1. Where would most of the freshwater available on Earth be located?
   A. glaciers and icebergs
   B. ponds and lakes
   C. rivers and streams
   D. springs and aquifers

2. The Clean Water Act passed by Congress in 1970 put restrictions on the quantity and type of pollutants that industries can release into rivers and lakes. What best describes this type of untreated wastewater when it enters the hydrosphere?
   A. groundwater contamination
   B. widespread contamination
   C. non-point source pollution
   D. point source pollution

3. Which property of water best explains why water droplets are able to stay in place on a leaf?
   A. adhesion
   B. cohesion
   C. density
   D. specific heat

4. What is the most likely result of overfishing in oceans?
   A. disrupted balance in ocean food webs
   B. increased reproduction of fish species
   C. disrupted ocean temperature patterns
   D. increased ocean food web productivity

5. Which conditions would most likely occur as a result of ocean upwelling?
   A. increased nutrients in surface waters
   B. decreased nutrients in surface waters
   C. increased temperatures in surface waters
   D. decreased photosynthesis levels in surface waters
A. coral reef
B. estuary
C. kelp forest
D. neritic zone

Scientists display their data for dissolved oxygen levels for the Redland River in a graph.

According to the graph, how many weeks during the summer was the river under stress?

A. 1 week
B. 2 weeks
C. 3 weeks
D. 6 weeks
9. What effect do waves in a river have on water quality?

A. a decrease in algae  
B. a decrease in sediment  
C. an increase in dissolved oxygen  
D. an increase in industrial pollution  

10. Scientists record the phosphates in Marchland River.

If the trend continues, what will scientists discover in Week 6?

A. The river will return to natural phosphate readings.  
B. The river will continue to move further into the danger zone.  
C. The phosphate level will stay at 0.85 ppm.  
D. The phosphate level will drop to 0.2 ppm.  

11. Which statement best describes the hydrosphere?

A. It includes only the water on the Earth's surface.  
B. It includes only freshwater on the Earth's surface.  
C. It includes water on the Earth's surface, underground, and in the atmosphere.  
D. It includes fresh and salt water on the Earth's surface and underground.  

12. The population of photosynthetic organisms is higher in the neritic zone and surface waters than in the deep ocean. Which statement best explains the reason for this?

A. There is more space for plants to grow in these areas of the ocean.  
B. There is more dissolved oxygen for plants in these areas of the ocean.  
C. The availability of sunlight and nutrients supports photosynthetic organisms.  
D. The high salinity and cool temperature supports photosynthetic organisms.
13. The diagram shows a boat using sonar to gather information in the ocean.

What is *most likely* being measured with this technology?

A. ocean depth  
B. ocean temperature  
C. pH level  
D. turbidity level

14. The table provides information about water conditions and trout survival.

<table>
<thead>
<tr>
<th>Water Conditions for Trout Survival</th>
<th>Waters Without Trout</th>
<th>Waters Containing Trout</th>
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</thead>
<tbody>
<tr>
<td>Dissolved Oxygen</td>
<td>&gt; 6.0 mg/L daily</td>
<td>&gt; 7.0 mg/L daily</td>
</tr>
<tr>
<td>pH</td>
<td>6.0 — 9.0</td>
<td>6.0 — 9.0</td>
</tr>
<tr>
<td>Temperature</td>
<td>&lt; 28°C — 33°C</td>
<td>&lt; 24°C</td>
</tr>
</tbody>
</table>

Which set of conditions would be *best* for the survival of trout?

A. 5.5 mg/mL DO and pH of 8.0  
B. pH of 7.0 and 22°C  
C. pH of 7.0 and 30°C  
D. 6.0 mg/mL DO and pH of 5.5

15. Which statement *best* describes how nutrients move in the ocean as a result of upwelling?

A. Nutrients move from estuaries into the intertidal zone.  
B. Nutrients move from warm, shallow areas to deep, colder areas.  
C. Nutrients move from the neritic zone to the intertidal zone.  
D. Nutrients move from deep, colder areas to warm, shallow areas.

16. Which factor *best* explains why a water sample has high amounts of nitrates?

A. The water contains high amounts of fertilizers.  
B. The water contains many disease-causing microorganisms.  
C. The water contains large amounts of bioindicators.  
D. The water contains large amounts of plant material.

17. Where is *most* of the freshwater on Earth located?

A. groundwater  
B. lakes and rivers  
C. polar ice caps  
D. oceans
18. The diagram shows an organism that lives in the ocean.

What is true about the organism shown?

A. It is algae.
B. It is benthos.
C. It is nekton.
D. It is plankton.

19. Examine the image of a spider resting on a pool of water.

Which property of water is illustrated?

A. adhesion
B. capillary action
C. density
D. surface tension

20. What effect can an increase in wind have on a river?

A. an increase in dissolved oxygen
B. an increase in chemical waste
C. a decrease in algae
D. a decrease in sediment

21. What allows ice to float in water?

A. Ice has a higher density than water.
B. Ice has a lower density than water.
C. Ice has high cohesion.
D. Ice has low cohesion.

