2022 Envirothon Aquatics Questions

1. What year was the Clean water Act put into place?
   A. 1945
   B. 1963
   C. 1972
   D. 1985

2. What was the intended purpose for establishing the Clean Water Act?
   A. To address the problem of pollution in United States major waterway systems.
   B. To create a basic structure for regulating discharges of pollutants into the waters of the United States and to regulate quality standards of surface waters.
   C. To protect wildlife and waterfowl that rely on our major river systems for survival.
   D. To protect wetlands and all the biodiversity that resides within.

3. Which item below is an effect of storm water pollution?
   A. Sediment can cloud the water and make it difficult or impossible for aquatic plants to grow.
   B. Excess nutrients can cause algae blooms that in turn decrease the level of oxygen in the water.
   C. Bacteria and other pathogens can wash into swimming areas and create health hazards.
   D. All of the above.

4. Which part of the water cycle includes snow melt runoff, ice, snow, and fog drip?
   A. Evaporation
   B. Precipitation
   C. Condensation
   D. Transpiration

5. A stream that does not flow during part of the year is referred to as?
   A. Intermittent stream
   B. Head water stream
   C. Second order stream
   D. Small river

6. What is the longest river in the world?
   A. The Nile River
   B. The Amazon River
   C. The Mississippi River
   D. The Euphrates River

7. Which aquatic insect listed below is a predator of other insects throughout most of its life cycle?
   A. May fly
   B. Giant water bug
   C. Caddisfly
   D. Stone fly

8. If you were planting a riparian buffer along a stream or river, which tree species would not be a suitable pick?
   A. Silver maple
   B. Sycamore
   C. Swamp white oak
   D. Virginia Pine

9. The presence of which species listed below would be an indicator of good water quality?
   A. Eastern box turtle
   B. Black rat snake
   C. Spring salamander
   D. Creek chub

10. Aquatic Invasive Species (AIS) interact with native species and can cause changes in the ecology of the ecosystem. If a successful planktivorous AIS was introduced at this site, which of the following is the most likely long term outcome?
   A. Increased species diversity by adding a new species to the local ecosystem
   B. Decreased species diversity by predation on native planktivorous species to extirpation
   C. Increased species diversity by providing an additional prey item for native species
   D. Decreased species diversity by out-competing native planktivorous species

11. Which species is NOT an endangered salamander found in Ohio?
   A. Cave salamander
   B. Eastern Hellbender salamander
   C. Spotted salamander
   D. Green salamander

12. Which of the following amphibians is totally aquatic throughout its entire lifespan?
   A. Eastern hellbender
   B. Bullfrog
   C. Red- Spotted Newt
   D. Blanchard's cricket frog

13. During hot summer months, many Ohio lakes and ponds will have a large layer of water depleted of oxygen. Which of the following terms means "depleted of oxygen"?
   A. Hyperaerobic
   B. Toxic
   C. Anoxic
   D. Aerobic

14. What is the most common frog species in Ohio?
   A. Bullfrog
   B. American Toad
   C. Spring Peeper
   D. Wood frog

15. Identify the main reason for the endangered status of wetland species?
    A. Disease
    B. Hunting and trapping
    C. Habitat destruction
    D. Sedimentation

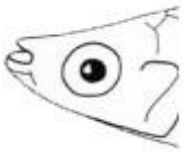
16. Which of the following is considered an invasive aquatic species in Ohio?
    A. Round goby
    B. Bighead carp
    C. Zebra mussel
    D. All of the above

17. What frog species is the only frog species known to live north of the Arctic Circle?
    A. Bullfrog
    B. Green frog
    C. Wood frog
    D. Mountain chorus frog

18. Increased turbidity in an aquatic system can lead to higher dissolved oxygen content, decreased photosynthesis, and increased temperature.
    A. True, but only in wetlands
    B. True, but only in rivers/streams
    C. False, because it increases photosynthesis
    D. False, because it decreases dissolved oxygen content

19. Which of the following would be the most likely reason for increased turbidity in an Ottawa National Wildlife Refuge wetland?

