CT Envirothon Aquatics Exam 2012

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 third of the exam and you are allowed to use the provided keys to ID each organism. Each question from #1-#33 is worth 3 points, question #34 is worth 1 point. Questions #35- #39 are focused on the current topic and worth 2 points each. **GOOD LUCK!!!**

Please utilize the *Key to Saltwater Invertebrates* to identify the following organisms:

1)   What is the species in container #1?

a) *Carcinus maenas*   b) *Euspira heros*

c) *Littorina littorea*   d) *Urosalpinx cinerea*

2)   What is the species in container #2?

a) *Busycotypus canaliculatus*   b) *Mercenaria mercenaria*

c) *Urosalpinx cinerea*   d) *Nucella lapillus*

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

3)   What is the species in container #3?

a) *Necturus maculosus*   b) *Ambystoma maculatum*

c)   *Desmognathus fuscus*   d) *Eurycea bislineata*

4)   What is the species in container #4?

a) *Rana pipiens*   b) *Rana clamitans*

b) *Bufo fowleri*   d) *Rana catesbeiana*

5)   What is the species in container #5?

a)   *Plethodon glutinosus*   b) *Notophthalmus viridescens*

b) *Ambystoma laterale*   d) *Plethodon cinereus*

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

6)   What species is in container #6?

a) *Micropterus salmoides*   b) *Cottidae*

c) *Esox americanus*   d) *Anguilla rostrata*

7)   What species is in container #7?

a) *Pseudopleuronectes americanus*   b) *Notemigonus crysoleucas*

c) *Esox niger*   d) *Catostomus commersoni*

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

8)   What species is the shell #8?

a) *Anodonta implicata*   b) *Dreissena polymorpha*

c)   *Alasmidonta undulata*   d) *Ligumia nasuta*

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

9)   What is the family in vial # 9?

a) *Gomphidae*   b) *Corydalidae*

c) *Perlidae*   d) *Tipulidae*

10)   What is the family in vial #10?

a) *Perlidae*   b) *Psephenidae*

c) *Pyralidae*   d) *Decapoda*

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

11) What is the plant in container #11?

    a) *Myriophyllum heterophyllum*   b) *Najas minor*

    c) *Hydrilla verticillata*   d) *Myriophyllum spicatum*

12) What is the plant in container #12?

    b) *Egeria densa*   b) *Trapa natans*

    c) *Potamogeton crispus*   d) *Myriophyllum aquaticum*

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 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.

13) Which of the following nonpoint source pollutants carried in stormwater runoff contributes excessive amounts of nitrogen to water bodies?
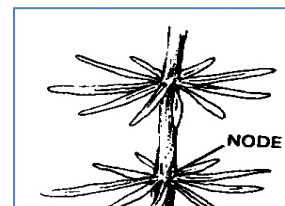
    a.) road salt
    b.) gasoline and motor oil
    c.) pesticides
    d.) fertilizer

