cohesion, surface tension, and adhesion have in common with reference to water?
 - A. all increase when temperature increases
 - B. all are produced by covalent bonding
 - C. all are properties related to hydrogen bonding
 - D. all have to do with nonpolar covalent bonding

4. Water is transported in plant tissue against gravity due to which of the following properties?
 - A. cohesion
 - B. adhesion
 - C. hydrogen bonding
 - D. all of the above

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5. Which of the following is a correct definition of a kilocalorie?

- A. the amount of heat energy required to raise 1 gram of water by 1 degree Fahrenheit
- B. the amount of heat energy required to raise 1 gram of water 1 degree Celsius
- C. the measure of the average kinetic energy in 1 liter of water
- D. the amount of energy in 1 kg of glucose
- E. the amount of heat energy required to raise 1kg of water by 1 degree Celsius

6. Water is the densest at what temperature?

- A. 0 degree Celsius
- B. 4 degrees Celsius
- C. 32 degrees Celsius
- D. 100 degrees Celsius
- E. 212 degrees Celsius

7. Why does ice float in liquid water?

- A. the liquid state of water's energy pushes the ice up
- B. the ionic bonds between the molecules in ice prevent the ice from sinking
- C. ice always has air bubbles in it which help it float
- D. hydrogen bonds keep the molecules of ice farther apart than in the water due to electromagnetism

8. What would be the pH of a solution with a hydrogen concentration of 1×10^{-8} M?

- A. pH 2
- B. pH 4
- C. pH 6
- D. pH 8
- E. pH 10

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9. Which of the following solutions has the greatest concentration of hydrogen ions?

- A. gastric juice pH 2
- B. vinegar pH 3
- C. tomato juice pH 4
- D. black coffee pH 5
- E. household bleach pH 12

10. If the pH of a solution is decreased from 7 to 6, it means that the

- A. concentration of hydrogen has decreased to 10 times of what it was at a pH of 7
- B. concentration of hydrogen has increased to 10 times of what it was at a pH of 7
- C. concentration of hydroxide has increased to 10 times of what it was at a pH of 7

11. One liter of a solution with a pH of 3 has how many more hydrogen ions than 1 liter of a solution with a pH of 6?

- A. 3 times more
- B. 10 times more
- C. 100 times more
- D. 300 times more
- E. 1000 times more

12. The amount of dissolved oxygen found in water is dependent on which of the following?

- A. temperature of the water
- B. the amount of animals found in the water
- C. the amount of plant life in the water
- D. the amount of movement of the water
- E. all of the above impact the amount of DO in water

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13. The tendency of water molecules to stick together is referred to as
- A. adhesion.
 - B. polarity.
 - C. cohesion.
 - D. transpiration.
 - E. evaporation.
14. Water's surface tension and heat storage capacity is accounted for by its
- A. orbitals.
 - B. weight.
 - C. hydrogen bonds.
 - D. mass.
 - E. size.
15. A measure of the average kinetic energy of the molecules in a body of matter
- A. calorie
 - B. temperature
 - C. heat of vaporization
 - D. Caloria
16. Ice is lighter and floats in water because it is a crystalline structure held together by
- A. ionic bonds only.
 - B. hydrogen bonds only.
 - C. covalent bonds only.
 - D. Both A and C are correct.
 - E. A, B, and C are correct.

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17. Desert rabbits are adapted to the warm climate because their large ears aid in the removal of heat by

- A. the high surface tension of water.
- B. the high heat of vaporization of water.
- C. the high specific heat of water.
- D. the buffering capacity of water.
- E. the dissociation of water molecules.

18. The formation of ice during colder weather helps temper the seasonal transition to winter. This is mainly because

- A. the formation of hydrogen bonds releases heat.
- B. the formation of hydrogen bonds absorbs heat.
- C. there is less evaporative cooling of lakes.
- D. ice melts each autumn afternoon.
- E. ice is warmer than the winter air.

