



2022 REGIONAL ENVIROTHON

Wildlife Test

(25 total points)

INSTRUCTIONS: Write your answers on the Respondent Sheet.

1. Which of these following native snake species of Iowa is poisonous?
 - a. Rattlesnakes
 - b. Northern Water Snakes
 - c. Prairie Rattlesnakes
 - d. None of the above
2. Cecropia Moths, Iowa's largest moth species, go through a process of metamorphosis. What is the correct order of the process?
 - a. Egg – caterpillar – pupa – adult
 - b. Egg – worm – chrysalis – adult
 - c. Egg – caterpillar – chrysalis – adult
 - d. Egg – caterpillar – cocoon – adult
3. What is the largest species in the rodent family?
 - a. River Otter (*Lontra canadensis*)
 - b. Wolverine (*Gulo gulo*)
 - c. American Beaver (*Castor canadensis*)
 - d. Woodchuck (*Marmota monax*)
4. Female American Goldfinches utilize thistles and cattails to make their nests. What time of year do they nest?
 - a. Early Spring (March and April)
 - b. Early Summer (May and June)
 - c. Late Summer (July and August)
 - d. Fall (September and October)
5. Which of the following is an example of the function of a keystone species?
 - a. Woodpeckers carving out holes in trees for nesting
 - b. Bluegills controlling zooplankton populations
 - c. Millipedes eating decaying wood plant matter
 - d. None of the above

6. Bulls, cows and calves are terms that are used with what large North American mammal species?
- Moose, Bison, Elk, and White-tail Deer
 - Bison and Elk only
 - Moose and Elk only
 - Moose, Bison, and Elk

MATCHING: Match the definition with the appropriate scientific term .

- | | |
|-------------------------|--------------------------|
| a. Bioaccumulation | f. Dendrology |
| b. Wildlife Corridors | g. Habitat Fragmentation |
| c. Citizen Science | h. Biodiversity |
| d. Natural Disturbances | i. Phenology |
| e. Ecosystem Services | j. Flyway |

7. _____ The process that causes the concentration of a substance to increase as it moves up the food web.
8. _____ The study of how the biological world times natural events.
9. _____ A positive benefit that wildlife provides to humans, which can include regulating, supporting, cultural or provisioning.
10. _____ Public volunteers give their time to assist scientists in scientific research.
11. _____ Human expansion that forces wildlife into smaller tracts of land which can cause the decline of many wildlife species.
12. _____ Tract of land that connects different wildlife habitats that might otherwise be separated by human development.
13. The following species lay their eggs in water.
- Tiger Salamander
 - Northern Pike
 - Grey Tree Frog
 - All of the above
14. The following can be hunted in Iowa:
- Hungarian Partridge, Bobwhite Quail, Woodcock
 - River Otter, Bobcat, Moose
 - Elk, Mourning Dove, Wood Duck
 - A and C only
 - Bobolink

15. Eastern Wild Turkeys (*Meleagris gallopavo silvestris*) were reintroduced in Iowa in the _____.
- 1920s
 - 1940s
 - 1970s
 - They were never reintroduced.
16. _____ are the fastest birds of prey, clocked at over 200 mph when diving.
- American Kestrel
 - Sharp-shinned Hawk
 - Peregrine Falcon
 - Osprey
17. The following insects migrate south for the winter:
- Monarch Butterflies
 - Common Green Darners
 - Viceroy
 - A and B only
18. Wood ducks are Iowa's only tree nesting duck species. Soon after hatching, Wood duck chicks will plummet as far as 50 ft. to the ground. These chicks are a great example of a species in which the young hatch with feathers, good eyesight, and have the ability to feed themselves. Ornithologists use this word to describe this type of baby:
- Precocial
 - Altricial
 - Nidicolous
 - None of the above
19. Over _____ species of moths have been recorded in the state of Iowa.
- 50
 - 200
 - 500
 - 2000

IDENTIFICATION: Identify each of the following.



