

2019 Area 1 Envirothon – Aquatics Test

Do Not Write on this Test

When you have finished, return test questions with your Scantron Answer Form

- 1.) This is the Sugar Creek Tributary here on Miller Conservation Farm. If you look at the stream, you will see its water varies in depth and speed as it curves through the woods. These different features in the stream are important for habitat. In healthy stream systems, these features should appear in which regular sequence:
 - A.) Log Jam, Rock
 - B.) Riffle, Run, Pool**
 - C.) Course Woody Debris, Pool and Rock
 - D.) There is no regular sequence.

- 2.) There are several bends in Sugar Creek. One of the bends is marked with a landscape flag labeled #2. At the location of this landscape flag, correctly identify how the creek sediments are being moved at this location:
 - A.) Creek sediments are being deposited.**
 - B.) Creek sediments are being eroded.
 - C.) Sediments will never change.
 - D.) Rivers don't have the ability to move soil material.

- 3.) There is a tree marked in the riparian area of Sugar Creek with red marking tape. What type of tree is it?
 - A.) Sycamore Tree
 - B.) Cotton Wood
 - C.) Maple
 - D.) Boxelder Tree**

- 4.) There is a stream feature marked with a landscape flag. The landscape flag has #4 written on it. Make sure you look at how the stream is interacting with the landscape in this specific area. Identify what this type of streambank is from the options below.
 - A.) This is an undercut streambank that is being eroded by Sugar Creek.**
 - B.) This is a wetland.
 - C.) This is a vernal pool
 - D.) This is not an important feature.

- 5.) For this question, stay in the area of landscape flag #4. Note that there are tree roots extending into the waters of Sugar Creek. These are known as root wads. Select the following statement that is true about root wads in streams:
- A.) Root wads are not important to stream health.
 - B.) Root wads contribute to flooding in streams.
 - C.) Root wads provide habitat to stream fish and aquatic macroinvertebrates**
 - D.) Root wads block fish movement.
- 6.) There is a landscape flag, marked #6, identifying a feature of Sugar Creek. Correctly identify the feature from the list below:
- A.) Pool
 - B.) Run
 - C.) Riffle**
 - D.) Wetland
- 7.) For this question, remain at landscape flag #6. From the list below, correctly identify the type of fish that would most likely be found in this specific portion of Sugar Creek:
- A.) Darter**
 - B.) Catfish
 - C.) Largemouth Bass
 - D.) Lake Sturgeon
- 8.) Correctly identify the major river system that Sugar Creek is a tributary too:
- A.) Grand River
 - B.) Scioto River
 - C.) Ohio River
 - D.) Sandusky River**
- 9.) Here at Miller Conservation Farm, Sugar Creek is surrounded by trees. Please select the option below that most completely represents how trees interact with streams:
- A.) Trees help to shade streams and keep water temperatures from getting too hot.
 - B.) Leaves from trees fall into the stream and help feed different types of aquatic macroinvertebrates.
 - C.) Trees help to stabilize streambanks and reduce soil erosion.
 - D.) Answers A, B and C.**

10.) If you were going to conduct biological monitoring using aquatic macroinvertebrates in Sugar Creek, what portion of the creek would be the best place to look for these creatures? Choose the most complete answer from the list below.

- A.) Look under logs laying around the forest floor.
- B.) Look in the riffle areas, root wads and in stream vegetation.**
- C.) Look in riffle areas.
- D.) Look in pools with coarse woody debris.

11.) All streams and wetland throughout the United State are protected by which Federal Law:

- A.) They are not Federally protected.
- B.) The Clean Water Act**
- C.) The Ohio Revised Code 1547.82
- D.) The Commerce Clause

12.) What regulatory agencies have authority to regulate construction projects that would take place in Ohio's streams and wetlands. Select the answer that is most complete:

- A.) The Ohio Environmental Protection Agency
- B.) The Army Corps of Engineers
- C.) Answers A and B**
- D.) The United State Geological Survey

13.) Mayflies are an important indicator of water quality. Select the answer below that most completely explains why mayflies are a good indicator of water quality:

- A.) They spend approximately 2 years of their nymph stage living in the water.
- B.) Mayflies are sensitive to changes in water quality.
- C.) Mayflies only live 24-48 hours as adults.
- D.) Answers A and B**

14.) Your family is planning to buy a new home. This home is located in close proximity to a river and rivers often flood. What resource could you use to find out if this new home is located in a floodplain?