19. Which bonds must be broken for water to vaporize?

- A. ionic bonds
- B. nonpolar covalent bonds
- C. polar covalent bonds
- D. hydrogen bonds

20. The nutritional information on a cereal box shows that one serving of dry cereal has 90 calories (actually kilocalories). If one were to burn a serving of cereal, the amount of heat given off would be sufficient to raise the temperature of 1 kg of water how many degrees Celsius?

- A. 0.9 degrees C
- B. 9.0 degrees C
- C. 90.0 degrees C
- D. 900.0 degrees C
- E. 9000.0 degrees C

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21. Which of the following is possible due to the surface tension of water?

- A. Lakes don't freeze solid in the winter, despite low temperatures.
- B. A waterstrider can walk across a small pond.
- C. Organisms resist temperature changes although they give off heat due to chemical reactions.
- D. Water can act as a solvent.
- E. The pH remains neutral.

22. Mosquito larvae are able to get their air by hanging upside-down in the water at the surface. Their ability to do this is based on ...

- A. Genetic abnormalities
- B. Water pH balance
- C. Suckers on the abdominal region
- D. Surface tension of the water

23. An elephant is able to keep cool in the Savanna's of Africa by fanning his ears. This is due to

- A. Finding a pool of mud and bathing in it
- B. Fanning himself to stay cool
- C. Increased blood supply to the ears that will allow heat flow out of the body thru evaporation of water
- D. Genetic predispositions of behavior

24. The motion of water molecules is controled by...

- A. Kenetic and Potential Energy
- B. Potential and Mechanical Energy
- C. Electromagnatism and Kenetic Energy
- D. Electromagnatism and Mechanical Energy

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25. Climates tend to be moderate near large bodies of water because...

- A. a large amount of solar heat is absorbed by the gradual rise in temperature of water
- B. the gradual cooling of the water releases heat to the environment
- C. the specific heat of water helps to regulate air temperatures
- D. a great deal of heat is absorbed and released by the breaking and forming of hydrogen bonds
- E. of all of the above

26. Why is water such an excellent solvent?

- A. as a polar molecule, it can surround and dissolve ionic and other polar molecules
- B. it forms ionic bonds with ions, hydrogen bonds with polar molecules, and hydrophobic interactions with nonpolar molecules
- C. it forms hydrogen bonds with itself
- D. it has a high specific heat and high heat of vaporization
- E. it is wet and has a great deal of surface tension

27. Which body of water would be able to hold the most dissolved oxygen?

- A. Water from the Gulf of Mexico
- B. Water in Johnson creek after a major rain mixed with run-off
- C. Water from Lake Michigan (a fresh water lake) after the spring thaw
- D. Water from the Pacific ocean
- E. Water from a stock pond in North Texas in mid August

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28. Which of the following is the best definition for biology?
- A. the study of plant life
 - B. the study human systems
 - C. the study of biodiversity
 - D. the study of the impact of water and energy on living systems
 - E. the study of life
29. A maple leaf is at which level in the hierarchical organization of life?
- A. tissue
 - B. organ
 - C. organelle
 - D. organism
30. What is a localized group of organisms that belong to the same species?
- A. network
 - B. community
 - C. biome
 - D. ecosystem
31. Which of the following statements is one of the generalizations of "The Cell Theory"?
- A. new cells come from pre-existing cells
 - B. DNA is the genetic material of all cells
 - C. all cells contain a nucleus
 - D. life is extraterrestrial in origin

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32. One of the key distinctions between prokaryotic and eukaryotic cells is the presence of _____ cells, which is lacking in _____ cells.
- A. a nucleus in eukaryotic prokaryotic
 - B. a nucleus in prokaryotic eukaryotic
 - C. DNA in eukaryotic prokaryotic
 - D. DNA in prokaryotic eukaryotic
33. The maintenance of a relatively stable internal environment is referred to as
- A. taxonomy
 - B. metabolism
 - C. homeostasis
 - D. biome
34. As a result of photosynthesis, plants release _____ into the atmosphere.
- A. Carbon dioxide
 - B. Oxygen
 - C. Methane
 - D. Sulfur dioxide
35. Which branch of biology is concerned with naming and classifying of organisms?
- A. genetics
 - B. physiology
 - C. taxonomy
 - D. evolution

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36. Prokaryotes are found in which of the following Domains?

