

Team Number _____

Score _____

2001 Envirothon Water Questions

The following 32 questions are divided into 4 main topics related to water quality and urban non-point source pollution: (1) Water, Watersheds and Ecology; (2) Water Quality; (3) Land Use; and (4) Definitions and Laws. The complete test represents 100 points, the points associated with each question are listed with the question.

Please circle the appropriate number for the multiple-choice questions. Please print all written answers clearly.

Water, Watersheds and Ecology

1. If water did not expand when frozen, which of the following would not be possible? (2 points)
1. Ice fishing
 2. Vertebrate year-round life in northern ponds
 3. Nutrient and thermal mixing of waters in lakes
 4. Emergent aquatic vegetation
 5. Human life as we know it
 6. All of the above

2. Is the pond below you eutrophic? Yes or No _____ (1 point)
Give 2 physical characteristics of eutrophic freshwater systems. (4 points)

3. Provide 3 reasons why wetlands are critical ecosystems worthy of protection. (6 points)

4. Which of the following activities uses the greatest amount of water? (1 point)
1. Drinking
 2. Agriculture
 3. Industrial purposes
 4. Fire fighting

5. How does groundwater get contaminated and why is it expensive to clean contaminated groundwater? (3 points)

6. Sediment can be transported to rivers and lakes via which of the following: Check all that apply. (2 points)

1. Wind
2. Precipitation
3. Wildlife
4. Decay

SEE ADDITIONAL QUESTIONS ON BACK

7. What percentage of water on earth is available for human consumption? (2 points)
1. 0.6%
 2. 0.00003%
 3. 1.2%
 4. 5%
8. Using the attached topographic map – delineate the watershed of identified pond. (6 points)

Water Quality

9. In Wisconsin, which component of traditional fertilizers is of primary concern for water quality. (1 point)
1. Phosphorus
 2. Nitrogen
 3. Potassium
 4. Iron

10. Give one example of non point source pollution and point source pollution. (2 points)
Which is more difficult to control and why. (5 points)

Nonpoint source pollution - _____
Point source pollution - _____

11. The level of dissolved oxygen is affected by all of the following except one. (2 points)
1. Water temperature
 2. Altitude
 3. Water agitation
 4. Coliform bacteria count

12. Why is fecal coliform bacteria used as an indicator of pathogenic organisms when assessing water quality? (3 points)

13. What factors are affected by a water's turbidity? Check all that apply (2 points)
1. Water temperature
 2. pH
 3. Dissolved oxygen
 4. BOD (Biological oxygen demand)
 5. Flow rate

14. Explain how an automobile accident involving a truck hauling milk that resulted in large amounts leaking into a slow stream would effect this stream. Would this be a long or short term problem. (6 points)

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15. Which of the following reasons are realistic concerns associated with sedimentation of our waterways. (3 points)
1. Harmful chemical elements and metals adhere to sediment particles and are transported through the systems via the sediment.
 2. High sedimentation leads to turbid waters which adversely effects plant growth and habitat conditions for aquatic life.
 3. As sediments filter out of the water at define locations, there is often a concentration of pollutants.
 4. All of the above.
16. Which of the following is NOT a source of toxic metals found in our waterways? (2 points)
1. Fungicides
 2. Street refuse and dust
 3. Industrial pollution
 4. Manure
 5. Deicing salts
 6. Automobile-related sources
17. Why shouldn't you pour used car oil directly into street storm sewers? (2 points)
1. Storm sewers empty water directly into natural streams and not to treatment plants
 2. Oil floats and it coats the sewer pipes.
 3. Oil can be safely used to keep dust down on roadways.
 4. In cold weather, the oil can clog the sewer pipes.

Land Use

18. On an acre per acre basis – which land use contributes the most to erosion and sedimentation? (2 points)
1. Agriculture (row crops)
 2. Dairy farming
 3. Construction sites
 4. Urban residential areas
19. Identify 2 ways vegetated buffer strips located between crops and waterways limit NPS contributions from farm fields. (6 points)

20. Explain how septic systems work – describe the functions of both living and non-living components. (3 points)

21. The local Parks Department plans to build a parking lot and beach concession stand in the flats connecting the two ponds below you – what design elements should they use to limit the environmental impacts. (3 points)
1. Use of pavers (such as bricks) in the parking lot area to decrease runoff volumes.

2. Pitch the asphalt parking lot and building roof runoff towards the roadway to get runoff away from the project site.
3. Clear the area of existing vegetation to ease construction activities and replace with lawn and annual flowers.
4. Re-grade a portion of the hill to incorporate the building and allow more beach space for sunbathing.

22. Channelized/paved waterways do all of the following EXCEPT. (2 points)

1. Increase flashiness of downstream waterways.
2. Increase sediment transport downstream.
3. Decrease flooding downstream.
4. Loss of floodplain reduces storage area and moves greater water volume downstream.
5. Increased water velocities increases scouring and erosive powers of waterway.

23. What is the purpose of detention and/or retention ponds constructed along with new development? (2 points)

1. They increase the property value by providing an aesthetic element to the landscape.
2. Their construction allows the contractor to use topsoil and fill from on-site and decreases the overall site development costs.
3. They catch storm water runoff from the site and release it to existing waterways at controlled rates.
4. They allow municipalities to aerate the water in their storm sewer systems.

24. How do pavement and other impervious areas (roofs, walkways, plazas etc.) affect the hydrologic cycle. (2 points)

1. Decreases transpiration rates
2. Limits aquifer/groundwater recharge
3. Decreases evaporation of stormwater
4. Increases condensation rates
5. Improves availability of water to plants

25. Of the following, which are the best TWO locations to wash your car with regards to water quality. (2 points)

1. In a parking lot where the water drains directly into a storm sewer
2. Over grass or gravel areas.
3. In a car wash facility.
4. Near a beach

26. Identify ONE benefit associated with planting trees in parking lots and along roadways with regard to water quality. (2 points)

27. Identify TWO benefits associated with dam removal. (4 points)

28. Define water conservation and describe two water-conserving things you can do in your house. (6 points)

Definitions and Laws

29. Define watershed. (5 points)

30. All of the following are objectives of the Clean Water Act EXCEPT which: (2 points)

- 1. Make all the country's surface waters safe for fishing and swimming.
- 2. To resort the chemical and physical integrity of the nation's surface water.
- 3. To set aside areas of land that are critical to maintaining a healthy watershed.
- 4. To restore the biological integrity of the nation's surface waters.

31. Nonpoint sources were subject to direct regulation under the Clean Water Act when it was enacted in 1972, true or false. (1 points) _____

32. The EPA has placed new emphasis on the provisions in Section 303 of the Clean Water Act which requires states to identify total maximum daily loads (TMDL) for waterbodies that are not meeting applicable water quality standards. Define TMDLs. (3 points)

END OF TEST