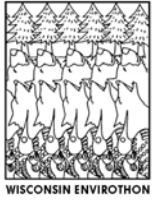


Score: \_\_\_\_\_

Team Name: \_\_\_\_\_



## 2008 Wisconsin Envirothon Water Resources Exam

For the following characteristics select which type of lake is best described (1pt each)(10 pts total):

**A. Oligotrophic Lake**      or      **B. Eutrophic Lake**

- |   |                                   |
|---|-----------------------------------|
| 1. _____ High transparency                        | 6. _____ Non-game fish            |
| 2. _____ Low transparency                         | 7. _____ Abundant plant life      |
| 3. _____ Rooted vegetation scarce                 | 8. _____ Game fish                |
| 4. _____ Rooted vegetation abundant               | 9. _____ Relatively infertile     |
| 5. _____ Algae blooms and small fish kills common | 10. _____ Nutrient Rich Sediments |

### Fill in the blank

11. What is the largest inland lake in Wisconsin? (2 pts) \_\_\_\_\_
12. List 2 of the sources of nutrients that lead to increased eutrophication in lakes. (2 pts each, 4 pts total)
- \_\_\_\_\_
13. Most lake flora in Wisconsin is limited by what nutrient? (2pts) \_\_\_\_\_
14. Name 2 things that recreational water users can do to prevent the spread of exotic species. (4pts)
- \_\_\_\_\_

Identify each of these as a positive (P) or negative (N) effect on the stream habitat. (2pts each, 8 pts total)

15. \_\_\_\_\_ Steam Straightening
16. \_\_\_\_\_ Bank Undercutting
17. \_\_\_\_\_ Boulder placement
18. \_\_\_\_\_ Placing Brush bundles

\_\_\_\_/30

Running Total: 30

Team Name: \_\_\_\_\_

19. As a lake becomes more eutrophic, recreation typically decreases. List 2 reasons why (4 pts)

\_\_\_\_\_  
\_\_\_\_\_

20. List 3 of the negative impacts recreational boaters have on lakes (6 pts):

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

True/False and Multiple Choice (2 pts each) (12 pts total)

21. Most impoundments were constructed primarily to create recreational opportunities. T or F

22. Most non-native species are introduced to inland waters via recreational boat users. T or F

23. Rice and cranberries will grow only in wetlands. T or F

24. Lakes in the early stages of eutrophication provide excellent fishing. T or F

25. Which of the following fish species would you not find in a eutrophic lake:

- a. northern pike
- b. bowfin
- c. brown trout
- d. black crappie
- e. yellow bullhead

26. Groundwater can be polluted by

- a. road salt
- b. lawn fertilizer
- c. motor oil
- d. gas from leaky storage tanks
- e. all of the above

\_\_\_\_/22

Running Total: 52

Team Name: \_\_\_\_\_

27. The most common water quality parameters tested for in lake water are: (2 pts)

- a. pH, nutrients, metals, plant material, dissolved oxygen, total suspended solids and fish species
- b. temperature, dissolved oxygen, pH, Secchi disk depth, nutrients, total suspected solids and turbidity
- c. boat traffic, pH, temperature, turbidity, plant life, bacteria, depth
- d. depth, recreational value, total suspended solids, pH, temperature, plant life, animal life

28. Lake Mead, AZ was recently in the news following a report that it may dry up by 2021 mainly due to which of the following factors: (2 pts)

- A. climate change and strong demand for water
- B. seepage into surrounding lakes and rivers
- C. shifting of plates under the earth's surface
- D. federal policy requiring more water to be released into the Grand Canyon
- E. All of the above

29. It's July in Wisconsin and you get a Dissolved Oxygen reading of 14.6 mg/L out of a stream at 1:30 in the afternoon. Filamentous algae is abundant. What would you expect the Dissolved Oxygen to be at 1:30 in the morning? (2 pts)

- a. Approximately the same (14.6 mg/L)
- b. Greater than 14.6 mg/L
- c. Around 10 mg/L
- d. around 5 mg/L or less

Short Answer

30. Explain your answer to question 29: (5 pts)

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Team Name: \_\_\_\_\_

Matching- match the word to its definition -- Not all words/letters may be used (2pts each)