22. Which property of water allows the ocean to be cool on a hot summer day?

A. buoyancy
B. density
C. specific heat
D. surface tension
23. Which statement *best* explains the reason water is able to move up the roots of plants and trees?

A. Adhesion allows for capillary action.
B. Adhesion allows for surface tension.
C. Cohesion allows for capillary action.
D. Cohesion allows for surface tension.

24. A unique property of water is polarity, which explains why molecules of water bond to each other. Which diagram shows the correct bond pattern between several molecules of water?

A.

B.

C.

D.
25. In the summer, it is found that the potability of some water sources decreases. What is a likely reason for this?

A. The increased temperatures lead to an increase in dissolved oxygen.

B. The increased temperatures lead to a decrease in dissolved oxygen.

C. The increased temperatures lead to an increase in turbidity.

D. The increased temperatures lead to a decrease in dissolved nutrients.

26. Which *best* describes the conditions in the intertidal zone?

A. few predators, low light, and temperature

B. high water pressure and limited sunlight

C. brackish water and high amounts of nutrients

D. frequent changes in salinity and temperature

27. Review the graph of dissolved oxygen and temperature levels in a lake.

What relationship exists between dissolved oxygen and the temperature of water?

A. Temperature has an unpredictable effect on the amount of oxygen that can be dissolved.

B. Temperature has no effect on the amount of oxygen that can be dissolved in water.

C. As the temperature of water increases, the amount of dissolved oxygen increases.

D. As the temperature of water increases, the amount of dissolved oxygen decreases.
28. What is the source for *most* of North Carolina's drinking water?

A. groundwater
B. aquifers and lakes
C. polar caps
D. oceans

29. The diagram shows life in a typical pond.

What *most likely* would happen if fertilizers from a nearby farm pollute this pond?

A. The fish would be most affected because they spend more time in the water.
B. The snails would die because the fertilizers will sink to the bottom of the pond.
C. Algal blooms would occur which would eventually lower the dissolved oxygen in the pond.
D. The plankton would be most affected because they are the smallest organisms in the pond.

30. In what ocean zone are tide pools located?

A. estuarial zone
B. intertidal zone
C. neritic zone
D. oceanic zone

31. Which example represents a point source of pollution?

A. acid rain caused by exhaust from vehicles
B. chemical runoff from lawns
C. oil and gasoline discharged from cars
D. heated water released from a power plant

32. What allows certain types of spiders to walk on the surface of a lake?

A. Adhesion between the water molecules allows for surface tension.
B. Cohesion between the water molecules allows for surface tension.
C. Cohesion between the water molecules allows for capillary action.
D. The polarity of water allows for adhesion between the water molecules.
33. Why do high nutrient levels reduce water quality for fish and other organisms?

A. Higher nutrients can increase turbidity.
B. Higher nutrients can increase pH.
C. Higher nutrients can increase dissolved oxygen.
D. Higher nutrients can decrease water temperature.

34. Examine the diagram showing a tube inside a container of water.

What property of water contributes to the behavior shown?

A. buoyancy
B. cohesion
C. specific heat
D. universal solvent

35. The local city authorities use a water treatment process to purify water before supplying it to the public. What is the first step of the water treatment process?

A. aeration of water
B. filtration of water
C. collection of water
D. sedimentation of impurities

36. What is the main purpose for adding chlorine during the water treatment process?

A. It improves the taste and odor of treated water.
B. It kills disease-causing bacteria and microorganisms.
C. It keeps the pH of treated water within an acceptable range.
D. It removes traces of harmful metals such as lead.
37. The graph shows dissolved oxygen concentrations at a sampling site in the Neuse River watershed.

![Dissolved Oxygen Concentrations for the 2009-2010 Monitoring Period]

What most likely led to the high dissolved oxygen concentrations in February?

A. high nitrates  
B. low nitrates  
C. high temperatures  
D. low temperatures

38. Which conditions indicate that a water system is healthy?

A. high dissolved oxygen, low temperature, and high nitrates  
B. low dissolved oxygen, high temperature, and low nitrates  
C. low temperature, low dissolved oxygen, and high numbers of bioindicators  
D. high numbers of bioindicators, low temperature, and high dissolved oxygen

39. What initially happens to the water quality in a lake when there is an increase in nitrates?

A. The dissolved oxygen levels will increase.  
B. The pH will remain neutral.  
C. The temperature will increase.  
D. The turbidity will decrease.

40. The hog farm in the diagram is located near a river.

What happens to water in the river when excess nutrients from the farmland enter the river?

A. The nutrients provide energy to aquatic organisms.  
B. The nutrients may cause an algal bloom, lowering the dissolved oxygen in the river.  
C. The nutrients dissolve in the water because of the high turbidity of river water.  
D. The water will have a lower turbidity and become stagnant.

End Test
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