Practice Exam for Virgina Nutrient Management Planner Certification- Agriculture

1. Which of the following soil particles are the finest (smallest)?
    a. Clay
    b. Silt
    c. Sand
    d. Gravel
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 suggested size limit for 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 might 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. 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
17. 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.
18. 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

19. 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
20. 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
21. 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
22. When is it acceptable to combine management areas for a single set of nutrient recommendations?
    a. It is not acceptable to combine management areas for a single set of nutrient recommendations
    b. When the fertility levels for potassium and phosphorus below the H level and the turfgrass/crops are in a low-maintenance situation
    c. When the fertility levels indicated by soil testing are dissimilar, but the management areas are managed in the same way
    d. When the soil test fertility levels of the different management areas are similar and they are managed in the same way
23. What must be included with the overview map in a nutrient management plan?
    a. Labeled individual management areas
    b. A scale or an explanation of acreage determination for the site
    c. Hydrologic soil groups for the soils within the site
    d. Satellite imagery with all structures and management areas visible

24. What must be included in the narrative summary section of the NMP?
    a. Numerical P and K soil test results
    b. Commercial fertilizer rates and timings of applications for each management area
    c. County and watershed code
    d. Information about additional plan restrictions or needs
25. How long is a Certified Nutrient Management Planner certificate valid for?
    a. 1 year
    b. 2 years
    c. 3 years
    d. 5 years
26. How should lime recommendations be determined for nutrient management plans?
    a. 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
    b. 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
    c. 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
    d. 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
27. How many pounds of phosphorus are in a ton of 15-5-0 fertilizer?
    a. 44
    b. 100
    c. 5
    d. 273
28. A dry fertilizer spreader, with a 50 ft spread pattern is pulled through a 193 ft course and collected 75 pounds of material. What is the application rate in pounds per acre?
    a. 75
    b. 872
    c. 335
    d. 580

29. Using the following information for a field in the Southern Piedmont (South of James River- West of I-95) what is the Topography and Climate factor for the Erosion Risk Assessment procedure?

    Soil Symbol – 11B

    Percent Area of Field - 100%

    Three (3) year rotation:

        Corn (grain) no-till

        Wheat (grain, leave straw), conventional-till

        Double Crop soybeans, (grain), no-till

        Corn (grain) no-till

    a. 1.32
    b. 1.08
    c. 1.17
    d. 0.96

30. Calculate the Runoff Risk Factor component of the Phosphorus Index for a field using the following information:

    An agricultural field on a dairy operation in Rockingham County

    Soil: Frederick-Lodi silt loam

    Soil test: 175 ppm Mehlich I Phosphorus.

    Anticipated P2O5 application on corn only:

    72 lbs./acre P2O5 dairy manure surface applied

    Hydrologic soil group = B

    Soil Erosion based on RUSLE2 = 3 tons/acre

    Distance from edge of field to intermittent stream = 80 feet

    Riparian Buffer = 0 feet

    Crop rotation: continuous corn planted no till for silage followed by rye for silage planted using conventional tillage.

Runoff from field	x	Runoff P delivery factor	x	Runoff DRP factor	x	0.22651	+	Applied fertilizer DRP factor	=	Runoff Risk Factor
	x		x		x	0.22651	+		=	

    a. 1.26
    b. 1.52
    c. 1.63
    d. 2.52

31. What is the complete fertilizer analysis of the final blended product of 500 lbs. of ammonium sulfate (21-0-0), 200 lbs. of diammonium phosphate (18-46-0), and 100 lbs. of muriate of potash (0-0-60)?
    a. 9-8-12
    b. 21-46-60
    c. 18-12-8
    d. 10-10-10
32. A liquid dairy manure analysis has a TKN of 21.43 lbs./1000 gallon, the NH4-N is 9.87 lbs./gallons. The farmer applies 3,000 gallons/acre following incorporation after 4 days of Spring planted corn. What is the approximate Plant Available Nitrogen (PAN) rate?
    a. 23
    b. 8
    c. 4
    d. 30
33. A feedlot in King George County finishes about 300 head of cattle yearly. This paved lot is 150 ft. wide and 325 ft. long. What would be the expected annual gallons of the feedlot runoff from this lot?
    a. 729,300
    b. 79,050
    c. 7,293,000
    d. 7,000,000

Answer Key

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