    A. Invasive common carp
    B. Invasive zebra mussels
    C. Native unionid mussels
    D. Migrating waterfowl


Species A Species B Species C

Consider the above diagram (adapted from http://aquaviews.net/explore-the-blue/fish-identification-guide-fish-anatomy-part-ii/) for the following two questions:

20. Which species would most likely be found near the surface of an Ottawa National Wildlife Refuge wetland?

    A. Species A
    B. Species B
    C. Species C
    D. Habitat preference cannot be determined from information given.

21. Which of the following would you most expect to find if you did a gut content analysis on Species C?

    A. Zooplankton
    B. Phytoplankton
    C. Benthos
    D. Forage Fish

22. Which of these trophic level pathways would you most likely find at the pond at this site?
    A. Phytoplankton→Rotifer→Spotfin Shiner→White Sucker→Osprey
    B. Phytoplankton→Freshwater mussel→Common Shiner→Chain Pickerel→Belted Kingfisher
    C. Phytoplankton→Daphnia→Bluegill→Largemouth Bass→Great Blue Heron
    D. Phytoplankton→Diatom→Rainbow Darter→Smallmouth Bass→Bald Eagle

23. These structures can be seen throughout the refuge. What organism creates these structures?
    A. Muskrat
    B. Beaver
    C. Red Swamp Crayfish
    D. Mute swan

24. The "Great Black Swamp" was a vast complex of historic marshland extending from here at western Lake Erie, across northwest Ohio, and into northeast Indiana. Which of the following effects did the Great Black Swamp have on larval fish?
    A. Poor nursery habitat because the shallow, warm water increases predator efficiency
    B. Poor nursery habitat because there is too much competition for larval fish to grow adequately
    C. Great nursery habitat because there are limited larval fish predators in shallow wetlands
    D. Great nursery habitat because the shallow, warm water is more productive for larval fish food items

25. As you tour the Ottawa National Wildlife Refuge, you'll see some areas dominated by the invasive common reed (*Phragmites australis*). Which of the below is the correct Wetland Indicator Status Rating for Phragmites?
    A. Facultative Wetland
    B. Floating
    C. Submerged
    D. Upland


Photo from nps.gov

26. Using the provided guide, identify this macroinvertebrate and identify its status in Ottawa County, Ohio.
    A. Invasive
    B. Native
    C. It is not present in Ottawa County, Ohio
    D. Both invasive and native


Photo from David E. Reed, BugGuide.net

27. Using the provided guide, identify this macroinvertebrate and what it might tell you about water quality.
    A. Blackfly larva, the water is polluted
    B. Mayfly nymph, the water is likely not polluted
    C. Damselfly nymph, the water is likely not polluted
    D. Midge larva, the water may or may not be polluted

28. If you are using this sampling equipment, what are you trying to capture?
    A. Amphibians
    B. Dragonflies
    C. Macroinvertebrates
    D. Plankton

29. Using the dichotomous key provided, identify this fish specimen to the family level.
    A. Catostomidae
    B. Centrarchidae
    C. Cyprinidae
    D. Percidae

Magnified 400x

30. Identify the type of this phytoplankton.
    A. Blue-green algae
    B. Green algae
    C. Diatom
    D. Dinoflagellate

31. The most environmentally preferred approach for managing all waste streams is
    a. Energy recovery
    b. Recycling and composting
    c. Source reduction
    d. Treatment and disposal

32. What gas is a byproduct of decomposing waste and can be collected and used to generate fuel?
    a. Leachate
    b. Methane
    c. Diesel
    d. Natural gas

33. Converting non-recyclable waste materials into electricity and heat is known as what process?
    a. Gasification
    b. Carbon emissions
    c. Anaerobic digestion
    d. Waste to energy

34. What is the number one material found in America's landfills?
    a. Food
    b. Diapers
    c. Electronics
    d. Single use plastics

35. A municipal solid waste landfill is a dedicated area of land that received what type of waste?
    a. Hazardous materials
    b. Household waste
    c. Medical waste
    d. Construction and demolition debris