20. The snake to the left is a _____.
- a. Water snake
 - b. Common water snake
 - c. Eastern milk snake
 - d. Ring necked snake



21. The frog to the left is _____.
- a. A Plains Leopard Frog
 - b. A Crawfish Frog
 - c. A Pickerel Frog
 - d. An Eastern Green Treefrog



22. The creature to the left is _____.
- a. An Eastern Tiger Salamander
 - b. A Tiger Salamander
 - c. An Eastern Newt
 - d. A Smallmouth Salamander



23. To the left is a _____.
- a. Blanding's Turtle
 - b. Wood Turtle
 - c. Yellow Mud Turtle
 - d. Box Turtle



24. To the left is a _____.
- a. Six-lined Racerunner
 - b. Slender Glass Lizard
 - c. Northern Prairie Skink
 - d. Prairie Skink



25. The bird to the left is _____.
- a. A Golden Eagle
 - b. An Osprey
 - c. A Turkey Vulture
 - d. A Red-tailed Hawk

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TEST REVISION DATE

02/14/2011

CONTENT EXPERT

Katie Klus - Naturalist III at Black Hawk County Conservation



2022 REGIONAL ENVIROTHON

Soils Test

(25 total points)

INSTRUCTIONS: Write your answers on the Respondent Sheet.

MATCHING: Match the term to the description that best fits.

- | | | |
|-------------------|------------------------|-----------------|
| A. Erosion | H. Sand | O. Limestone |
| B. A horizon | I. Glacial till | P. Infiltration |
| C. Organic Matter | J. Bacteria | Q. pH |
| D. Loess | K. Aggregate stability | R. Clay |
| E. Earthworms | L. C horizon | S. Compaction |
| F. Permeability | M. Silt | T. Manure |
| G. B horizon | N. Bedrock | |

- _____ This mineral particle has the most surface area and therefore interacts most with water and nutrients
- _____ This particle holds the least amount of water
- _____ The ability of a particular soil to absorb water
- _____ Process where soil particles are moved by wind or water
- _____ The highest biological activity would be expected in this layer
- _____ This layer lacks development and appears similar to the material as it was deposited (parent material)
- _____ Wind-blown material that covers much of Iowa
- _____ Organism associated with high levels of soil quality
- _____ This accumulated in Iowa's soils due to the wet prairie history
- _____ This soil component controls nutrient availability to plants

MULTIPLE CHOICE: Select the best possible answer from those provided.

- Which soil order makes up the majority of Iowa's land area?
 - Mollisols
 - Alfisols
 - Entisols
 - Inceptisols
 - Histisols

12. Soil texture refers to what?
- The mix of sand, silt, and clay
 - How the soil sticks together or aggregates
 - The appearance of the surface
 - How the soil holds together when put in water
13. In estimating erosion with the USLE or RUSLE, which of the following is NOT considered?
- Soil texture or susceptibility to erosion
 - Slope steepness and length
 - Previous year's erosion
 - Cropping practices
14. Compaction _____.
- Generally causes increased root growth
 - Is needed for nutrient transport
 - Is naturally forming in lowa
 - Can cause more runoff and erosion
15. Which soil organism colonizes plant roots?
- Decomposer
 - Mycorrhizal fungi
 - Nematodes
 - Arthropods
16. The three main texture classifications of soil are _____.
- Loam, sandy loam, and silty loam
 - Clay, sand, and silt
 - Bedrock, sand, and clay
 - Rock, silt, and humus
17. Which of the following is NOT one of the five main soil forming factors?
- Climate
 - Living organisms
 - Time
 - Animal activity and waste
 - Parent material
18. Thin, wearing away of the uppermost surface of the soil profile is called _____.
- Rill erosion
 - Mass wasting
 - Sheet erosion
 - Soil creep

19. Which practice most effectively holds soil on a slope during a rain event?
- Live, rooted plant cover
 - Undisturbed residue from previous crop
 - Contour tillage
 - Vertical tillage parallel to the slope
20. A 3% slope _____.
- Is not steep enough to cause worry about soil erosion
 - Means that there is a 3 foot drop in elevation over a horizontal distance of 100 feet
 - Does not occur often in Iowa
 - Means that there is a 3 foot rise in elevation over a horizontal distance of 10 feet
21. Which of the following activities is most likely to decrease soils health?
- Contour farming
 - Leave soil bare over winter
 - Strip-cropping
 - Adding organic matter to the soil
22. The four principle components of soil are _____.
- Colloids, water, oxygen, and compost
 - Air, water, minerals, and organic matter
 - Sand, rocks, organic matter, and air
 - Water, rocks, oxygen, and compost
23. What area is adjacent to surface waters such as stream banks and shorelines?
- Upland
 - Wetland
 - Riparian
 - Buffer
24. The soil food web contains proportions of bacteria, fungi, and other organisms. Which of the following statements is true?
- Soil food web proportions are identical under different types of vegetation.
 - Forests and pastures have unique soil web proportions.
 - Management practices do not change the soil food web proportion if using conservation management practices.
 - None of the statements are true.

