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DEPARTMENT OF EDUCATION
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United Community School
Boone, Iowa

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IOWA ~~ASSOCIATION~~ FFA SOILS JUDGING CONTEST
~~(Mark the best answer on the answer sheet.)~~

1. All but one of the following statements are true about upland soils:
 - a. Some can be flooded.
 - b. Some are low in fertility.
 - c. Some need artificial drainage.
 - d. Some may be subject to erosion.

2. An intermittent drainage way:
 - a. is a manmade underground drainage pipe with multi inlets.
 - b. is an area in upland soils through which water flows during and after a rain.
 - c. can be positively identified as it is always a grassed waterway.
 - d. can be identified by its deep channels and steep banks.

3. One of the following is an untrue statement regarding a footslope:
 - a. Footslopes are an accumulation of soil material which has moved down from the steeper area above.
 - b. Footslopes are usually deep and fertile.
 - c. Footslope soils are relatively moist because of seepage from soils above in addition to normal precipitation.
 - d. Footslopes are so named because they are one percent slopes, meaning they drop one foot in elevation per one hundred feet of slope.

4. With reference to landscape position, a terrace:
 - a. is a man made structure designed to reduce the slope of the land and to walk water down the hill.
 - b. is a level plain near a stream which is subject to flooding.
 - c. is a remnant of a former bottomland that is no longer subject to flooding because the stream bed has eroded too deeply.
 - d. is an upland soil ridge that was deposited by a melting glacier.

5. A flood plain which is covered by water when the stream overflows its banks is called:
 - a. a terrace
 - b. bottomland
 - c. a colluvial deposit
 - d. All of the above.

6. In regard to slope:
 - a. Steepness of a slope is measured on a percentage scale and is classified into slope groups.
 - b. The percentage scale tells how many feet the elevation rises or falls per 100 feet of slope length.
 - c. Percent of slope is always measured in the steepest direction at the site.
 - d. All of the above are true statements.

7. A soil classified as moderately sloping would have a slope of:
 - a. 2 to 5 percent
 - b. 5 to 9 percent
 - c. 9 to 14 percent
 - d. greater than 14 percent

8. Using the elevation method of calculating slope, which percentage of slope below would be correct for a soil which in 75 feet of slope has a difference in elevation of 8 feet?
 - a. 13.66
 - b. 12.5
 - c. 10.66
 - d. 9.6

9. The soil profile is:
 - a. a calculated index which predicts productivity based upon quantity and balance of plant nutrients in the soil.
 - b. composed of various layers of soil called horizons.
 - c. a hard, impervious layer in soil which is caused by compaction.
 - d. is visible in newly developed soils, but disappears as soils age.

10. The O horizon designates:
 - a. layers dominated by organic matter.
 - b. well aerated surface or subsurface soils high in oxygen.
 - c. subsoil.
 - d. bedrock.

11. A dark-colored mineral horizon formed at the surface containing an accumulation of organic matter is designated as a horizon by the letter:
 - a. A
 - b. B
 - c. C
 - d. D

12. The greatest amount of physical and chemical weathering of soils occurs:
 - a. at the 3-foot level
 - b. at the 2-foot level
 - c. in the surface horizon
 - d. uniformly throughout the entire depth of the soil

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13. An accumulation of clay in the subsoil is the result of:
 - a. glaciers
 - b. erosion
 - c. weathering
 - d. leaching
 14. The soil color is usually a good indicator of the:
 - a. pH of the soil
 - b. organic matter content
 - c. soil particle size
 - d. structure of the soil
 15. The texture of the soil can be determined by feel. A soil sample when moistened that has a smooth "floury" feel is high in:
 - a. sand
 - b. silt
 - c. clay
 - d. loam
 16. The depth of the soil is determined by:
 - a. measuring the thickness of the surface layer.
 - b. measuring the thickness of the A and B horizons.
 - c. measuring the depth to the layer that prohibits penetration by plant roots.
 - d. its landscape location.
 17. Approximately silt-sized rock material transported and deposited by wind is called:
 - a. colluvium
 - b. residuum
 - c. glacial drift
 - d. loess
 18. Alluvium soils are those that were deposited by:
 - a. running water
 - b. gravity
 - c. wind
 - d. glaciers
 19. Which of the following description best fits upland soils developed solely under prairie grass?
 - a. High in peat content.
 - b. Thick, dark A 1 horizon and no E horizon.
 - c. Relatively thin A 1 horizon, an E horizon present, and a tendency for both the topsoil and subsoil to be acid.
 - d. Five to ten inches of topsoil and indistinct E horizon.

