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CT Envirothon Aquatics Exam 2017

Print the name of your Team/School on the line in the upper right hand corner of this page and **EACH** additional page. For each of the questions in this exam you will either circle the correct answer or fill in the blank space(s) provided.

All specimen identifications are included in the first half of the exam and you are allowed to use the provided keys to ID each organism. There are two questions per specimen and each specimen identification question number correlates to with the specimen # (e.g. 1A and 1B). Each question from #1A – #22 is worth 3 points, and the bonus question #23 is worth 1 point. Questions #24 – #28 are focused on the current topic and worth 2 points each. **GOOD LUCK!!!**

Use *The Amphibians of Connecticut* to identify the following organisms:

1A) Identify the species in container #1.

a) *Pseudacris crucifer*
b) *Rana clamitans*
c) *Rana palustris*
d) *Hyla versicolor*

1B) What is the conservation status of populations of the species in container #1 in Connecticut?

a) common
b) State Threatened
c) populations declining
d) Federally Endangered

2A) What is the species in container #2?

a) *Plethodon glutinosus*
b) *Hyla versicolor*
c) *Ambystoma opacum*
d) *Ambystoma maculatum*

2B) What habitat do the species in container #2 use for reproduction?

a) trees
b) lakes
c) vernal pools
d) streams

3A) What is the species in container #3?

a) *Ambystoma opacum*
b) *Desmognathus fuscus*
c) *Plethodon cinereus*
d) *Necturus maculosus*

3B) Adult forms of the species in container #3 live in what conditions?

a) terrestrial b) aquatic

Use the *Freshwater Mussels of CT Guide* for the following shell:

4A) What species is in container #4?

a) *Anodonta implicata* b) *Elliptio complanata*

c) *Lampsilis cariosa* d) *Strophitus undulatus*

4B) Which type of waterbody do the species in container #4 inhabit?

a) Large Ponds. b) Streams

c) Rivers c) All of the above

5A) What species is in container #5?

a) *Anodonta implicata* b) *Ligumia nasuta*

c) *Lampsilis cariosa* d) *Margaritifera margaritifera*

5B) Is the species in container #5 protected through the State of Connecticut's Endangered and Threatened Species laws?

a) No, it is common. b) Yes, it is special concern.

c) Yes, it is endangered. c) No, it is an invasive.

Use the *Guide to Riffle Dwelling Macroinvertebrates* for the following organisms:

6A) What is the family in vial #6?

a) *Hyrdropsychidae* b) *Aeshnidae*

c*) Philopotamidae* d) *Lepidostomatidae*

6B) What type of feeding group does the specimen in vial #6 belong to?

a) scraper b) collector-filterer

c) predator d) gatherer

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7A) What is the family in vial #7?

a) *Gomphidae* b) *Amphipoda*

c) *Oligochaeta* d) *Pteronarcyidae*

7B) What is the pollution tolerance value for the family in vial #7?

a) 0 b) 5

c) 1 d) 7

Use the *Connecticut Fish Key* to identify the following organisms:

8A) What species is in container #8?

a) *Apeltes quadracus* b) *Ictalurus punctatus*

c) *Etheostoma olmstedi* d) *Morone saxatilis*

8B) What type of scales does the fish in container #9 have?

a) placoid b) ctenoid

c) cycloid d) lacks scales

9A) What species is in container #9?

a) *Lepomis macrochirus* b) *Catostomus commersonii*

c) *Apeltes quadracus* d) *Menidia menidia*

9B) What is the configuration of the mouth of the fish in container #9?

a) terminal b) subterminal or inferior

c) superior d) oral disk

Use the *Invasive Aquatic Plants in CT Guide* for the following plant:

10A) What is the plant in photo #10?

a) *Potamogeton crispus* b) *Najas flexilis*

c) *Pistia stratiotes* d) *Egeria densa*

10B) Where in the water column can this plant be found?

a) Free floating on the surface of the water

b) Plants are submerged

c) Plants are on or above the water surface

d) Plants are rooted to the substrate and float

11A) What is the plant in photo #11?

a) *Marsilea quadrifolia* b) *Nymphoides peltata*

c) *Trapa natans* d) *Cabomba caroliniana*

11B) What management approaches can address the species in photo #11 and other nuisance aquatic plant species?