25. Growing cover crops is one practice that improves soil health. Cover crops can address which of the following concerns farmers may have in regards to their fields?
- a. Erosion control
 - b. Build organic matter levels
 - c. Break-up a compaction layer
 - d. Recycle nutrients
 - e. All of the above

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TEST REVISION DATE	02/17/2022
CONTENT EXPERT	Amber Anderson, MS - ISU Assistant Teaching Professor



2022 REGIONAL ENVIROTHON

Forestry Test

(25 total points)

INSTRUCTIONS: Write your answers on the Respondent Sheet.

MATCHING: Match the term to the description that best fits.

- | | | |
|------------------------|------------------------|--------------------------|
| U. Xylem | Z. Heartwood | EE. Secondary Succession |
| V. Cambium | AA. Root cap | FF. Meristem |
| W. Bark | BB. Silviculture | GG. Alternate |
| X. Sapwood | CC. Phloem | HH. Opposite |
| Y. Species composition | DD. Primary Succession | II. Trunk |

- _____ Main support of the tree and tree growth; it contains transport vessels for water, nutrients, and sugars
- _____ Found just below the bark; transport water and nutrients up the tree
- _____ Transports sugars from leaves to roots and other parts of the plant
- _____ Area of growth
- _____ Region of tissue expansion that occurs at the tips of both twigs and roots
- _____ Where new soil is formed and vegetation must start from a new substrate; can be caused by flooding
- _____ Where a disturbance clears vegetation, but existing soils and seed sources still exist on the site; this can be caused by fires
- _____ Science of controlling the establishment, growth, composition, health, and quality of forests and woodlands
- _____ Measurement of the different types of trees located within a particular area
- _____ Branching pattern unique to trees such as maple, ash, dogwood, and buckeye

MULTIPLE CHOICE: Select the best possible answer from those provided.

- The native insect two-lined chestnut borer (*Agilus bilineatus*) is an example of _____.
 - An invasive pest
 - Abiotic factor
 - Biotic factor
 - A parasite

12. Which of the following trees has compound leaves?
- Sugar maple (*Acer saccharum*)
 - Red oak (*Quercus rubra*)
 - Grey dogwood (*Cornus racemosa*)
 - Green ash (*Fraxinus pennsylvanica*)
13. The living outermost portion of a woody stem or branch is _____.
- Heartwood
 - Pith
 - Growth rings
 - Sapwood
14. Trees provide the following benefits, EXCEPT for _____.
- Increasing storm water
 - Reducing energy costs
 - Improving air quality
 - Intercepting rainfall
15. What are some of the abiotic factors affecting the growth of trees?
- Bacteria
 - Wind
 - Water
 - Fungi
 - Sunlight
 - All of the above
 - B, C, & E
16. Which one of the following trees disperse their seed using wind?
- Cottonwood
 - Cherries
 - Walnuts
 - Oaks
17. Forest composition changes with soil type, elevation, and slope aspect. Which slopes will have tree species adapted to hot and dry conditions?
- South and West
 - East and South
 - North and East
 - West and North
18. Community tree inventories provide which of the following data?
- Species diversity
 - Maintenance recommendations
 - Tree prices
 - Both A & B

19. Black walnut, red oak, and white ash trees are all considered _____.
- Softwoods
 - Canopy trees
 - Hardwoods
 - Conifers

MATCHING: Match the term to the description that best fits.

- White Oak
- Red Oak
- Black Walnut
- Kentucky Coffeetree
- Silver Maple
- Sugar Maple
- Eastern Red Cedar
- Eastern White Pine
- Blue Spruce

20. _____ Produces short, wide seed pods. The seeds were previously steeped to make a drink by Indigenous cultures
21. _____ Produces a samara seed and is found naturally in bottomland forests; bats often shelter under its loose bark
22. _____ Is only evergreen native to all parts of Iowa, and despite its name is actually a Juniper
23. _____ Second in lumber value and is used for making barrels of various kinds, but a higher value is derived from the seed that is used by over 45 species of wildlife in Iowa
24. _____ Has doubly compound leaves and produces a large nut. The roots produce toxins which can deter tomatoes, lilac, and apples if planted nearby
25. _____ Has light green needles that come in bundles of 5 and are soft and flexible

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TEST REVISION DATE	02/17/2022
CONTENT EXPERT	Gabrielle Edwards, Urban Forestry Program Specialist at Iowa DNR



2022 REGIONAL ENVIROTHON

Aquatics Test

(25 total points)

INSTRUCTIONS: Write your answers on the Respondent Sheet.