- A. Bacteria
- B. Eukarya
- C. Archaea
- D. Archaea and Bacteria
- E. Bacteria and Eukarya

37. Which of the following identifies the correct alignment from top to bottom (most inclusive to least) when considering categorizing life?

- A. kingdom,, phylum, class, order, genus, species
- B. domain, order, phylum, class, kingdom, genus, species
- C. kingdom, order, family, species, phylum
- D. species, genus, order, class, phylum, kingdom

38. Which of the following feedback systems, shuts down the chemical reaction as the concentration increases?

- A. dual feedback
- B. altruistic feedback
- C. positive feedback
- D. negative feedback

39. Which of the following is the best definition for eutrophication.

- A. The result of releasing of all the Oxygen in a body of water into the atmosphere without the replacement by mechanical or biological means.
- B. Massive death as a result of "Red Tide" contributed by global warming.
- C. The increase in nutrients from runoff into our local water sheds allow algae blooms to occur resulting in the locking-up of Oxygen within a system.
- D. Is the increase in nutrients as a result of decomposition of dead organisms.

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40. Which of the following will impact the rate of nutrient cycling the most?
- A. the availability of heat
 - B. the duration of light
 - C. the availability of water
 - D. the rate of decomposition
41. In which aquatic environment would you expect dissolved oxygen to be highest?
- A. A bog where the water is shallow and warm and there is a mat of aquatic plants
 - B. A mountain lake that is clear and cold
 - C. A marine tidepool
 - D. A cold mountain stream dropping over a series of small rock falls
 - E. A coral reef in a still lagoon
42. Which of the following will contain the least amount of dissolved Oxygen?
- A. Salt water at the polar regions
 - B. Warm water along the gulf coast in mid August
 - C. Water flowing down the Trinity river in January near DFW
 - D. Water adjacent to a thermal vent in the Pacific Rim
43. Which of the following would have the greatest capacity to hold Oxygen?
- A. Hot water from the ocean
 - B. Cold water from the Gulf of Mexico
 - C. Hot water off the shores of Florida
 - D. Cold water from a mountain spring in Colorado
 - E. Hot water from Rush Creek

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44. The laboratory method used to find the "end point" of a solution is called ... It is the method used to drop a liquid and swirl to find the end point one drop at a time. This method is used in acid/base chemistry and in determining dissolved Oxygen.

- A. tare
- B. tear
- C. titration
- D. balance
- E. osmoregulate

45. It is said that our weather systems are based on the uneven heating of the earth's surface. If you get right down to it, it is really based on...

- A. The availability of water, its surface tension and heat storage capacity
- B. The position of the moon
- C. The number of solar flares in a given week
- D. The randomness of cosmic bombardment

46. How many Domains are currently recognized by Biologists today?

- A. 2
- B. 3
- C. 4
- D. 6
- E. 8

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47. Which of the following is based on conservation of materials?
- A. Positive Feedback
 - B. Negative Feedback
48. The increase of dissolved Oxygen in water from a biological process is accomplished by ...
- A. increase rain fall
 - B. increase runoff from irrigation
 - C. increase growth in algae and other plants
 - D. increase in wave frequency
 - E. increase water flow over water falls
49. Eutrophication can be increased by excessive fertilizing followed by over watering.
- a. True
 - b. False
50. Eutrophication only occurs as a result of uncaring societies like ours not paying attention to our environment.
- a. True
 - b. False