

TEAM/SCHOOL _____

CT Envirothon Aquatics Exam 2005

Print the name of your Team/School on the line in the upper right hand corner of this 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 within the first third of the exam and you are allowed to use the provided keys to ID each organism. Each question is worth 3 points except number 24, which is worth 4 points. Good Luck!

These photos are an invasive plant that is very common in CT.

- 1) What is the aquatic invasive plant in these photos?
- a) water hyacinth
 - b) **purple loosestrife**
 - c) water chestnut
 - d) red-bell honeysuckle

Use the salamander key for the next specimen.

- 2) What species of salamander is this?
- a) Northern two-lined salamander (*Eurycea bislineata*)
 - b) Northern dusky salamander (*Desmognathus fuscus*)
 - c) **Four-toed salamander (*Hemidactylium scutatum*)**
 - d) Spotted salamander (*Ambystoma maculatum*)

Use the “abbreviated key to Saltwater Invertebrates” for the next 3 questions

- 3) What is this organism?
- a) limulus polyphemus
 - b) carcinus maenas
 - c) urosalpinx cinerea
 - d) **libinia emarginata**
- 4) What is this organism?
- a) aurelia aurita
 - b) **asterias forbesi**
 - c) busycotypus canaliculatus
 - d) felix domesticus

5) What is this organism/shell?

a) nucella lapillus

c) crepidula fornicata

b) homo sapiens

d) littorina littorea

Use “An Identification Key to the Most Common Freshwater Benthic Macroinvertebrates” for the next 3 questions

6) What is the family of the organism in vial # 6?

a) Elmidae

c) Psephenidae

b) Gomphidae

d) Baetidae

7) What is the family of the organism in vial #7?

a) Corydalidae

c) Aeshnidae

b) Isopoda

d) Simuliidae

8) What is the family of the organism in vial #8?

a) Limnephilidae

c) Brachycentridae

b) Leptoceridae

d) Philopotamidae

For the next question use the “Abbreviated Key to Saltwater Fishes”

9) What is this fish specimen?

a) alosa aestivalis

c) brevoortia tyrannus

b) alosa pseudoharengus

d) pomatomus saltatrix

For the next 2 questions use the “Abbreviated Key to Freshwater Fishes”

10) What is the fish specimen in this tray?

a) anguilla rostrata

c) lepomis gibbosus

b) micropterus salmoides

d) cyprinus carpio

11) What is the fish specimen in this tray?

a) pomoxis nigromaculatus

c) lepomis macrochirus

b) catostomus commersoni

d) micropterus dolomieu

Use the “Field Guide to Freshwater Mussels of CT” for the following question.

12) What species is this small mussel shell?

a) zebra mussel (dreissena polymorpha)

c) eastern pondmussel (ligumia nasuta)

b) eastern elliptio (elliptio companata)

d) alewife floater (andonta implicata)

The remaining questions are not Identifications and you may not use study guides or keys to quest for their answers.

13) According to Article 4 “Nutrient Movement from the Lawn to the Stream” from the Center for Watershed Protection, a survey of Minnesotan homeowners, discovered 85% had their lawns fertilized regularly. What percentage of this group had their soil tested to see if they actually needed fertilizer? (pg 1&2)

- a) 100% b) 85% c) 50% **d) less than 20%**

14) In Article 28 “Basic Concepts in Watershed Planning”, what is the correct order of size, in terms of acreage, from largest to smallest, when discussing watershed plans? (pg 1&2)

- a) basin, sub-basin, watershed, sub-watershed, catchment**
b) catchment, basin, sub-basin, subwatershed, watershed
c) watershed, stream, river, LIS, ocean
d) catchment, watershed, sub-watershed, basin, sub-basin

15) What are the larvae of Freshwater Mussels called? (Mussel guide pg1)

- a) fry **b) glochidia**
c) nymph d) musselette

16) What are two threats that freshwater mussels are very vulnerable to? (Mussel guide pg2)

- a) freezing and thawing b) boiling and freezing
c) disturbance and pollution d) drowning and drying up