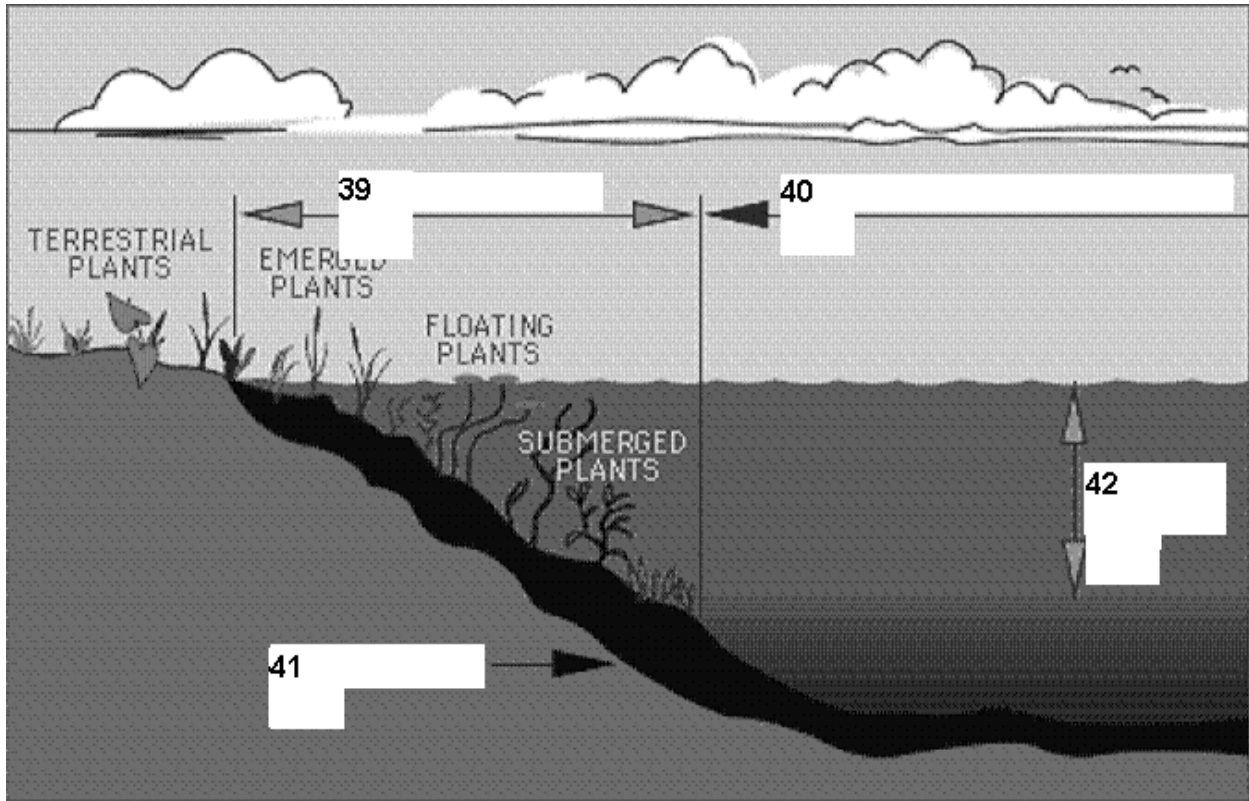
- |  |                |
|--|----------------|
| 31. _____ Sustained flow of a stream in the absence of direct runoff.  | A. Fen         |
| 32. _____ The depth at which the temperature gradient is steepest during the summer.   | B. Thalweg     |
| 33. _____ The amount of solid particles that are suspended in water and that cause light rays shining through the water to scatter.  | C. Yield       |
| 34. _____ The line defining the deepest points along the length of a river bed.  | D. Turbidity   |
| 35. _____ The place where a sewer, drain, or stream discharges to a receiving water body.  | E. Bog         |
| 36. _____ Peat-accumulating wetland that generally receives water from surface runoff and (or) seepage from mineral soils in addition to direct precipitation; generally alkaline; or slightly acid. | F. Peak Flow   |
| 37. _____ The maximum instantaneous discharge of a stream or river at a given location.  | G. Outfall     |
| 38. _____ The material in transport that primarily is supported by the streambed.  | H. Bedload     |
|  | I. Base Flow   |
|  | J. Percolation |
|  | K. Thermocline |
|  | L. Porosity    |

\_\_\_\_/16

Running Total: 79

Team Name: \_\_\_\_\_

Label the different biological lake zones (2 pts each) (8 pts total).