- 40 20. Which class of surface drainage fits the following condition? *Water has an avenue of escape but, because of nearly level but rough surface and vegetation, water stands on the surface for several hours following a rain.*
- rapid
 - medium
 - slow
 - ponded
21. Internal soil drainage is affected by:
- permeability of the soil
 - material beneath the soil
 - water table
 - All of the above.
22. One of the following is not true for a poorly drained soil:
- Good aeration
 - Ponding on surface for short periods of time
 - A 1 horizon black in color
 - B horizon uniformly gray and either with or without mottles
23. The detrimental effects of accelerated erosion are classified into erosion phases on the basis of how severely they restrict the use of the land. One of the following is not one of these phases:
- overwash
 - glacial outwash
 - uneroded or slightly eroded
 - gullied land
24. Calcareous soils are soils that:
- effervesce when given the acid test.
 - are lighter in color than otherwise similar soil because of high lime content.
 - have a pH above neutral.
 - All of the above.
25. With regard to the soil being stony or rocky, for a serious limitation to the use of the land, the surface layer should contain:
- 5% or more rock by volume
 - 15% or more rock by volume
 - boulders closer than 25 feet
 - Any of the above.

- 16 ✓ 26. The Land Capability classification system identifies land as to use for which it is best suited as well as identifying limitations and hazards in its use for agricultural purposes. In which class does good land fall that has a slope of 2 to 5 percent and can be adapted for nearly any use by taking some precautions such as contouring or tiling?
- Class I
 - Class II
 - Class IV
 - Class VIII
- 19 ✓ 27. Land Capability subclasses are used to identify limitations restricting use of land. A classification of II E means:
- that it is excellent soil and has no limitations.
 - that the soil is too cold or too dry.
 - that there is a need for subsurface drainage.
 - that either wind or water erosion could be a problem.
28. Soil productivity indexes reflect the physical and chemical properties of the soil in terms of soil productivity for commonly grown crops. In Iowa, the productivity index is called:
- Agricultural Science, Technology & Marketing (ASTM)
 - Agricultural Stabilization Commission (ASC)
 - Corn Suitability Rating (CSR)
 - Commodity Credit Corporation (CCC)
29. Land classified as low for the potential of continuous growing of row crops:
- would most likely have slopes of 0 to 4 percent.
 - can be used for row crop less than half the time when adequate management practices are used.
 - are unsuited for row crops.
 - could be used for corn or soybeans three out of a five-year rotation.
30. An effective erosion control practice for soils classified as Land Capability Class VI, VII, or VIII is:
- contouring
 - strip cropping
 - conservation tillage
 - None, as these soils are unsuited for cultivation.
31. One of the following statements concerning management practices to overcome soil limitations is not true:
- Surface drainage is best accomplished by the use of crops with a high moisture requirement.
 - Use of tile drains is a means of removing excess subsurface water.
 - Terraces reduce erosion by shortening the effective slope length.
 - Permanent grass vegetation helps prevent the formation of gulleys in soil drainageways.

32. One of the following is a true statement regarding terraces:

- a. Terraces must be built on an exact contour to be effective.
- b. Strip cropping is more effective than terracing on steep slopes (15% or more).
- c. Terraces are ridges and channels constructed across a slope to intercept runoff water and to dispose of it safely.
- d. Terraces are best adapted to short and relatively uneven slopes.

33. Conservation tillage is a practice:

- a. of burying all crop residue and leaving the soil in a smooth surface condition.
- b. of leaving untilled strips of grass across slopes on the contour.
- c. involving drainage and farming on the contour.
- d. leaving plant residue on the surface of the soil or leaving ridges and surface roughness to reduce loss of soil and water.

22 ✓ 34. Estimate the percentage of crop residue in a cornfield, using the meter stick method, when the row spacing is 75 centimeters and residue measurement in centimeters in the row were 5, 2, 1, 3, and 7.

- a. 6%
- b. 12%
- c. 24%
- d. 36%

24 ✓ 35. In estimating surface crop residue, how many observations (measurements) should be made for each site?

- a. one
- b. two
- c. three
- d. four

28 ✓ 36. Which of the following shrink-swell percentage of the soil would present no problem as a site for a house with a basement?

- a. 8%
- b. 10%
- c. 15%
- d. 20%

31 ✓ 37. One of the following is not a limitation to the effectiveness of a conventional septic tank absorption field:

- a. Bedrock less than 6 feet from the surface.
- b. Permeable soils deeper than 6 feet.
- c. Area where flooding is possible.
- d. Soils in which the water table is less than 5 feet from surface.

- 39/ 38. Soils that are most desirable as a source of topsoil are:
- Soils with profile depths of 40 inches or more.
 - Dark A horizons 14 inches or more thick.
 - Soils free of stones or gravel.
 - All of the above.
39. Soils formed in glacial drift usually have textures of:
- sand and sandy loam throughout the profile.
 - loam and clay loam throughout the profile.
 - silt loam and silty clay loam subsoils.
 - clay topsoils.
40. One of the following is not a major parent material of Iowa soil.
- Gravitational water
 - Loess
 - Materials deposited by glaciers
 - Peat and muck