14) "Which of these amphibian species is considered Endangered by the State of Connecticut? (*The Amphibians of Connecticut*)
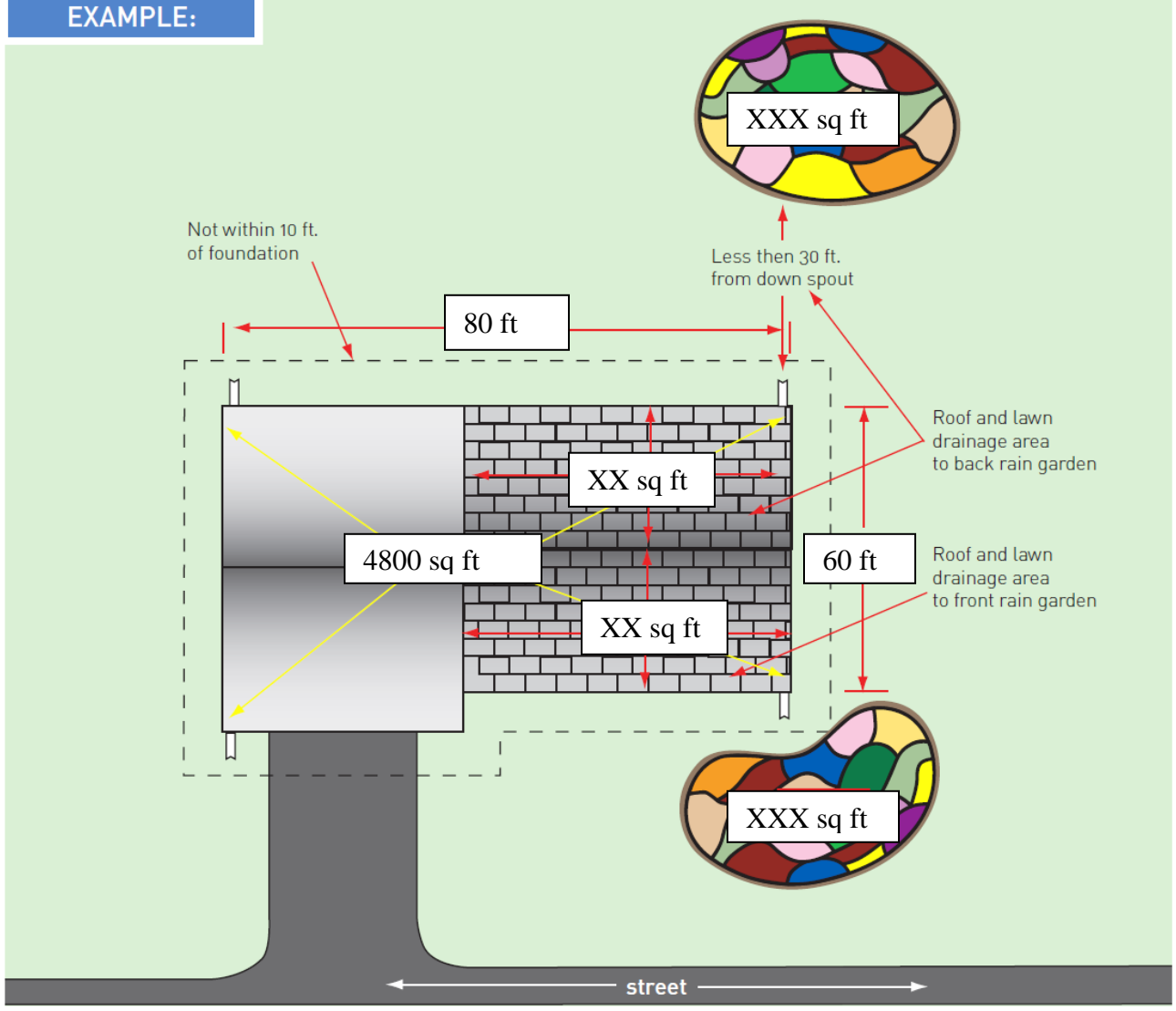
    a) *Bufo fowleri*
    b) *Scaphiopus holbrooki*
    c) *Eurycea bislineata*
    d) *Ambystoma opacum*

15) The diagram below depicts which form of aquatic plant leaf structure? (*Invasive Aquatic Plants in Connecticut Presentation 2012*)

    a) Alternate
    b) Simple
    c) Opposite
    d) Whorled

XXX sq ft

Not within 10 ft.
of foundation

Less then 30 ft.
from down spout

80 ft

Roof and lawn
drainage area
to back rain garden

XX sq ft

4800 sq ft

60 ft

Roof and lawn
drainage area
to front rain garden

XX sq ft

XXX sq ft

street

16) To calculate the proper size of a rain garden prior to installation, you must calculate roof area, % of roof drained by each downspout, and then divide the % of roof for each garden by 6. What is the appropriate sized rain garden in the following example? *(UCONN rain garden brochure pg 6)*

a) 100 sq ft
b) 200 sq ft
c) 500 sq ft
d) 1000 sq ft

17) The owner you designed the rain garden for is concerned that the standing water will create mosquito issues. What is your response? (*UCONN rain garden brochure pg 3*)

    a) Recommend use of pesticides to reduce mosquito breeding.
    b) Mosquitoes are better than non-point source pollution.
    c) If the rain garden is designed properly it will only hold water for up to 6 hours after a rain event, therefore mosquitoes will not be an issue.
    d) Amphibian breeding in the rain garden will reduce mosquito populations naturally.

18) What is a major cause of extinction of amphibian species in Connecticut? (*The Amphibians of Connecticut, pg 2*)

    a) Habitat destruction
    b) Invasive species
    c) Warming climate
    d) Unknown cause

19) Which is NOT a reason benthic macroinvertebrates are considered a valuable tool for water quality studies? (*Macro Guide, pg 3*)

    a) They are not very mobile and cannot avoid pollution.
    b) They can accumulate toxic substances in their bodies.
    c) They serve as prey for many more mobile organisms.
    d) They have long life spans lasting several years.