- A.) Federal Emergency Management Agency Flood Maps**
- B.) United State Geological Survey Stream Gauges
- C.) There are no floodplain maps available for public use.
- D.) The Ohio Environmental Protection Agency Watershed Maps

15.) Select the answer below that best defines the word 'riparian corridor'.

- A.) This is wetland area near streams.
- B.) The area where a stream or body of water interfaces with the landscape.**
- C.) A strip of trees along a stream.
- D.) An area along a stream filled with rock.

16.) Select the option below that correctly identifies the most significant pollutant of streams in Ohio

- A.) Raw sewage from unmaintained septic systems.
- B.) Chemical waste from industrial processes.
- C.) Animal manure
- D.) Sediment caused by soil erosion from the landscape.

17.) Select the option below that correctly defines point source pollution.

- A.) This is a source of pollution that can be measured from a single pipe outlet.
- B.) Point source pollution does not exist.
- C.) Point source pollution comes from the entire landscape.
- D.) This is a source of pollution that cannot be measured or regulated.

18.) Select the option below that correctly lists potential sources of point source pollution and the agency that regulates them.

- A.) Municipal waste water treatment plants and industrial water treatment facilities. They are regulated through the Ohio Environmental Protection Agency.
- B.) Municipal waste water treatment plants and industrial water treatment facilities. They are regulated by the Ohio Department of Natural Resources.
- C.) Farm fields with row crops that are regulated by the Ohio Department of Agriculture.
- D.) Municipal waste water treatment plants and they are not regulated.

19.) Phosphorus plays an important role in the health of the Western Lake Erie Basin. However, there is more than one type of phosphorus. Select the type of phosphorus from the list below that has the most significant influence on algae growth in the Western Lake Erie Basin.

- A.) Total phosphorus, this includes phosphorus molecules that are attached to soil sediments.
- B.) Dissolved reactive phosphorus. This is a type of phosphorus that is not attached to soil and is dissolved in the water column.
- C.) White phosphorus.
- D.) Red phosphorus.

20.) Nutrients are required for the growth of photosynthetic organisms in both aquatic and terrestrial ecosystems. Identify the nutrient that most limits the growth of photosynthetic organisms in **freshwater** ecosystems.

- A.) Nitrogen
- B.) Phosphorus
- C.) Magnesium
- D.) Potassium

21.) Identify the phrase that best defines the hydrologic term, watershed.

- A.) Catchment or topographically delineated area drained by a stream system.
- B.) A forest growing on a hillside.
- C.) A pond.
- D.) An area where people store water in the event of an emergency.

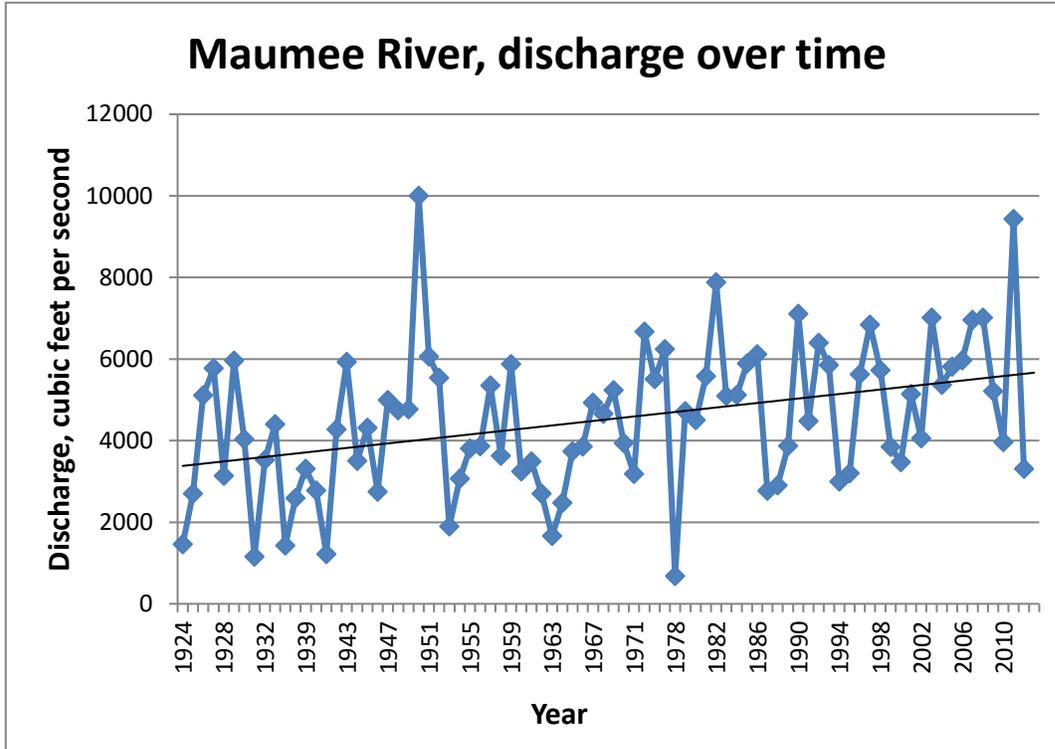
22.) Aquatic systems support different types of aquatic macroinvertebrates that may be herbivores, detritivores or carnivores. Identify the aquatic macroinvertebrate from the list below that behaves most like a carnivore.

