

## **Practice Exam for Virginia Nutrient Management Planner Certification-**

### **Turf and Landscape**

1. Which of the following soil particles are the finest (smallest)?
  - a. Gravel
  - b. Clay
  - c. Sand
  - d. Silt
2. Which soil horizon is the most developed part of the subsoil with the most accumulation (clay, iron, aluminum, calcium carbonate, etc.)?
  - a. O
  - b. A
  - c. B
  - d. C
3. A soil with a high bulk density is more likely to have:
  - a. High porosity
  - b. Increased leaching
  - c. Nutrient deficiency
  - d. Inhibited rooting
4. Which soil type has the highest associated runoff risk?
  - a. Sandy soil
  - b. Silty soil
  - c. Loamy soil
  - d. Clayey soil
5. Which soil characteristic is the most important determining factor for nutrient availability?
  - a. pH level
  - b. Organic matter content
  - c. Water content
  - d. C:N ratio
6. Which of the following elements are essential for plant growth:
  - a. Si
  - b. Fe
  - c. Al
  - d. As

7. How do positively charged soil ions predominantly interact with clays?
  - a. Absorption into the interior of clay particles by diffusion
  - b. Adsorption on the surface of negatively charged clay particles
  - c. Adsorption on the surface of positively charged clay particles
  - d. Electrostatic repulsion of ions away from clay particles
8. Soils with high CEC will also tend to have higher:
  - a. Water holding capacity
  - b. Sand content
  - c. Decreased lime requirement
  - d. Nutrient leaching risk
9. What type(s) of acidity does Soil pH represent on a soil test report?
  - a. Active acidity
  - b. Exchangeable acidity
  - c. Residual acidity
  - d. Both active and residual acidity
10. Which form of nitrogen is the most prone to leaching?
  - a.  $N_2$
  - b.  $NH_4^+$
  - c.  $NO_3^-$
  - d.  $N_2O$
11. Which form of nitrogen is converted to a gas that is subject to volatilization losses?
  - a.  $N_2$
  - b.  $NH_4^+$
  - c.  $NO_3^-$
  - d.  $N_2O$
12. At what pH range is phosphorus most available to plants?
  - a. 3.5-4.8
  - b. 4.8-5.5
  - c. 5.5-6.8
  - d. 7.2-8.8
13. To get the best representative data from a single soil sample, what is the maximum size limit for the associated management area?
  - a. 5 acres
  - b. 10 acres
  - c. 15 acres
  - d. 20 acres

14. How often should the soils for most management areas be tested to estimate nutrient availability and to obtain fertilizer/lime recommendations?
- a. Every 6 years
  - b. Every 3 years
  - c. Every year
  - d. Monthly
15. In what situation should soil samples be taken more frequently than the general recommendation for most soils?
- a. Poorly drained soils
  - b. Soils with high organic matter content
  - c. Soils with a high clay content
  - d. Soils with a high sand content
16. What is the best way to manage high phosphorus soils to protect water resources?
- a. Control erosion
  - b. Apply only organic fertilizers at low rates
  - c. Return grass clippings
  - d. Lime frequently to correct pH
17. Which of the following fertilizer sources has the highest leaching potential?
- a. Biosolids
  - b. IBDU
  - c. Sulfur-coated Urea
  - d. Urea
18. When is the best time to fertilize a cool-season turfgrass?
- a. Winter
  - b. Spring
  - c. Summer
  - d. Fall
19. Which of the following turfgrasses have a low fertility requirement?
- a. Fine fescue
  - b. Perennial ryegrass
  - c. Kentucky bluegrass
  - d. Creeping bentgrass
20. What is the per-application limit for water soluble nitrogen sources on most general turfgrass stands?
- a. 0.25 lb N/1000 sq. ft.
  - b. 0.5 lb N/1000 sq. ft.
  - c. 0.7 lb N/1000 sq. ft.
  - d. 0.9 lb N/1000 sq. ft.