20) What is the definition of a "run" habitat? (*River Watch Macro Guide, pg 12*)

    a) Deep, intermediate/slow moving sandy and gravelly bottom area.
    b) Deep, slow moving muddy-bottom area.
    c) Shallow, fast-moving, rocky-bottom area.
    d) Dry area, only wet during rain events.

21) The Aquatics station leaders have to dispose of the invasive aquatic plant specimens we are using for the Envirothon event. Which is the **BEST** method of disposal? (*Invasive Aquatic Plants in Connecticut Presentation 2012*)

    a) Throw them in the pond next to the station setup.
    b) Let them dry in the zip lock back and throw them away.
    c) Flush them down the toilet.
    d) Put them in our fish tank.

Hydrologic Cycle Components

©The COMET Program
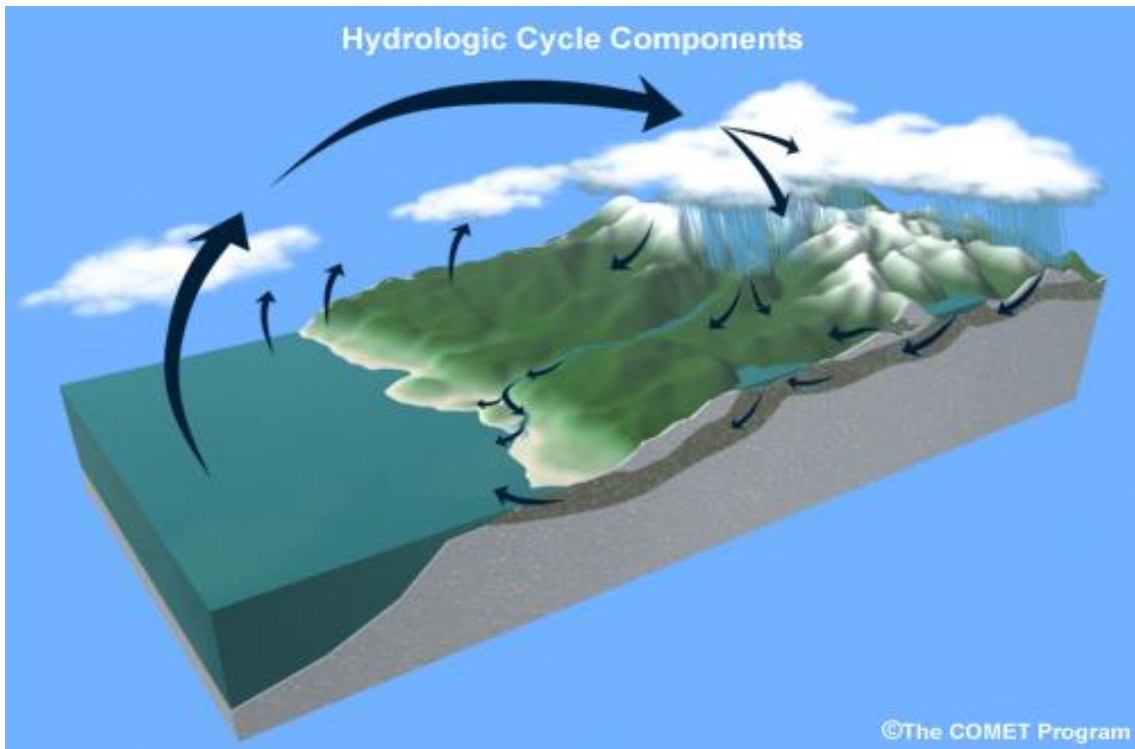
What are the components of the hydrologic cycle? Please choose the correct terms directly from the options listed in the adjacent text box. Not all choices will be used. *(Watershed Presentation 2012)*

-evaporation   -condensation
-consumption -discharge
-recharge   -infiltration
-storage   -precipitation

22) __Evaporation_____

23) __Precipitation_____

24) __Infiltration_____

25) The invasive algae *Grateloupia turuturu* is native to _____ *(Red Algae Invasion, pg 1)*

a) Alaska
b) Asian Pacific
c) Caribbean
d) South American Pacific

26) Due to impervious surfaces like pavement and rooftops, a typical city block generates more than ____ times more runoff than a woodland area of the same size. *(USEPA NPS Urban Fact Sheet, pg 1)*
a) 2
b) 5
c) 10
d) 100

Use the Figure to the right to answer questions # 27-28.

