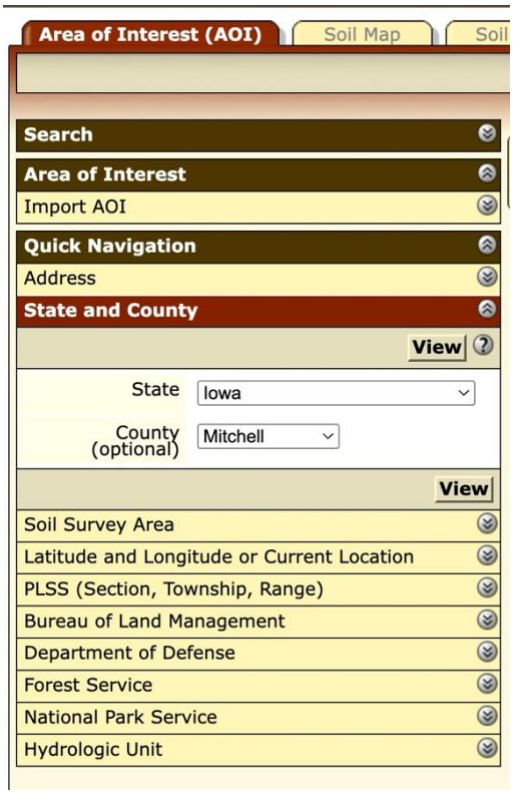
2026 Iowa Regional Envirothon Soils Test (25 points) KEY

1. The _____ is a near real-time monitoring and modeling system that estimates precipitation, runoff, soil erosion, and sediment delivery across each watershed within its coverage area.
A. Daily Erosion Project (DEP)*
B. Light Detection and Ranging Program (LiDAR)
C. Revised Universal Soil Loss Equation (RUSLE)
D. Universal Soil Loss Equation (USLE)

2. This "Area of Interest (AOI)" screenshot is from _____.
A. ArcGIS Online hosted by Esri
B. County Soil Survey books printed at Iowa State University
C. Soil Web: An Online Soil Survey Browser hosted by the University of California at Davis
D. Web Soil Survey which is hosted by the NRCS and the USDA*



3. Which of the following indicators relates most directly to the soil health factors of nutrient retention, soil fertility, soil structure, soil stability, and soil erosion?
A. Soil organic matter*
B. Physical
C. Chemical
D. Biological

4. The five soil-forming factors include:
A. parent material, climate, living organisms, landscape position, and time*
B. climate, living organisms, landscape position, time, and texture
C. living organisms, landscape position, texture, time, and parent material
D. time, parent material, climate, living organisms, and radiation

5. On the soil survey block drawing (Figure 28), of the Lamoni-Shelby association which soil types are found in upland areas? (see Figure 28).
A. Colo
B. Shelby
C. Lamoni, Grundy, and Sharpsburg*
D. All of the above

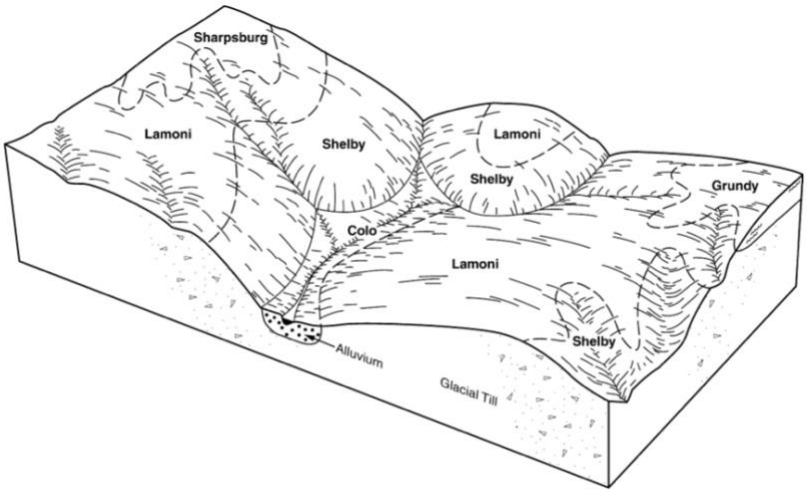
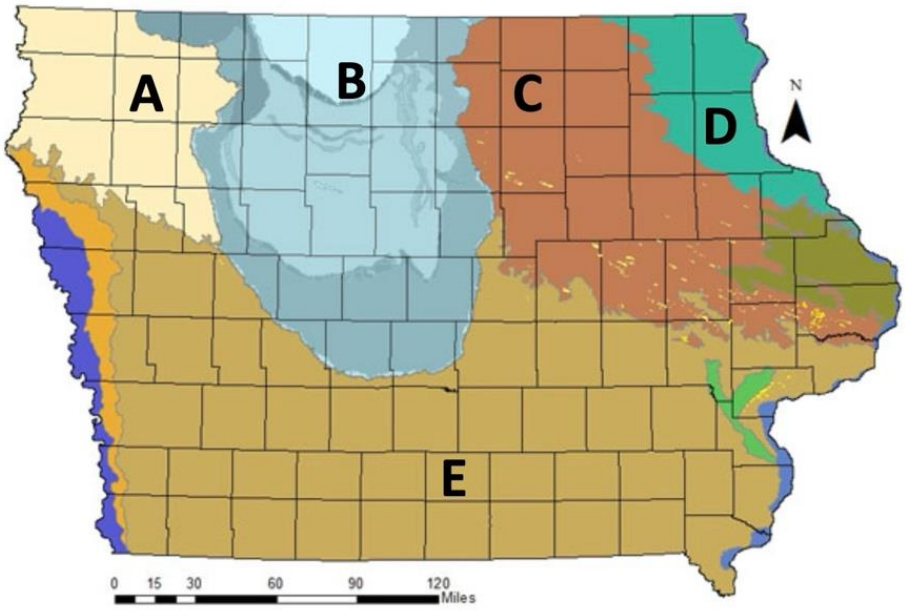


