

## 2024 Area Envirothon Test

### Aquatics

1. Wind is important to ponds and lakes because it:
  - A. Circulates pond/lake water
  - B. Increases water clarity
  - C. Enhances natural aeration
  - D. A and C
2. What is the most common non-point source pollutant in Ohio streams?
  - A. Sand
  - B. Silt
  - C. Clay
  - D. Human waste
3. Aquatic plants that grow with their roots and lower stems in the water, but most of the plant is above the water's surface are called:
  - A. Submerged Plants
  - B. Floating Plants
  - C. Emergent Plants
  - D. A and B
4. Summer fish kills can usually be attributed to a loss of dissolved oxygen that results in total or partial death of the pond's fish population. Which one is not likely a cause of a summer fish kill?
  - A. Daytime oxygen production exceeds the nighttime oxygen use.
  - B. Shallow pond
  - C. Thermal inversions
  - D. Chemical applications
5. When conducting a bioassessment of aquatic macro-invertebrates in a stream, which of the following aquatic macro-invertebrate assemblages are the most sensitive to pollution:
  - A. Blood midge, aquatic worm, crayfish.
  - B. Dragonfly nymph, damselfly nymph, crane fly larvae.
  - C. Pouch snails, leeches, beetle larvae.
  - D. Dobsonfly larvae, stonefly larvae, riffle beetle.
6. Which of the following has the distinction of being the smallest flowering plant in the world?
  - A. Watermeal.
  - B. Filamentous Algae.
  - C. Spatterdock.
  - D. Water Milfoil

7. The best example of a lotic habitat is:
- A. Bog.
  - B. Pond.
  - C. Lake.
  - D. Creek.
8. Which has more potential to permanently lower the water quality of streams?
- A. Erosion.
  - B. Urbanization.
  - C. Agriculture.
  - D. Timber harvesting.
9. The following members of the lamprey family *Petromyzontidae* are parasitic except?
- A. Sea Lamprey.
  - B. Least Brook Lamprey.
  - C. Silver Lamprey.
  - D. Ohio Lamprey.
10. As part of a conservation effort in your watershed, your class has been asked to plant trees in a riparian area that is currently a hay field. The local nursery has supplied you with the following list of trees. Which tree would you not want to be part of your riparian trees to be planted?
- A. Chestnut Oak.
  - B. Sycamore.
  - C. Pin Oak.
  - D. Silver Maple.
11. Mayflies belong to which order?
- A. Plecoptera.
  - B. Ephemeroptera.
  - C. Trichoptera.
  - D. Hemiptera.
12. Lake Erie has gained international attention for Harmful Algae Blooms (HABs) affecting drinking and recreational waters. Which of the following statements is true about HABS?
- A. HABs only occur in large bodies of water, such as Lake Erie or Grand Lake St Mary
  - B. HABs are caused by low oxygen conditions, usually as a result of fish kills
  - C. The presence and severity of a HAB in surface water depends on nutrient loading from the surrounding watershed.

D. Boiling fresh surface water will remove the HAB toxins and make it safe to drink or cook with.

13. The junction of two rivers, streams or creeks is known as.

- A. Meander
- B. Confluence
- C. Contributory
- D. Thalweg

14. Vegetation holds some rain during precipitation. This water evaporates into the atmosphere without touching the soil. This process is called:

- A. Interception.
- B. Infiltration.
- C. Evapotranspiration.
- D. Percolation

15. Which aquatic macroinvertebrate is a primary consumer?

- A. Stonefly.
- B. Crayfish.
- C. Alderfly.
- D. Caddisfly.

16. The amount of dissolved oxygen necessary to oxidize the readily decomposable organic matter is known as:

- A. Titration.
- B. Buffering Capacity.
- C. Biochemical Oxygen Demand.
- D. Ion Exchange.

17. You are developing a plan to improve water quality in a watershed that includes multiple land uses. Which of the following potential sources of pollution can NOT be addressed via a NPDES permit?

- A. Confined Animal Feeding Facilities
- B. Municipal sewage treatment
- C. Urban stormwater
- D. Bulk cargo vessels
- E. Agricultural runoff

18. Which aquatic plant is not an example of an invasive species in Ohio?

- A. Curly-leaf Pondweed.
- B. Common Reed.
- C. Narrowleaf Cattail.
- D. Spatterdock.