17) Which of the following vernal pool-breeding salamanders reproduces in the fall rather than the spring? (salamander proof guide pg 2)

- a) Spotted salamander (*Ambystoma maculatum*)
b) Marbled salamander (*Ambystoma opacum*)
c) Blue-spotted salamander (*Ambystoma laterale*)

18) Which of the following species of salamanders breeds in vernal pools?
(salamander proof guide pg8)

- a) Redback salamander (*Plethodon cinereus*)
- b) Northern two-lined salamander (*Eurycea bislineata*)
- c) Northern dusky salamander (*Desmognathus fuscus*)
- d) Jefferson salamander (*Ambystoma jeffersonianum*)**

19) What are general characteristics of the “ultimate bufferzone”? (buffer fact sheet page 3)

- a) gentle slopes
- b) moderately permeable soil
- c) native vegetation
- d) large boulders
- e) a and d
- f) a b and c**

20) Which of the following is NOT a personal effort that will help protect water quality? (clean water fact sheet pg1)

- a) using non-toxic alternatives for cleaning
- b) conserving water
- c) flushing chemicals down the toilet**
- d) reducing fertilizer usage

21) Which of the following processes allows water to leave a watershed after it falls as precipitation? (What Happens to Water pg5)

- a) Evapotranspiration
- b) ground water recharge
- c) a and b**
- d) none of the above

22) Which soil type will cause the highest levels of runoff during a rain event? (what Happens to water pg11)

- a) coarse textured soil
- b) **clay particle soil**
- c) gravel
- d) topsoil

23) List the 3 “Alien Invader” species of the Long Island Sound rocky intertidal zone that are listed in “Living Treasures” pg 19-20.

a) _____

b) _____

c) _____

Only accept periwinkle snails, green crab, and Japanese Shore Crab

24) Name the four true marine turtle species which visit LIS in the summer (Living treasures pg37)

a) _____ b) _____

c) _____ d) _____

Only answers are Loggerhead, Kemp's Ridley, Leatherback, and Green

25) Which characteristic is not shared by many aquatic invasive weeds? (Invasive Aquatic Weeds pg 1)

- a) grow very fast
- b) can reproduce from plant fragments
- c) **exhibit camouflage**
- d) can survive in a variety of temperatures

26) List 3 of the 4 control/eradication methods used when dealing with invasive weeds (Invasive Aquatic Weeds pg 3)

a) _____ b) _____

c) _____

Mechanical, Biological, Physical, and Chemical are all acceptable

27) What do the letters E P T stand for when dealing with freshwater macroinvertebrates? (macro doc in Envirothon pg 1)

a) _____ b) _____

c) _____

Only Ephemeroptera, Plecoptera, Trichoptera are acceptable. No common names

28) What taxonomic class is shared by stoneflies, mayflies, and dragonflies? (Riverwatch macro guide pg2)

- a) crustacea
- b) gastropoda
- c) arthropoda
- d) **insecta**

29) Using the TOPO map provided at the station, what is the approximate elevation above sea level of this testing station (close to the red flags)?

- a) 1000 ft
- b) 50 ft
- c) **450 ft**
- d) 650 ft

30 Quickly looking at the diversity of the benthic organisms collected from the Farmington River, do you think the water quality supports a healthy community or an impaired community?

(I will only know this that morning)

31) What is the main source of water that fills vernal pools?
(Wicked Big Puddles pg 4)

- a) flooding rivers
- b) **spring rain and snow melt**
- c) garden hose
- d) groundwater seepage

32) For the ground water to discharge into a stream or other surface water body, what must be true? (USGS circular 1139 pg 1)

- a) stream must flow very slowly
- b) stream water is more dense than the ground water
- c) **the altitude of water table near the stream is higher than surface of the stream**
- d) lots of animals are drinking from the stream at the same time

33) What are the stinging cells of sea jellies called? (Sea Jelly {jellyfish} factsheet

- a) mitochondria
- b) blastocysts
- c) **nematocysts**
- d) stinging hooks