b) Nutrient reduction

b) Sediment removal

c) Biological controls

d) All of the above

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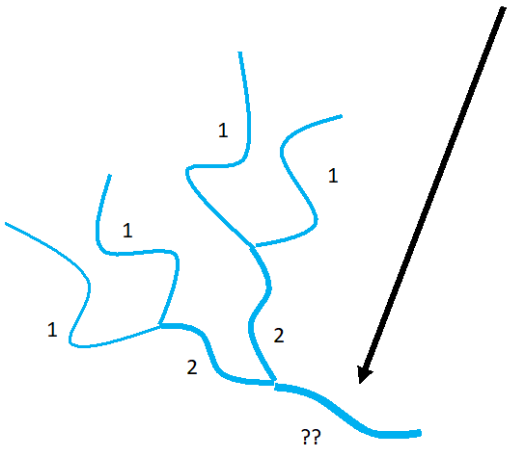
For the remaining questions on the exam, no ID guides or other reference materials may be used, unless indicated. All questions come directly from the workshop training session including many of the materials posted on the CT Envirothon website and are referenced for your future learning. Please ask station leaders if you have any specific questions as you work through the exam.

The following six questions are based on the "Watershed Jeopardy" session during the Aquatics 2016 Workshop.

12) This stream order:



a) What is 1? b) What is 4?

c) What is 3? d) What is 2?

13) Bogs receives most of their water from this.

a) What is groundwater? b) What is precipitation?

c) What is rivers? d) What is runoff?

14) A TMDL is the total amount of pollution a water body can receive and still meet water quality standards. What does it stand for**?**

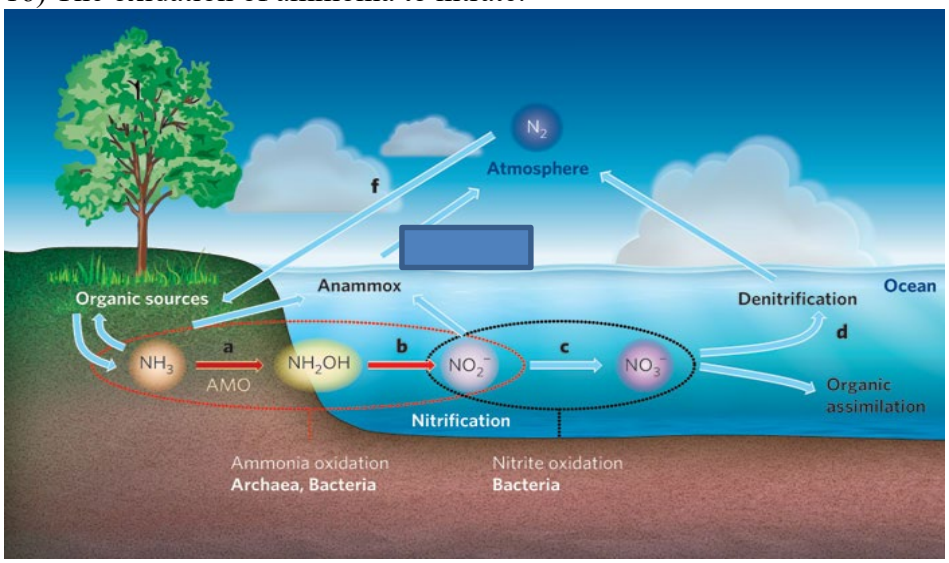
a) What is True Maximum Dosage Level? b) What is Total Maximum Daily Load?

c) What is Total Maximum Daily Limit? d) What is Total Minimum Dosage Loss?

15) This 1972 federal law regulates point source discharges to the nations waters:

a) What is The Clean Water Act?
b) What is The Inland Wetlands and Watercourses Act?
c) What is The Resource Conservation and Recovery Act?
d) What is The Coastal Zone Management Act?

16) The oxidation of ammonia to nitrate:



a) What is eutrophication?
b) What is respiration?
c) What is evapotranspiration?
d) What is nitrification?

17) This is the study of lakes and ponds:

a) What is zoology?
b) What is geomorphology?
c) What is limnology?
d) What is oceanography?

