

Missouri State Envirothon Challenge

Aquatics Ecostation

Aquatics

A1. (6 points) Give two reasons that a fish develops a slime coat.

-Protective layer -Reduce friction -Harder for predator to catch

A2. (4 points) Algae affects dissolved oxygen levels in a pond when it_____.

- A. Releases oxygen at night
- B. Releases carbon dioxide at night
- C. Release oxygen during the day
- D. A & B
- E. B & C
- F. None of the above

A3. (4 points) Using the key provided, determine what Kingdom Macroinvertebrate #1 is in

-Animal

A4. (4 points) Using the key provided, determine what Order Macroinvertebrate #2 is in.

- Ephemeroptera

A5. (4 points) Using the key provided, determine the common name for Macroinvertebrate #3

-Scud

A6. (4 points) Which of the 3 Macroinvertebrates is pollution tolerant?

-#1

A7. (4 points) This 3.2 acre pond requires an annual treatment of Bluestone (See label) to control aquatic vegetation. If the lake is to be treated at the maximum level for *Chara*, how much Bluestone can be safely (1/2 pond area) applied to a depth of 4 feet?

- A. 68.1 lbs.
- B. 34.0 lbs.
- C. 12.5 lbs.
- D. 8.5 lbs.
- E. None of the above

Answer: $[(3.2 \text{ acres}) \times (4 \text{ feet})] / 2 = 6.4 \text{ acre feet}$
 $(6.4 \text{ acre feet}) \times (5.32 \text{ lbs.}) = 34 \text{ lbs.}$

A8. (6 points) Looking at this lake, name 3 of the 5 habitat types. (2 points each up to 6 points)

- Pond edge
- Pond surface
- Pond bottom
- Open water
- Air over pond

A9. (6 points) A typical Missouri farm pond can sustain about 250 lbs of fish per acre of water. If you have 125 lbs of largemouth bass and 125 lbs of bluegill in a 1 acre pond. What can you assume about the fish population in that pond (fish size, food available, age of fish, etc.)

This situation exhibits a stockpiling of the bass. There are too many bass which will limit the food they have available. Bass will be small for their age.

A10. (12 points) Matching

A water sample with a pH (F) is termed acidic.

Fresh water is densest (D) degrees F.

Cold-water organisms require a dissolved oxygen level (A) ppm.

The atmosphere contains (E) % oxygen.

Drinking water quality standards limit Nitrates to (C) mg/l.

(B) % of the worlds water is currently accessible for potable water

A. >7 B. <0.05 C.10 D. 39 E. 21 F. <7

Soils

S1. (2 points) The small rounded quartz and granite gravel found along the pond bank are indicators that these soils formed from which of the following parent materials?

- A. Alluvium.
- B. Residuuum.
- C. **Glacial Till.**
- D. Loess.

S2. (6 points) Which of the following are important when evaluating a site for construction of a wetland?

- A. **Soil texture.**
- B. Blocky soil structure.
- C. **Depth of water table.**
- D. **Slope.**

S3. (2 points) Soil pH is an indicator of:

- A. The amount of Phosphorous in the Soil.
- B. **The measurement of acidity or alkalinity of a soil.**
- C. The amount of Phosphate in the soil.
- D. The amount of Potash in the soil.

Wildlife

W1. (6 points) "Herps" are a common term to describe Reptiles and Amphibians collectively. Pick the three herps you would expect to find at this site?

- A. Pygmy Rattlesnake, Green Water Snake, Northern Leopard Frog.
- B. Western Massasauga, Yellowbelly Water Snake, Wood Frog
- C. Northern Copperhead, Northern Water Snake, Plains Leopard Frog
- D. Both A and C.
- E. None of the above.

W2. (2 points) Select one species of wildlife that would be totally dependent on this pond as a source of water during the nesting period.

- A. White-tailed Deer
- B. Pileated Woodpecker
- C. Wild Turkey
- D. Woodchuck

W3. (10 points) "Herps" will utilize the log marked with an orange flag during daylight hours. What is this type of log commonly referred to and what two benefits do herps, especially turtles gain from using this log?

Basking Log: - Sunlight destroys algae and fungus on turtle exterior while basking. Turtle also receives vitamin A from sunlight

Forestry

F1. (10 points) What trees would grow well along the pond's shoreline? Circle all that would apply.

- A. pin oak
- B. red maple
- C. black gum
- D. cottonwood
- E. bald cypress

F2. (2 points) If the watershed surrounding this woodland pond was completely in grass, what differences in the pond would you expect to observe?

- A. more organic matter
- B. higher water temperatures
- C. more fish
- D. all of the above
- E. a and only

F3. (6 points) What value is large woody debris in this pond?

Large woody debris provides fish habitat; organic matter for the food chain; substrate for bacteria and invertebrates; loafing locations for turtles and amphibians.