Figure 28.—Relationship of soils, topography, and parent material in the Lamoni-Shelby association in Gentry County, Missouri.

6. The last glacier to enter Iowa advanced in a series of surges beginning 15,000 years ago and reached its southern limit, the site of modern-day Des Moines, 14,000 years ago. By 12,000 years ago, the slowly decaying ice sheet was gone, leaving behind a poorly drained landscape underlain by pebbly clay as well as sand and gravel from swift meltwater streams. What is this landform region called?
A. Des Moines Lobe*
B. Iowan Surface
C. Loess Hills
D. Northwest Iowa Plaines
E. Paleozoic Plateau

7. Earthworms benefit the soil by _____.
A. supporting microbial activity and nutrient cycling
B. contributing nutrients to the soil and improving porosity, tilth, and root development
C. building of soil structure and aggregate stabilization
D. all of these are correct*

8. What is the name for the brown shaded landform region labeled “C”, on this Iowa map?
A. Des Moines Lobe
B. Iowan Surface*
C. Loess Flats
D. Eastern Iowa Plain
E. Paleozoic Plateau



9. Staff at a local NRCS office can help landowners learn more about improving soil health and assist in developing a soil conservation plan. What does “NRCS” stand for?
A. Natural Resources Conservation Service*
B. Natural Resources Conservation System
C. Nutrient Reduction Conservation Strategy
D. Needed Resources for Conserving Soils

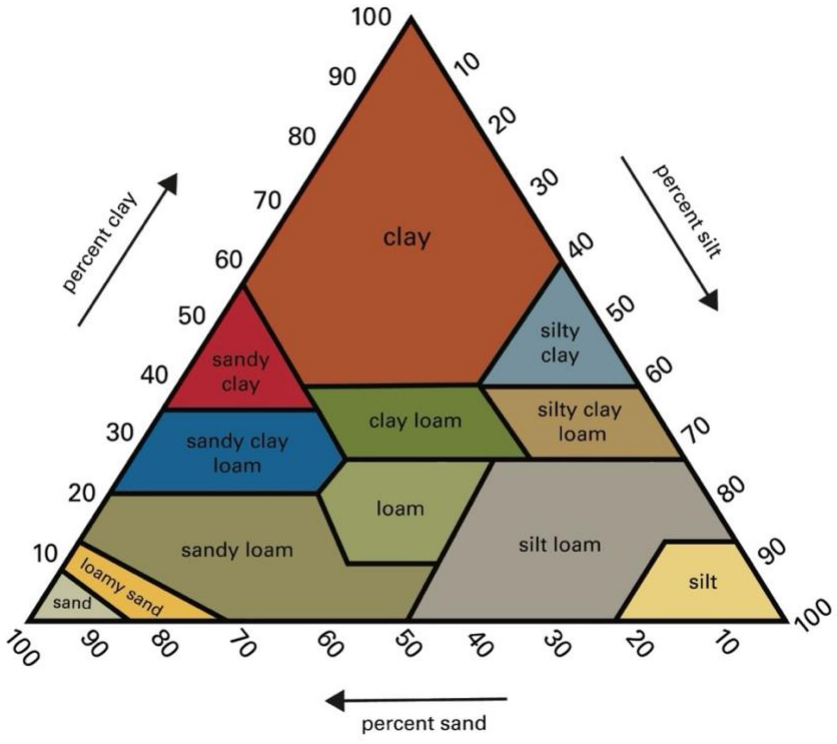
10. What is the slope of a hill when in 40 feet of run, the elevation drops 5 feet?
A. 6%
B. 8%
C. 9.5%
D. 10%
E. 12.5%*

