Soil Judging National Practice Exam (Sample)

Study Guide

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Questions

1. **Which rock types are specifically mentioned in the context of Wisconsin soils?**
   - A. Igneous rocks
   - B. Round rocks
   - C. Metamorphic rocks
   - D. Sedimentary rocks

2. **What is the primary characteristic of loess soil?**
   - A. Coarse sand content
   - B. High clay concentration
   - C. Silty or silty clay texture
   - D. Exclusively organic material

3. **What type of area is characterized by being perfectly flat and formed from sedimentation from a lake?**
   - A. Outwash plain
   - B. Lake plain
   - C. Stream terrace
   - D. Loess plains

4. **What is a characteristic of the parent material (PM) found on top of a lake plain?**
   - A. It can have alluvium or glacial deposits
   - B. It consists only of lacustrine sediment
   - C. It has significant volcanic material
   - D. It is primarily sandy

5. **What is the criterion for redox marks if there is a depletion/concentration percentage?**
   - A. 0%
   - B. 1%
   - C. 2%
   - D. 5%

6. In what position is the toeslope located according to the depression position definition?

A. Centered

B. Curvilinear

C. Peripheral

D. Flat

7. What does the term "till" refer to in soil classification?

A. Sorted sediment

B. Unsorted rocks

C. Layered soil

D. Plastic deformation

8. Inceptisols typically show evidence of which soil horizons?

A. Cambic, mollic, umbric

B. Argillic, illuvial, mollisol

C. Cambic, argillic, histic

D. Entisol, spodosol, fluvial

9. What is the range for loamy mollic horizon thickness to perform the arg/camb test?

A. Less than 18 cm

B. Between 18-25 cm

C. Greater than 25 cm

D. Fixed at 20 cm

10. How can soil moisture be assessed effectively in the field?

A. By conducting a visual inspection

B. By probing the soil or using moisture meters

C. By checking the soil temperature

D. By measuring soil color

Answers

1. B
2. C
3. B
4. A
5. C
6. A
7. B
8. A
9. B
10. B

Explanations

1. Which rock types are specifically mentioned in the context of Wisconsin soils?

A. Igneous rocks

B. Round rocks

C. Metamorphic rocks

D. Sedimentary rocks

In the context of Wisconsin soils, it is important to understand the geological background of the region. Wisconsin is primarily characterized by sedimentary rocks, such as limestone and sandstone, which significantly influence the soil types and their properties. These rocks have been shaped over millions of years by the actions of water and ice, both key factors in soil formation processes. Round rocks, which may refer to weathered sedimentary materials or glacial deposits, can often be found in Wisconsin's landscapes due to glacial till. This glacial activity has played a significant role in depositing these rounded stones across the state. However, the context of Wisconsin soils typically highlights sedimentary and glacially influenced materials rather than focusing on round rocks specifically as a classification or type of rock relevant to soil formation. Understanding the primary influences on soil characteristics in Wisconsin helps in recognizing the interplay between geology and soil composition, contributing to soil types prevalent in the state, including how they are derived from sedimentary and glacial processes.

2. What is the primary characteristic of loess soil?

A. Coarse sand content

B. High clay concentration

C. Silty or silty clay texture

D. Exclusively organic material

Loess soil is primarily characterized by its silty or silty clay texture, which is formed from wind-blown silt. This fine-grained material contributes to its unique properties, such as good agricultural fertility and a relatively high water retention capacity. The predominantly silt content is crucial because it allows loess to hold moisture well while also providing a loose structure that is beneficial for root penetration and aeration. In contrast, other options present characteristics that do not align with loess soil. For instance, a coarse sand content would indicate a different soil type that is coarser and does not retain water as effectively as loess. A high clay concentration describes a soil with a significant amount of clay particles, leading to different drainage and aeration properties. Exclusively organic material refers to soils primarily composed of decomposed plant and animal matter, which is not representative of loess. Thus, the defining trait of loess being its silty or silty clay texture underscores its formation process and environmental significance.

