

2011 Iowa FFA Soils Judging Exam

1. The accumulation of clay in the subsoil is due to:
 - a. glacial deposits
 - b. decomposition of minerals and organic matter
 - c. the percent of material from which the soil was developed
 - d. the effect of percolating water removing clay from the upper regions of the soil profile

2. The topsoil may be called the:
 - a. A horizon
 - b. O horizon
 - c. E horizon
 - d. all of the above

3. Shrink-swell of the soil relates to:
 - a. the external drainage of the soil
 - b. the expansion of soil when it freezes
 - c. the percent of volume change during wetting and drying
 - d. none of the above

4. Topsoil is often removed from its place of origin and used to cover an area of either disturbed or undisturbed soil so that vegetation can be established. Topsoil is preferred for the purpose rather than subsoil because:
 - a. of its particle size
 - b. it is easier to obtain
 - c. of its organic matter content
 - d. all of the above
 - e. none of the above

5. Which of the following statement (s) is (are) true about horizons in the soil profile?
 - a. horizons are roughly parallel to the surface of the soil
 - b. soil profile formation has been influenced by weathering
 - c. characteristics of each horizon is a result of the nature of parent material and the physical, chemical and biological processes that have acted upon it.
 - d. All of the above

6. One of the following is not a true statement about a soil profile:
 - a. it is a list of characteristics of a soil group
 - b. it is a vertical section through the layers that make up the soil
 - c. it extends down through the soil and plant root zones
 - d. it may be as shallow as a fraction of an inch

7. Land capability subclasses are used to denote the type of hazard or limitation restricting use of soils grouped in:
- all eight classes
 - only classes I through IV
 - classes II through VIII
 - classes VI through VIII
8. Surface drainage can be defined as the escape of water by flowing across the soil surface. The flow is influenced least by which of the following?
- soil texture
 - slope
 - surface roughness
 - vegetative cover
9. One of the following is not a true statement about the influence native vegetation has on soil:
- it is possible to identify the native vegetation of a soil even though the soil has been under cultivation for a long period of time
 - after forest soil has been cleared and put under cultivation, it is virtually impossible to distinguish it from soils developed under grass or marsh conditions
 - a forested soil is usually more acid and has had more clay movement from the A horizon to the B horizon than a soil formed under grass
 - the effect of vegetation is strong enough to influence the chemical, physical and biological characteristics of the soil
10. 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 III
 - Class IV
11. A tract of land was judged as having a 9 percent slope with a mix of pasture grasses and a few trees present. The land is currently being used for pasturing cattle, but the farmer is thinking about putting the land back into crop production next year. What surface drainage class would this land most likely be:
- rapid
 - medium
 - slow
 - It does not matter since it is not crop land at the current time

12. External soil characteristics that can be identified by observing the landscape are referred to collectively as:
- internal features
 - profile traits
 - texture differences
 - surface features
13. The steepness of a slope is measured on a percentage scale and is classified into slope groups. One slope group with a 0 to 2 percent slope is called "nearly level." Another with a percent slope of 2 to 5 percent is called "gently sloping." If the measured percent of the slope is exactly 2 percent, which group would you classify it?
- nearly level
 - gently sloping
 - both are correct
 - not enough information to decide
14. A soil profile is made up of layers of soil that are different due to their parent material and the physical, chemical, and biological processes that have acted upon it. These layers are referred to as:
- horizons
 - bedrock
 - organic matter
 - all of the above
15. Inadequate surface drainage of soil may be detrimental to plant growth because:
- it may leach out all of the soil nutrients
 - it may increase growth of harmful bacteria
 - it may inhibit root growth due to poor aeration
 - all of the above
 - none of the above
16. Which class of surface drainage fits the following condition? Water has an avenue of escape but, because of nearly level, but rough surface vegetation, water stands on the surface for several hours following a rain.
- rapid
 - medium
 - slow
 - ponded

17. Which of the following descriptions best fits upland soils developed solely under prairie grass?
- High in peat content
 - Thick, dark A horizon and no E horizon
 - Relatively thin A horizon, an E horizon present, and a tendency for both the topsoil and subsoil to be acid
 - five to ten inches of topsoil and an indistinct E horizon
18. In comparison to the overlying horizon, if present, an E horizon is usually:
- darker in color
 - higher in organic matter
 - higher in clay content
 - none of the above
19. How many Land Capability Classifications are there that are not suitable for cropland?
- one
 - four
 - five
 - eight
20. While judging a soil pit during agriculture class one day, you noticed the following: upland landscape position with a concave appearance, a slope of 0.5 percent, a thick dark A horizon, a medium textured A, a moderately fine textured B, and a uniform gray subsoil with rust colored mottles. What would be the appropriate Land Class for this area?
- Class I
 - Class IIw
 - Class IIIw
 - Class IVw
 - Class Vw
21. Land which is colored blue on land capability maps:
- Can have crops grown on it 3 out of 5 years as long as more soil conserving crops are grown for 2 years and have intensive practices installed such as terraces.
 - Needs some erosion control such as contouring and conservation tillage. Land in this class may need tile drainage.
 - Can be used occasionally for cropland under careful management but is better suited for hay or pasture most of the time.
 - Is not suited for cropland but is likely to be damaged by pasture or woodland use.
 - All of the above are true