11. Which portion of a soil profile is described as the loose underlying unstructured parent material.
A. A horizon
B. B horizon
C. C horizon*
D. R horizon
E. E horizon

12. In Iowa, _____.
A. all soils have an A, B, and C horizon
B. most prairie soils have an E horizon
C. most soils have an A, B, and C horizon*
D. most soils have only an A and C horizon

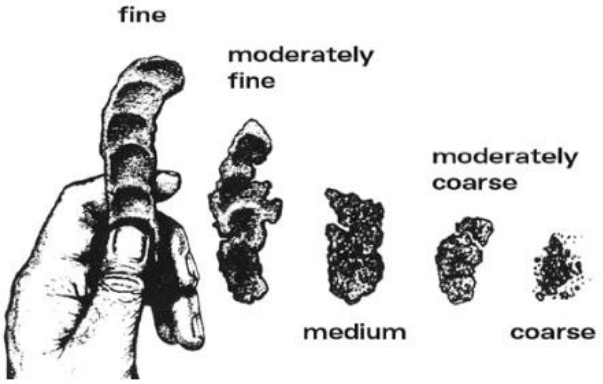
13. Soil texture is determined by the proportions of _____.
A. black, brown and gray colored particles
B. loess, alluvium and colluvium materials
C. sand, silt and clay*
D. organic matter, minerals, and water
E. minerals, water, air and organic matter

14. An average loam soil contains _____. (see chart)
A. 50 percent sand, 30 percent silt, and 20 percent clay
B. 40 percent sand, 40 percent silt, and 20 percent clay*
C. 40 percent sand, 40 percent clay, and 20 percent silt
D. 25 percent gravel, 25 percent sand, 25 percent clay, and 25 percent silt



15. What soil parent material is formed from ground up material left by glaciers?
A. Alluvium
B. Colluvium
C. Glacial sediments*
D. Loess
E. Residuum

16. That field method for determining the soil textural group of a soil sample, that is pictured, is called a _____.
A. ribbon test*
B. soil crumbling test
C. soil sensory test
D. squeeze test



17. _____ form where tremendous amounts of organic matter accumulate, like where a thick layer of leaves have decomposed in a forest.
A. A horizons
B. B horizons
C. C horizons
D. O horizons*
E. R horizons

18. Dark colored soils are associated with soils that have _____.
A. higher organic matter and more fertile conditions*
B. lower organic matter and more fertile conditions
C. lower organic matter and lower fertile conditions
D. higher organic matter and lower fertile conditions

19. _____ is part of the prairie pothole ecosystem, a region dotted with shallow wetlands within the greater tall grass prairie ecosystem.
A. North central Iowa*
B. North east Iowa
C. Southern Iowa
D. The entire state of Iowa
E. Western Iowa

20. _____ is a defining characteristic of most Iowa soils and is most noticeable in the uniquely Iowan Loess Hills landform region of western Iowa. Northwest Iowa, southern Iowa and eastern Iowa were downwind recipients of these wind-blown sediments.
A. Alluvium
B. Colluvium
C. Glacial sediments
D. Loess*
E. Residuum

MATCHING: Match the definition with the appropriate scientific term. Use any selected term only one time.

A. Cation exchange capacity (CEC)
B. Crop residue
C. Fertilizer
D. Humus
E. Hyphae
F. Mycorrhiza
G. Soil aggregate
H. Soil bulk density
I. Soil pH
J. Soil organic matter

_____ 21. Any chemical or organic substance applied to the soil to increase the nutrients in the soil, soil diversity, and soil health **C**

_____ 22. Completely decomposed soil organic matter **D**

_____ 23. Living plant roots and microorganisms, dead plant and animal tissues at various stages of decomposition, and soil animals **J**

_____ 24. Plant materials including stalks, stems, leaves, and seed pods left in the field after harvest **B**

_____ 25. Ratio of the dry mass of soil to the bulk volume of the soil (g/cm3) **H**