21. Which of the following fertilizers has a predominantly water soluble N source:
- a. Methylene urea
  - b. Ammonium sulfate
  - c. Natural organics
  - d. IBDU
22. What is the minimum criteria that must be met for a fertilizer to be considered slow-release?
- a. At least 5% SAN
  - b. At least 10% SAN
  - c. At least 15% SAN
  - d. At least 50% SAN
23. Which action is most likely to threaten the environment on a site with P-deficient soils?
- a. Returning grass clippings
  - b. Stopping all P applications
  - c. Liming to a pH of 6.2
  - d. P fertilization with superphosphate
24. Micronutrient deficiency is rare, but is most likely in:
- a. Soils with low organic matter
  - b. Clay-based soils
  - c. Soils that have been recently limed
  - d. Sand-based soils
25. Stormwater has the most potential to impair water quality on lands with:
- a. A higher percentage of turfgrass coverage
  - b. A higher percentage of woody vegetation
  - c. A higher percentage of impervious surfaces
  - d. A higher percentage of wetland coverage
26. When is the best time to fertilize most landscape perennials?
- a. Winter
  - b. Spring
  - c. Summer
  - d. Fall
27. What is the general N rate recommendation for landscape ornamentals?
- a. Up to 1 lb N per 1000 sq. ft./yr
  - b. 0.5 lb N per 1000 sq. ft./yr when indicated by a soil test
  - c. 1-4 lbs N per 1000 sq. ft. per growing month
  - d. Up to 4 lbs N per 1000 sq. ft./yr

28. Which irrigation water source is most likely to have a very high nutrient content and should be tested/accounted for in a nutrient management plan?
- a. Public/tap water
  - b. Pond water
  - c. Creek water
  - d. Reclaimed water
29. Can nitrogen (N) fertilization influence the water demand of turfgrass stands?
- a. No- N fertilization does not have an influence on turf water demand
  - b. Yes- N fertilization of turf with rates that are too low can increase water demand
  - c. Yes- N fertilization with rates that are too high can increase water demand
  - d. Yes- N fertilization of turf with rates that are too high can decrease water demand
30. Which groups are mandated to have an urban nutrient management plans as of July 1, 2017?
- a. Golf courses, state-owned lands, localities with MS4 permits
  - b. State-owned lands, athletic fields, and golf courses
  - c. Localities with MS4 permits, athletic fields, golf courses
  - d. Athletic fields, localities with MS4 permits, state-owned lands
31. What are the main negative effects of eutrophication?
- a. Excessive nutrients stimulate submerged aquatic plant growth this depletes dissolved carbon dioxide in water bodies, increases the pH to extreme levels, and eventually kills fish
  - b. Excessive nutrients stimulate algal blooms. These algal blooms produce poisons toxic to both submerged aquatic vegetation and fish, killing both
  - c. Excessive sediment blocks sunlight to submerged aquatic vegetation and clogs fish gills. The drop in oxygen production coupled with reduced oxygen uptake kills fish
  - d. Excessive N and P leads to algal blooms. The algae blocks sunlight and results in a decline of aquatic plants. As algae die, oxygen is depleted and leads to fish kills
32. How can the HUC6 watershed code for Nutrient Management Plans be determined?
- a. Found in the Virginia Nutrient Management Standards and Criteria
  - b. Using the Virginia Hydrologic Unit Explorer website
  - c. Found in the Mid-Atlantic Nutrient Management Handbook
  - d. Using the Watersheds HUC6 feature in Google Earth

33. How long is a Certified Nutrient Management Planner certificate valid for?
- 1 year
  - 2 years
  - 3 years
  - 5 years
34. What is the recommended season of application for nitrogen fertilizers on cool-season turf according to the Virginia Nutrient Management Standards and Criteria?
- Six weeks prior to the last spring average killing frost date until six weeks past the first fall average killing frost date
  - No earlier than the last spring average killing frost date until one month prior to the first fall average killing frost date
  - No earlier than the last spring average killing frost date until six weeks past the first fall average killing frost date
  - Six weeks prior to the last spring average killing frost date until one month prior to the first fall average killing frost date
35. What is the recommended season of application for nitrogen fertilizers on non-overseeded warm-season turf according to the Virginia Nutrient Management Standards and Criteria?
- Six weeks prior to the last spring average killing frost date until six weeks past the first fall average killing frost date
  - No earlier than the last spring average killing frost date until one month prior to the first fall average killing frost date
  - No earlier than the last spring average killing frost date until six weeks past the first fall average killing frost date
  - Six weeks prior to the last spring average killing frost date until one month prior to the first fall average killing frost date
36. If you have a soil test level of M- for P<sub>2</sub>O<sub>5</sub>, and the Nutrient Needs for the M level are 1-2 lbs of P<sub>2</sub>O<sub>5</sub> per 1000ft<sup>2</sup> according to the Virginia Nutrient Management Standards and Criteria, how much P<sub>2</sub>O<sub>5</sub> should be recommended for a fertilizer application?
- 0 lbs P<sub>2</sub>O<sub>5</sub> per 1000ft<sup>2</sup>
  - 1 lb P<sub>2</sub>O<sub>5</sub> per 1000ft<sup>2</sup>
  - 1.5 lbs P<sub>2</sub>O<sub>5</sub> per 1000ft<sup>2</sup>
  - 2 lbs P<sub>2</sub>O<sub>5</sub> per 1000ft<sup>2</sup>