- A.) Water pennies
- B.) Aquatic earthworms
- C.) Scuds
- D.) Dragonflies

23.) You and your friends are working together to organize a canoe float on the Maumee State Scenic and Recreational River in July. Unfortunately, a significant drought has hit the area and you don't know if there will be enough water flow in the river to have your canoe float. Which of the organizations listed below provide real-time water flow data for river systems in Ohio and across the United States?

- A.) United States Department of Agriculture
- B.) Ohio Department of Natural Resources
- C.) United States Geological Survey
- D.) United States Environmental Protection Agency

24.) Select the statement that most accurately describes the trend shown in the chart.



- A.) There are no significant trends to be observed from this data.
- B.) Discharge in the Maumee River is being reduced over time.
- C.) Discharge in the Maumee River is increasing over time.**
- D.) Discharge in the Maumee River was highest in 1950 and the lowest in 1978.

25.) Identify the organism below that is the most pollution intolerant.

- A.) Hellgrammite**
- B.) Blackfly
- C.) Leech
- D.) Damselfly

26.) Use David Zeisberger's description to select the historical, natural feature that is missing in the quote.

"The diary of David Zeisberger, a Moravian missionary who traveled through northwestern Ohio and southeastern Michigan in 1761-82, provides an early description of the _____. He writes after leaving the Sandusky River for Detroit in October, 1791, of the 'deep swamps and troublesome marches,' the many miles 'where no bit of dry land was seen...'"

- A.) Lake Maumee Marsh
- B.) Lake Whittlesey Swamp
- C.) The Everglades
- D.) The Great Black Swamp**

27.) Select the option(s) that best describe the impacts of impervious surfaces on a watershed.

- A.) There is no impact.
- B.) Excessive runoff containing sediment, chemicals and nutrients.**
- C.) Impervious surfaces increase water retention.
- D.) Enhanced water infiltration.

28.) The Chesapeake Bay Watershed is a hotspot of degraded water quality. What agricultural technologies are being implemented to combat this problem?

- a. Construction of state of the art wastewater treatment plants on poultry farms
- b. Ban of livestock operations in excess of 1 AU (animal unit) per 50 square feet
- c. BMP's that have the biggest impact on soil and fertilizer runoff**
- d. Ban on chemical fertilizer inputs in floodplains

29.) All four of these "rights" are necessary for sustainable management of plant nutrition: management that sustainably increases the productivity of plants and crops. The 4Rs Nutrient Stewardship stand for which of the following?

- a. Right Plant, Right Feed, Right Light and Right Plot
- b. Right Sun, Right Row, Right Lime and Right Water
- c. Right Source, Right Rate, Right Time and Right Place**
- d. Right Way, Right Steward, Right Place and Right Water

30.) What is the definition of agroecology?

- a. Building and maintaining healthy soil
- b. The science of managing farms as ecosystems**
- c. The science of minimizing air & water pollution
- d. The science of managing water wisely

31.) This type of soil sampling requires breaking the field up into squares where each of them will have a sample taken, and will allow for variable rate application.

- a. Grid Sampling**
- b. Composite Sampling
- c. Zone Sampling
- d. Basic sampling