



2009 Wisconsin Envirothon Aquatic Resources Exam

1. This winter the water in the Big Eau Pleine Flowage has become essentially anoxic. The conditions are not caused by agricultural run-off or industrial wastewater discharges. What is the most probable cause of low dissolved oxygen (DO) levels?
 - a. Decaying wood
 - b. Plant respiration
 - c. Sediment oxygen demand
 - d. Too many fish

2. Which of the following is considered an exotic species in Wisconsin?
 - a. Rainbow trout
 - b. Walleye
 - c. Whitefish
 - d. Yellow perch

3. What is the greatest contributor of exotic species in the Great Lakes?
 - a. Discharge of ballast water from ships
 - b. Dumping of fishing bait
 - c. Intentional introduction by state and federal agencies
 - d. Natural movement to the lakes from the St. Lawrence Seaway

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4. Which of the following are considered invasive species in the Great Lakes? Circle all that apply:

- a. Brown Trout
- b. Common Carp
- c. Sea lamprey
- d. Spiny Water Flea
- e. Zebra Mussel

5. Use the Biotic Index provided. How healthy is the stream that the biota in the bucket came from.

- a. Excellent health
- b. Fair health
- c. Good health
- d. Poor health

6. Which of the following activities would most impact the biodiversity of a lake?

- a. Deep snow cover
- b. Installation of an aerator
- c. Shoreline development
- d. The construction of a dam on an upstream minor tributary

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7. Identify each specimen as a Wisconsin Native or Exotic:

Specimen	Native	Exotic
a. Alewife		
b. Bladderwort		
c. Blazing Star		
d. Brown Trout		
e. Chestnut Lamprey		
f. Common Carp		
g. Coontail		
h. Curly Leaf Pondweed		
i. Eurasian Milfoil		
j. Fireweed		
k. Glass Shrimp		
l. Northern Water-Milfoil		
m. Purple Loosestrife		
n. Lake Trout		
o. Ruffe		
p. Rusty Crayfish		
q. Sea Lamprey		
r. Spiny Water Flea		
s. Swamp Loosestrife		
t. Zebra Mussel		

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8. With no runoff, when would you expect DO levels in a 24-hour period to be the lowest and why?

9. What are four factors that can influence DO levels in lakes?

10. Which Hilsenhoff Biotic Index (HBI) score is most characteristic of excellent water quality?

- a. 1
- b. 5
- c. 10
- d. 100

11. What is the difference between an exotic and an invasive species? Give an example of each.

12. What are two characteristics of a eutrophic freshwater system? Is the Lions Camp Lake a eutrophic water body?

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13. Do cold water streams have less, more or the same amount of diversity than warm water streams?

14. What kinds of problems are rusty crayfish causing in WI lakes?

15. What nutrient most limits primary production in water?

- a. Iron
- b. Nitrogen
- c. Phosphorus
- d. Potassium

16. Winter runoff events can carry massive amounts of sediment and nutrients into lakes and rivers. What are the immediate, expected results in the receiving water? What are the expected long term results? Please provide three reasons for your answer. _____

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17. Use the pH paper provided to test each of the three samples. Then answer each of the following questions about your results.

a. What is the value and pH description (Acidic, Basic, Neutral) of each sample?

Sample A: _____

Sample B: _____

Sample C: _____

b. Which sample would you expect to cause elevated levels of lead and copper in a drinking water system?

c. If you started with a pH 7 and you aerate the sample, which sample would likely be the result?

d. Chlorine would be most affective for disinfection at which sample?

18. When responding to a manure related runoff event, which of the following set of water chemistry parameters best documents that a water quality impact has occurred?

a. Ammonia, BOD5, water temp

b. BOD5, ammonia, bacteria

c. COD, Iron and Sulfates

Iron, chlorides and potassium

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19. Identify one positive and one negative aspect associated with planting trees in parking lots and along roadways with regard to water quality and aquatic life.

20. What are 2 functional values of wetlands?

21. Which three factors are evaluated to determine whether an area is a wetland?

- a. Animals, vegetation, soils
- b. Soils, topography, insects
- c. Vegetation, soils, and hydrology
- d. Water levels, water quality, slopes

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22. Last summer the earthen levee containing eutrophic Lake Delton was breached and almost the entire volume of the lake was emptied into the Wisconsin River. Not counting the immediate aftermath, will there be a long-term positive or negative impact on the diversity of plant, insect and fish communities in the lake? Give 2 reasons why.

23. In October 2008, President Bush signed the Great Lakes Compact. What is the main point of this compact?

- a. Each state will transfer at least 5% of its water to those in need.
- b. The banning of new diversions of water, with limited exceptions.
- c. To spell out the protective measures to be taken for native species in the lakes.
- d. Setting prices to charge for different activities, such as transportation, recreation, industry, on the lakes.

24. Identify the following aquatic insects:

	Family	Common Name
a. Organism 1		
b. Organism 2		
c. Organism 3		
d. Organism 4		

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TIE BREAKER

Where does the Lion's Camp get its drinking water?

- a. Alto-Cambrian Aquifer
- b. Groundwater Well
- c. Lion's Camp Lake
- d. Village of Rosholt Waterworks