3. What type of area is characterized by being perfectly flat and formed from sedimentation from a lake?

A. Outwash plain

B. Lake plain

C. Stream terrace

D. Loess plains

The area described as being perfectly flat and formed from sedimentation from a lake is classified as a lake plain. Lake plains are typically found adjacent to former or present lakes and are created through the deposition of sediments that accumulate over time in a lake's basin. These sediments can include clay, silt, and sand, which settle at the bottom of the water column as the water within the lake fluctuates. Lake plains are characterized by their flat topography and relatively level surface, making them distinct from other landforms that may have more varied elevations or slopes. This flatness is due to the natural processes of sediment deposition, which spread out the materials evenly across the area where water once existed. In contrast, outwash plains are formed by sediments deposited by glacial meltwater, stream terraces result from the lateral erosion of rivers that cut into older floodplain deposits, and loess plains are created from wind-blown silt that accumulates in certain regions, all of which do not exclusively relate to the sedimentation process associated with lake basins.

4. What is a characteristic of the parent material (PM) found on top of a lake plain?

A. It can have alluvium or glacial deposits

B. It consists only of lacustrine sediment

C. It has significant volcanic material

D. It is primarily sandy

The characteristic of the parent material found on top of a lake plain is that it can have alluvium or glacial deposits. Lake plains are often formed from the sedimentation processes associated with lakes, where various sediments accumulate over time. These sediments can include alluvial deposits, which are materials deposited by rivers as they flow into the lake, and glacial deposits, which are remnants of glaciers that melted and contributed sediments to the area. This variability in parent material signifies that lake plains are not uniform and can be influenced by different geological processes. The presence of alluvium relates to the dynamics of water flow in and out of the lake, while glacial deposits can indicate past glacial activity in the area. The other choices may not accurately represent the diversity found in these environments. While lacustrine sediments, which are deposited directly by lake processes, are common, they do not exclusively define the parent material of a lake plain. Significant volcanic material is not typically associated with lake plains unless there is a specific volcanic activity in the region, and being primarily sandy does not encompass the full range of sediment types that can be found. Therefore, the correct understanding of parent material on a lake plain encompasses a broader range of geological influences, including alluvium

5. What is the criterion for redox marks if there is a depletion/concentration percentage?

A. 0%

B. 1%

C. 2%

D. 5%

Redox marks are indicators of soil conditions associated with the reduction and oxidation processes of iron and manganese, which are critical in understanding soil drainage and aeration. The criterion of 2% for the percentage of depletion or concentration in a soil profile is significant because it serves as a threshold to determine if redox features are prominent enough to influence the soil's classification. When the concentration of redox features is at least 2%, it indicates that there is sufficient oxidation-reduction activity occurring in the soil. This percentage is also relevant because it allows for the differentiation between soils that experience regular wetting and drying cycles and those that may remain saturated for extended periods. Understanding this threshold aids soil judges in identifying soil horizons with significant redoximorphic features, which can affect land use, agricultural practices, and wetland designations.

6. In what position is the toeslope located according to the depression position definition?

A. Centered

B. Curvilinear

C. Peripheral

D. Flat

The toeslope is defined as the area at the base of a slope where sediment tends to accumulate, often due to the forces of gravity and water movement. In the context of depression position definitions, the term "centered" refers to a position that is centrally located within the overall landscape or landform. In this case, the toeslope occupies a significant location at the transition zone between upland and lowland areas. It is typically situated at or near the bottom of a slope, aligned as the central feature of the landscape's gradient. This central positioning in relation to the overall topography allows for optimal water collection and sediment deposition. Understanding this definition is crucial for soil judging, as it helps in identifying the nuances of soil horizons and their implications in terms of drainage, moisture retention, and vegetation support. The other positions of depression such as curvilinear, peripheral, or flat do not accurately capture the distinctive features and functional characteristics of the toeslope, as these terms suggest different configurations that do not align with the central accumulation aspect of the toeslope.