37. Which of the following are required to be included in urban nutrient management plans?
- a. Specific brand names of fertilizer products to be used
  - b. RUSLE 2 Calculations
  - c. Particle size analysis results and soil texture information
  - d. Summaries of soil test results for potassium and phosphorus
38. What extraction procedure does Virginia Tech use to measure soil test phosphorus, which is approved for use in Nutrient Management Plans?
- a. Mehlich I
  - b. Mehlich III
  - c. Bray
  - d. Olsen
39. Which of the following soil test phosphorus extraction procedures are approved for use in nutrient management plans as long as the data is correlated/converted to Mehlich I?
- a. SMP
  - b. Bray
  - c. Olsen
  - d. Mehlich III
40. Which of the following would need to be identified as an environmentally sensitive site in a nutrient management plan?
- a. 32% of the managed area has soils with high leaching potential and excessive water drainage
  - b. The entire managed area is situated over limestone bedrock with soils that are 24 inches deep
  - c. 50% of the managed area has fine-textured clay soils with 5% slopes, and tests VH for phosphorus
  - d. The entire managed area is within 100 feet of a tributary that is part of the Chesapeake Bay watershed

41. How should lime recommendations be determined for nutrient management plans?
- Subtract Soil pH from Buffer pH on an approved lab's soil test report. Recommend 1 T/A of lime for every 0.1 unit difference as stated in the Virginia Nutrient Management Standards and Criteria
  - Use the Soil pH from an approved lab's soil test report. Soil pH should be correlated to lime application rate recommendations in the Virginia Nutrient Management Standards and Criteria
  - Use recommendations provided on an approved lab's soil test report. If none are provided, contact the lab or use buffer pH data with the lime application rate tables in the Virginia Nutrient Management Standards and Criteria
  - Convert the buffer pH values found on an approved lab's soil test report to Virginia Tech Soil pH values. Then use the Virginia Nutrient Management Standards and Criteria tables to find appropriate lime application rates
42. When is it acceptable to combine management areas for a single set of nutrient recommendations?
- It is not acceptable to combine management areas for a single set of nutrient recommendations
  - When the fertility levels for potassium and phosphorus below the H level and the turfgrass/crops are in a low-maintenance situation
  - When the fertility levels indicated by soil testing are dissimilar, but the management areas are managed in the same way
  - When the soil test fertility levels of the different management areas are similar and they are managed in the same way
43. What must be included with the overview map in a nutrient management plan?
- Labeled individual management areas
  - A scale or an explanation of acreage determination for the site
  - Hydrologic soil groups for the soils within the site
  - Satellite imagery with all structures and management areas visible
44. What must be included in the narrative summary section of the NMP?
- Numerical P and K soil test results
  - Commercial fertilizer rates and timings of applications
  - County and watershed code
  - Statement restricting nutrient applications on frozen or snow-covered ground
45. How many pounds of phosphorus are in a ton of 15-5-0 fertilizer?
- 44
  - 100
  - 5
  - 273

### Answer Key

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|-------|-------|
| 1. B  | 24. D |
| 2. C  | 25. C |
| 3. D  | 26. B |
| 4. D  | 27. D |
| 5. A  | 28. D |
| 6. B  | 29. C |
| 7. B  | 30. A |
| 8. A  | 31. D |
| 9. A  | 32. B |
| 10. C | 33. B |
| 11. B | 34. A |
| 12. C | 35. B |
| 13. B | 36. D |
| 14. B | 37. D |
| 15. D | 38. A |
| 16. A | 39. D |
| 17. D | 40. B |
| 18. D | 41. C |
| 19. A | 42. D |
| 20. C | 43. B |
| 21. B | 44. D |
| 22. C | 45. A |
| 23. B |       |

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