39. \_\_\_\_\_ Hint- zone where sunlight penetrates all the way to the sediment and allows aquatic plants to grow.

40. \_\_\_\_\_ Hint- open water area where light does not generally penetrate all the way to the bottom.

41. \_\_\_\_\_ Hint- The bottom sediment which has a surface layer abundant with organisms. Most of the organism are invertebrates, such as Dipteran insect larvae.

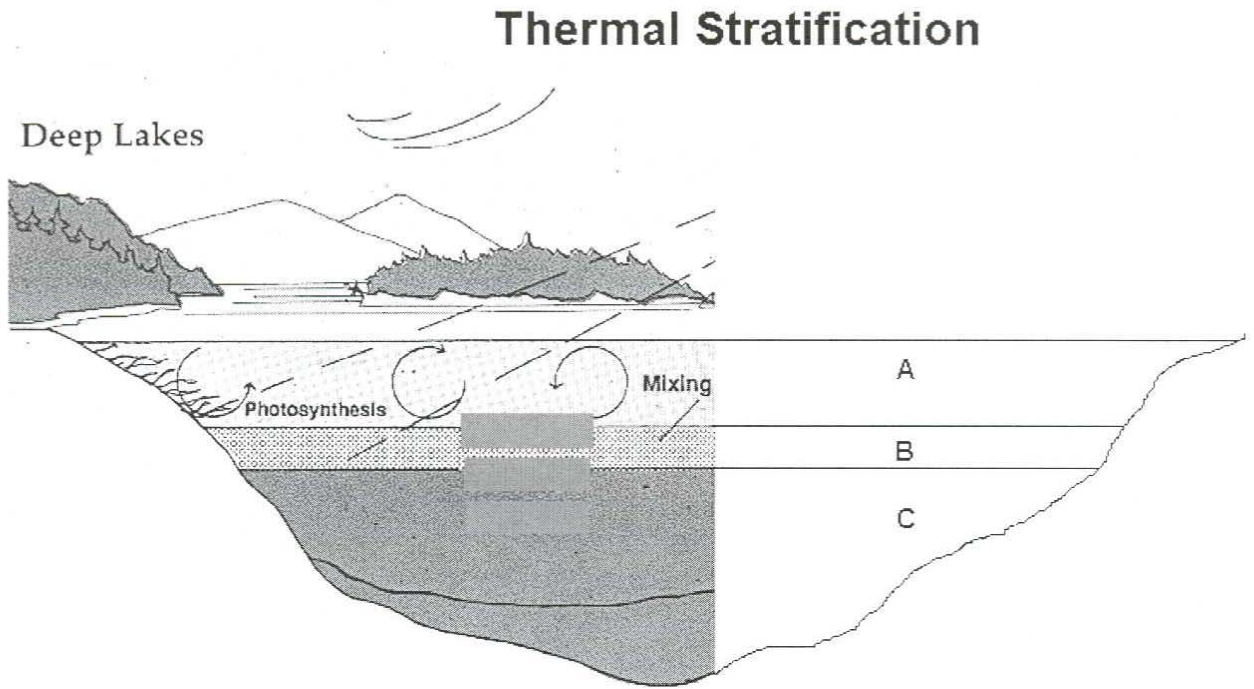
42. \_\_\_\_\_ Hint- Light levels become too low for photosynthesizers.

\_\_\_\_/8

Running Total: 87

Team Name: \_\_\_\_\_

Label the different thermal stratification zones (1pt each- Not all words may be used)



43. \_\_\_\_\_ Zone A

44. \_\_\_\_\_ Zone B

45. \_\_\_\_\_ Zone C

Mezolimnion, Altolimnion, Hypolimnion, Compolimnion, Epilimnion, Stratelimnion, Metalimnion

\_\_\_\_/3

Running Total: 90

Team Name: \_\_\_\_\_

Exotic Species Identification

2 Pts Each ( 10 Points Total)

46. \_\_\_\_\_

47. \_\_\_\_\_

48. \_\_\_\_\_

49. \_\_\_\_\_

50. \_\_\_\_\_

**TIE BREAKER**

List Arizona's 4 Major Rivers and 6 Major Lakes

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_/10

Running Total: 100