22. Strip Cropping is defined as strips of an erosion reducing crop placed to catch the soil that erodes from a cropped area of land is a very practical method of controlling erosion on land with 2 – 18 percent slopes. What is (are) the name(s) for this type of conservation practice?
- Contour strip cropping
 - Wind strip cropping
 - Border strip cropping
 - All of the above
 - None of the above
23. A conventional septic tank absorption field has laterals placed at a depth of 24 to 30 inches below the ground surface. The size of the absorption field depends on:
- The number of bathrooms in the house
 - The total square footage of the house
 - The number of bedrooms in the house
 - The depth of bedrock and landscape position
 - All of the above are important factors to consider for the size of a lateral field
24. The thickness of the soil horizons is influenced by
- climate
 - vegetation
 - slope and position
 - parent material
 - all the above
25. A favorable subsoil
- is always high in nutrients, organic matter, air and water
 - may become saturated for an extended period of time but is good for plant growth if it has a high nutrient level
 - must retain enough water for plant growth but will not permit excess water to drain out so air and roots can enter and roots can grow and develop
 - all of the above
 - none of the above
26. A very slow rate of erosion under natural conditions is called
- natural erosion
 - rill erosion
 - accelerated erosion
 - geological erosion

27. Water evaporating from wet soil leaves behind enough _____ to cause a condition known as calcareous soils.
- Calcium carbonate
 - Calcium phosphate
 - Sodium chloride
 - Hydrochloric acid residue
28. In evaluating building sites for houses with basements, bedrock is a limitation when soft bedrock is found within
- three feet or less
 - five feet or less
 - six feet or less
 - bedrock is always a problem
29. Class VI, VII and VIII land needs which of the following practices
- contouring
 - strip cropping
 - terracing
 - none of the above
 - all of the above
30. Land with a deep, somewhat poorly drained, medium textured soil with a 0-2 percent slope would be classified as
- Class I
 - Class Iw
 - Class IIw
 - Class IIIw
31. While judging soil, you discovered the following facts: 10 percent slope, moderately coarse A and B horizons, a severely eroded A horizon, excessively drained and less than 20 inches of useable soil. What land class would this soil most likely be?
- Class III
 - Class IV
 - Class VI
 - Class VII
32. While judging soil, you discovered the following: a soil with 23 inches of silt sized material located at the surface, 35 inches of uniform brown soil mixed with sand, large pebbles, and small rocks. The parent material of this soil would be:
- Glacial drift
 - Alluvium
 - Colluvium
 - Loess

33. While judging soil, you discovered the following: an area of land that is deep, well drained, and moderately fine textured. You have decided based on the location of the soil pit, water would travel from the uplands in a concentrated flow if a heavy rain occurred. What would be the most appropriate and cost effective practice to implement in this location?
- Field tile to eliminate poor drainage
 - Terraces to stop the flow of water
 - Grassed waterway
 - None of the above
34. Silt and clay sized soil particles are the result of the breaking down of larger particles. This process is called:
- Bacterial decomposition
 - Stratification
 - Weathering
 - Soil decomposition
35. An area of moderate slope between a relatively steep area above and a relatively flat area below is called a (an):
- Landscape
 - Footslope
 - Upland
 - Terrace
36. Soils, showing in its profile, the influence of water tolerant plants, are called:
- Marsh
 - Prarie
 - Forest
 - Transition
37. A soil with a profile depth of 47 inches would be classified as:
- Very deep
 - Deep
 - Moderately deep
 - Shallow
38. Mineral grains such as sand, silt and clay are responsible for determining the texture of a soil sample. After observing the sample and having a mechanical analysis completed, you noticed 30 percent of the sample contains mineral grains with a size range of .002 mm to .05 mm. What mineral grain would this most likely be?
- Sand
 - Silt
 - Clay
 - Organic Matter

39. The color of this horizon is a good indicator of the air to water ratio in the soil:

- a. A
- b. B
- c. C
- d. E
- e. R

40. After spending some time analyzing a soil profile and the related features associated with this tract of land, you noticed the following: a slope of 1 percent, a medium textured A and B horizons, poorly drained subsoil and a dark A horizon. What color would you code this tract of land on a land capability map?

- a. Green
- b. Yellow
- c. Blue
- d. Red

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1. D
2. D
3. C
4. D
5. D
6. A
7. C
8. A
9. B
10. B
11. ?A
12. D
13. B
14. A
15. ?C
16. C
17. B
18. D
19. B
20. C
21. C
22. D
23. ?C
24. E
25. ?C
26. D
27. A
28. A
29. D
30. A
31. C
32. ?B
33. C
34. C
35. B
36. A
37. B
38. B
39. B
40. B