The following two questions are based on the "Nonpoint Source Pollution: A Challenge to Control" session during the Aquatics 2017 Workshop.

18) What is a habitat degradation problem that can result from nutrients in storm water runoff?

a) increased scour
b) bioaccumulation in the food web
c) decreased temperature
d) hypoxia

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19) Which of the following is an example of a Low Impact Development?

a) Increased impervious surfaces
b) protected wetlands including vernal pools
c) More lawns – less trees and gardens
d) Higher curbing

The following three questions are based on the "Riparian Buffers" session during the Aquatics 2017 Workshop.

20) What is a Riparian Corridor?

a) The wetland boundary line for a stream identified through review of soil conditions.
b) The natural vegetation and soil cover adjacent to a river, stream, or other body of water.
c) All areas of the uplands within the watershed.
d) The portions of a stream or river permanently covered by water.

21) The sorption coefficient (Koc) describes the tendency of a pesticide to bind to soil particles. The higher the Koc:

a) The greater the sorption potential.
b) The lower the sorption potential.
c) The sorption potential remains the same.
d) This does not indicate sorption potential.

22) What is the recommended minimum width of a riparian buffer in order to protect bank stability and maintain water temperature for a small, forested stream?

a) 5 ft.
b) 15 ft.
c) 50 ft.
d) 100 ft.

23) ****BONUS**** What if your teams favorite aquatic organism?
(All answers receive 1 Point)

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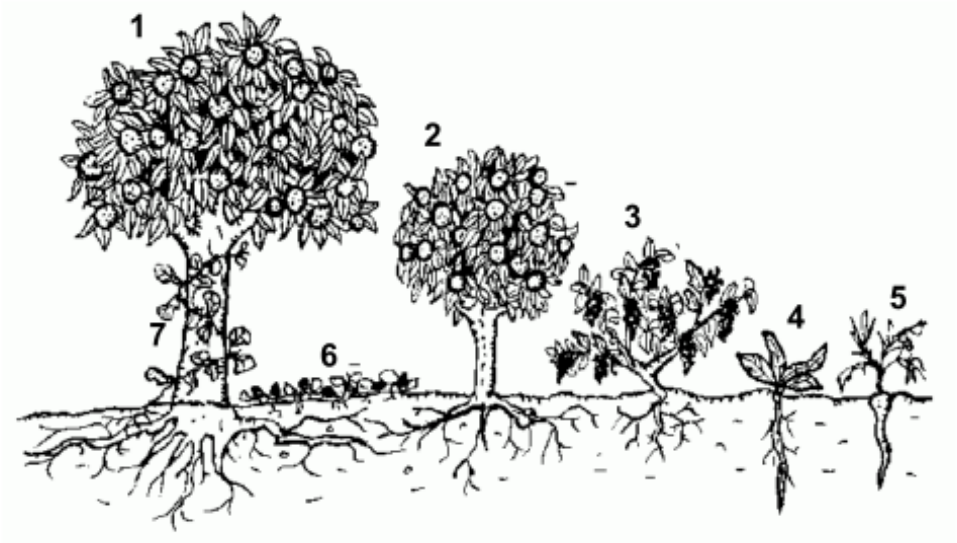
The following questions on the exam are focused directly on the Current Topic for 2016 "Permaculture." Please ask station leaders if you have any specific questions. ***(Current Issue: Introduction to Permaculture by Cynthia Rabinowitz).***

The following questions are based on the "Introduction to Permaculture" presentation provided by Cynthia Rabinowitz during the Aquatics Workshop. Question 24 is worth 3 points, and each answer within question 25 is worth 1 point.

24) Permaculture is a _____ which seeks to draw ideas from the universal principles of nature (ecology).

a) Design System
b) Regulation
c) Protocol
d) Construction Approach

25) Match the plant guilds (labeled with letters) identified in "The Forest Garden" diagram with their associated numbers.



1. C
2. E
3. A
4. B
5. G
6. D
7. F

a. Shrub layer (currants & berries)
b. Herbaceous (comfreys, beets, herbs)
c. Canopy (large fruit & nut trees)
d. Soil surface (ground cover)
e. Low tree layer (dwarf fruit trees)
f. Vertical layer (climbers & vines)
g. Rhizosphere (root vegetables)