MATCHING: Match the term to the description that best fits.

- | | | |
|---------------------------|-----------------------------|-----------------------|
| JJ. European watermilfoil | PP. Duckweed | VV. White water lily |
| KK. Amphipods | QQ. Tertiary Consumer | WW. Phytoplankton |
| LL. Coontail | RR. Lacustrine wetlands | XX. Zooplankton |
| MM. Fen wetland | SS. Wetlands | YY. Primary consumers |
| NN. Palustrine wetlands | TT. Prairie pothole marshes | |
| OO. Invertebrates | UU. Sago pondweed | |

26. _____ Wetland marshes that are the result of glacial movement
27. _____ A wetland with no visible water, rich in biodiversity, and usually alkaline
28. _____ Tiny shrimp-like detritivores
29. _____ Plant that grows underwater with floating leaves
30. _____ Branching underwater plant that is a favorite food among ducks and geese
31. _____ Base of the food chain in many aquatic environments
32. _____ These types of ecological systems are considered the most productive and diverse biological communities on Earth
33. _____ A widespread invasive plant species
34. _____ Wetland that borders the edge of a large body of water and has emergent and submersed plants
35. _____ Walleye and largemouth bass

MULTIPLE CHOICE: Select the best possible answer from those provided.

36. The bottom 1/3 tier of Iowa has most of the farm ponds.
- True
 - False
37. The common carp is a member of which family of fish?
- Sunfish
 - Perch

- g. Minnow
- h. Sucker

38. An aquatic environment composed of running water, such as streams and rivers, is called a _____.

- e. Lentic ecosystem
- f. Watershed
- g. Lotic ecosystem
- h. Riverine wetland

39. The number of all wetlands that were historically found in Iowa _____.

- e. Has increased due to government incentives
- f. Has been reduced about 95%
- g. Has been reduced almost 50%
- h. Has remained about the same.

40. What type of plant is arrowhead?

- e. Emergent
- f. Submersed
- g. Free-floating
- h. Tertiary

41. Floodplains are _____.

- a. Areas in a field where water stands following a heavy rain
- b. Low lying areas that border only some water bodies
- c. Are flood prone areas where human development is always restricted
- d. Are nature's storage area for heavy rains that help reduce downstream flooding

42. Which one of the following statements is true concerning trout species in Iowa?

- f. There are only about 25 cold water trout streams in Iowa
- g. Most trout streams in Iowa are in the northwest part of the state
- h. There are three different species of trout present in the state
- i. Iowa's trout streams are state owned

43. Oxbows are found in _____.

- e. Upper reaches of a river
- f. Lakes that are filled in with nutrients
- g. Abandoned river channels that are cut off from the river
- h. Prairie potholes that are enlarged

44. Runoff from home lawns can add what to Iowa's surface waters?
- e. Sediment
 - f. Nutrients
 - g. Pesticides
 - h. A and C only
 - i. All of the above
45. Fish are identified using body shape, fins, scales, and mouth shape. Where is the caudal fin located?
- e. Tail
 - f. Belly
 - g. Behind the gills
 - h. Back
46. If over _____ of a watershed is converted to impervious surfaces, significant ecologic damage can occur from polluted runoff, lack of ground water recharge, and increased flooding.
- e. 2%
 - f. 10%
 - g. 25%
 - h. 30%
47. Rain gardens should be designed to handle the runoff from _____ inches of rain.
- e. 1.25
 - f. 2
 - g. 2.25
 - h. 3
48. A watershed is generally defined as _____.
- e. A building that stores water
 - f. All the land area that drains to a common point or water body
 - g. All the water area that drains to a given point in a landform
 - h. A moment in time when you cross into a new area.
49. What is the most common form of nitrogen found in streams and lakes?
- e. Phosphorus
 - f. Nitrite
 - g. Nitrate
 - h. All of the above
50. Wetlands help improve water quality by _____.
- f. Removing pollutants from surface water
 - g. Releasing sediment
 - h. Allowing nutrients and organic waste to flow
 - i. All of the above

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TEST REVISION DATE	02/14/2022
CONTENT EXPERT	Dr. Joseph E. Morris at Iowa State University