7. What does the term "till" refer to in soil classification?

A. Sorted sediment

B. Unsorted rocks

C. Layered soil

D. Plastic deformation

In soil classification, the term "till" refers to a type of glacial sediment that is typically unsorted and unstratified. It is formed by the direct deposition of material from glacial ice as it melts, which results in a mix of particle sizes ranging from fine silt to large boulders. Unlike sorted sediments, which have been reworked by water or wind and exhibit a specific order in particle size and distribution, till contains a jumble of materials that have not been arranged in a systematic manner. This unique characteristic is essential in differentiating till from other types of sediments, contributing to its definition and role in various soil classifications. Thus, understanding that till is a result of glacial activity and is characterized by its unsorted nature is crucial in soil classification and the study of soil horizons. The other terms mentioned do not accurately capture the essence of till as it is recognized in soil science.

8. Inceptisols typically show evidence of which soil horizons?

A. Cambic, mollic, umbric

B. Argillic, illuvial, mollisol

C. Cambic, argillic, histic

D. Entisol, spodosol, fluvial

Inceptisols are characterized primarily by the presence of a cambic horizon, which indicates a degree of soil development that includes some physical and chemical weathering processes, but does not yet exhibit the extensive horizon development found in more mature soils like Alfisols or Ultisols. The cambic horizon in Inceptisols tends to show some evidence of altered clay, structure, and color compared to the parent material, reflecting the initial stages of soil formation. While the mollic and umbric horizons mentioned in the correct answer can be recognized in some soils, they are not definitive characteristics of Inceptisols. Instead, they often appear in Mollisols. In contrast, the other options include horizons that are not typically found in Inceptisols. For instance, the argillic horizon is associated with certain more developed soils and not commonly found in Inceptisols. Similarly, the terms "histic" and "illuvial" horizons describe conditions found in specific types of soils or with specific processes, which don't accurately represent Inceptisol characteristics. Thus, the focus on the cambic horizon is what makes the correct choice appropriate, signifying the formative nature of Inceptisols while distinguishing them from other soil orders with

9. What is the range for loamy mollic horizon thickness to perform the arg/camb test?

A. Less than 18 cm

B. Between 18-25 cm

C. Greater than 25 cm

D. Fixed at 20 cm

The loamy mollic horizon needs to have a thickness within a specific range to accurately conduct the argillic/cambic test. This test is critical as it helps in identifying soil characteristics that determine its classification and potential use. The correct range of thickness, which is between 18-25 cm, provides sufficient depth for the mollic horizon to exhibit its properties effectively, including its moisture retention and nutrient-holding capacities. This specific thickness ensures that the horizon is well-developed and indicative of significant soil processes such as organic matter accumulation and clay illuviation, which are essential for interpreting the soil's profile. A horizon thickness less than 18 cm may not provide a reliable representation of the mollic horizon's properties, while a thickness greater than 25 cm could indicate that the soil has been exposed to other factors that may alter its classification or characteristics. A fixed measurement at 20 cm does not account for the natural variability found in soils, making the range of 18-25 cm more appropriate for conducting this particular test.

10. How can soil moisture be assessed effectively in the field?

A. By conducting a visual inspection

B. By probing the soil or using moisture meters

C. By checking the soil temperature

D. By measuring soil color

Assessing soil moisture in the field is critical for understanding its physical and chemical properties, which in turn influences plant growth and land management practices. Probing the soil or using moisture meters provides a direct and accurate measure of the water content in the soil, allowing for a clear assessment of moisture levels. Using a probe enables the evaluator to collect soil samples from various depths, providing insights into moisture distribution throughout the soil profile. Moisture meters can also deliver precise measurements, generating immediate feedback about soil moisture status, which is invaluable for making informed agricultural or environmental decisions. The other methods listed do not effectively determine soil moisture. A visual inspection might help identify surface conditions, but it cannot accurately quantify moisture levels beneath the surface. Checking soil temperature provides valuable information about the soil's thermal conditions but does not correlate to moisture content. Lastly, measuring soil color can suggest moisture conditions indirectly—darker soils often indicate higher organic matter and possibly better moisture retention—but it does not provide a direct measurement of actual soil moisture content. Thus, probing the soil or employing moisture meters stands out as the most effective approach for assessing soil moisture in the field.