19. When identifying and classifying water pollution problems, one of the tools biologists use is the Fish Index of Biological Integrity (IBI). There are several metrics that are used to determine the IBI. Which is not a metric used to determine the fish IBI?
- A. Number and identity of benthic insectivorous species.
  - B. The total suspended solids in the stream.**
  - C. Proportion of with disease or anomalies.
  - D. Total Number of Fish.
20. When using fish as biological indicators to determine if a stream is a cold-water stream, which of the following species would not be an indicator of a cold-water stream?
- A. Redside Dace.
  - B. Brook Stickleback.
  - C. Rainbow Darter.**
  - D. Mottled Sculpin.
21. What percentage of Ohio's land mass is in the Ohio River watershed.
- A. 85%
  - B. 33%.
  - C. 66%.**
  - D. 50%
22. Decaying organic matter such as leaves in streams, ponds and lakes is known as:
- A. Detritus.**
  - B. Periphyton.
  - C. Alluvial
  - D. Pigmentation.
23. When landowners are managing their floodplain forests along streams, rivers, wetlands, ponds and lakes it is important to leave trees (living or dead) with cavities (holes in the tree) because some birds nest in these tree cavities. All of the following are cavity nesting birds in floodplain forests except.
- A. Wood Ducks.
  - B. Belted Kingfisher.**
  - C. Prothonotary Warblers.
  - D. Common Mergansers.
24. In headwater streams that are too small to support fish, salamanders are the key indicator species in these waters. Which of the following group of two

salamanders would you most likely find living in these small headwater streams?

- A. Spotted salamander & marbled salamander.
- B. Two-lined salamander & dusky salamander.
- C. Ravine salamander & red-backed salamander.
- D. Hellbender salamander & mudpuppy salamander.

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### Site questions

25. Imagine a typical farm pond with healthy open-water habitat like those near the Gwynne Conservation Area's cabin. At what point of the day would dissolved oxygen be at its lowest and why?

- A. Dawn: algal respiration consumes oxygen overnight before daytime photosynthesis resumes.
- B. Noon: algal respiration consumes much of the oxygen when the sun is most intense.
- C. Dusk: algal photosynthesis is shutting down after a full day of production.
- D. Midnight: algal photosynthesis is suspended without sunlight.

### Picture on the Table

26. Invasive round goby eat a great many invasive zebra and quagga mussels in Ohio's Lake Erie waters. Native smallmouth bass is an important game fish species in Lake Erie that eats a lot of Round Goby, but does not eat zebra mussels. Native yellow perch eats very few round goby, but will eat young zebra mussels. Considering this simplified food web, what is the likely end effect of a persistent toxic pollutant that bioaccumulates in mussels from Lake Erie sediments?

- A. Biomagnification of the toxin is greatest in smallmouth bass.
- B. Biomagnification of the toxin is greatest in round goby.
- C. Biomagnification of the toxin is greatest in yellow perch.
- D. Elevated concentrations of the toxin do not leave the zebra mussel's trophic level.

### Picture on the Table

27. The fish pictured above is common to Ohio streams and reservoirs (including Deer Creek Lake a bit downstream). Considering what you can see of its morphology, what is the most likely foraging behavior of this species?

- A. Detritivore.
- B. Molluscivore.
- C. Piscivore.
- D. Planktivore.

## Picture on the Table

28. Based on morphology of the animal pictured above, what assumptions can you make about this species found in the Deer Creek?

- A. Prefers habitat at the river bottom and forages on benthic invertebrates.
- B. Prefers habitat at the river bottom and forages by hunting fish suspended above it.
- C. Prefers habitat at the river surface and forages on insects that land on the surface.
- D. Prefers habitat at the river surface and forages on minnows suspended below it

29. Identify this aquatic macroinvertebrate to order using the provided key.

- A. Dragonfly (Odonata)
- B. Caddisfly (Trichoptera)
- C. Crayfish (Decapoda)
- D. Crane fly (Diptera)

30. Identify this fish to family level using the provided key.

- A. Percidae
- B. Salmonidae
- C. Leuciscidae
- D. Centrarchidae