27) Which of the following identifies boundaries that are considered a watershed? (*Nonpoint Source Pollution Presentation 2012*)

a) Area # 4.
b) Area # 4, 3 and 2.
c) All areas shaded region. (There is no pink color!)
d) All of the above.

28) What is the largest watershed depicted in this figure? (*Nonpoint Source Pollution Presentation 2012*)

a) The Connecticut River Watershed
b) The Thames River Watershed
c) The Long Island Sound Watershed
d) The Eight Mile River Watershed
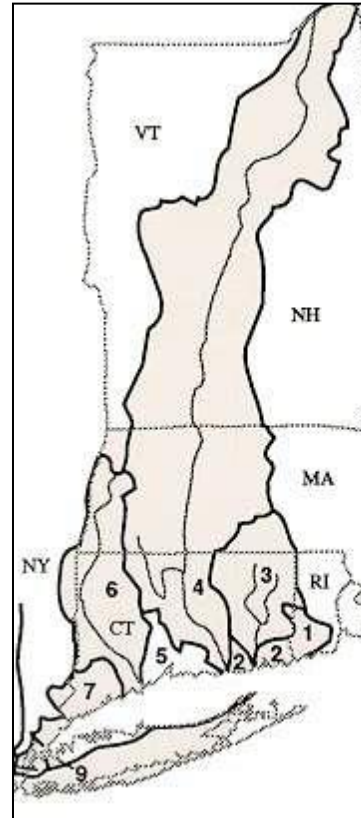
29) Enhancing spawning habitat for Northern Pike would focus on which of the following habitats? *(Extension Notes: Improving Fish Habitat, pg 2)*:

a) Seasonally flooded marshes and wetlands near grassy hummocks
b) Cobble-rubble in fast-flowing streams or wind-exposed shoals of lakes
c) Stream channels or riffle areas with clean gravel-cobble substrate
d) Pea gravel in shallow littoral areas

30) What are two threats that freshwater mussels are very vulnerable to? *(Mussel guide pg 2)*

a) freezing and thawing
b) flooding and smothering
c) disturbance and pollution
d) drowning and drying up

31) Which of the following is a best management practice that should apply when considering construction of a dock? *(Reducing Recreational Impacts pg 3)*

   a) Apply wood preservatives once the dock is installed to prevent rotting.
   b) Construct a dock at least three times the size of the expected vessel.
   c) Build a patio next to the dock.
   d) Construct all docks to allow free flow of water beneath them to prevent erosion and sedimentation along the shore.

32) EPT (Ephemeroptera, Plecoptera, Trichoptera) values can tell biologists a lot about the pollution levels in a stream. Which range is indicated as showing a high quality stream? *(Macro Guide, pg 3)*

   a) 6-10
   b) 2-5
   c) 11-20
   d) 0-1

33) How would you classify a small seasonally water filled depression, absent of a fish population and containing no inlets or outflows? *(Wicked Big Puddles pg 1)*

   a) pond
   b) vernal pool
   c) detention basin
   d) autumnal puddle

34) Which body of water do you plan to spend most time enjoying this summer?

(ANY answer receives 1 point)

The following questions on the exam are directly focused on the Current Topic for 2012 "Nonpoint Source Pollution / Low Impact Development." The materials posted on the CT Envirothon website are referenced for your future learning. These questions are worth 2 points each. Please ask station leaders if you have any specific questions.

Each question requires one answer. One answer in the right column will not be used.
(Current Issue: 2004 Connecticut Stromwater Quality Manual)

35) __D__ eutrophication

36) __A__ total suspended solids (TSS)

37) __E__ sedimentation

38) __B__ erosion

a.) A measurement of particles in water that block light penetration or reduce water clarity.

b.) The transportation of weathered material and sediments from one place to another by water.

c.) Condition in which dissolved oxygen is below the level necessary to sustain animal life.

d.) Excessive nutrient loading of water bodies resulting in reduced dissolved oxygen availability for aquatic life.

e.) The process of deposition of a solid material from a state of suspension

39) What is the most common cause of pollution in streams, rivers, and oceans?
(*Watershed Presentation 2012 Aquatics Workshop Slide 13*)

a) Trash washed into the ocean from beaches
b) Dumping of garbage by cities
c) Waste dumped by factories
d) Surface water running off yards, streets, paved lots, and farm fields.