

Soil Science Reviewer By Agriculture Review.

1. The mineral fraction of the soil that determines its texture and influences water retention and drainage is mainly composed of:

- a. Soil colloids and humus
- b. Sand, silt, and clay particles
- c. Organic matter and microorganisms
- d. Soluble salts and bases

2. Which soil horizon is commonly referred to as the zone of eluviation due to leaching of clay, iron, or organic matter?

- a. A horizon
- b. B horizon
- c. E horizon
- d. C horizon

3. The cation exchange capacity (CEC) of a soil is primarily influenced by the amount and type of:

- a. Sand and silt
- b. Organic matter and clay
- c. Calcium and magnesium
- d. Nitrogen and phosphorus

4. In highly weathered tropical soils, the dominant type of clay mineral is usually:

- a. Montmorillonite
- b. Illite
- c. Kaolinite
- d. Vermiculite

5. The nitrogen-fixing bacteria Rhizobium are primarily associated with which group of plants?

- a. Leguminous crops
- b. Cereal crops
- c. Oilseed crops
- d. Root and tuber crops

6. The process by which nitrate is converted to gaseous nitrogen (N_2) or nitrous oxide (N_2O) under anaerobic conditions is known as:

- a. Mineralization
- b. Denitrification
- c. Nitrification
- d. Ammonification

7. Which of the following soil conservation practices involves planting across the slope to reduce erosion and runoff?

- a. Strip cropping
- b. Contour farming
- c. Terracing
- d. Mulching

8. The primary cause of soil acidity in upland areas of the Philippines is:

- a. Excess accumulation of sodium salts
- b. Leaching of basic cations due to high rainfall
- c. Deposition of volcanic ash
- d. Overliming and excessive irrigation

9. Which soil property is most directly affected by the application of lime to acidic soils?

- a. Organic matter content
- b. Soil pH and base saturation
- c. Soil texture
- d. Soil color

10. The type of soil structure most desirable for good seedbed preparation and plant growth is:

- a. Columnar
- b. Granular
- c. Prismatic
- d. Platy

11. The negatively charged particles in soil that adsorb cations and contribute to Cation Exchange Capacity (CEC) are known as:

- a. Soil colloids
- b. Soil aggregates
- c. Soil pores
- d. Soil macroparticles

12. Among the following clay minerals, which has the highest cation exchange capacity (CEC)?

- a. Kaolinite
- b. Montmorillonite
- c. Illite
- d. Chlorite

13. In soils, the ratio of exchangeable bases to the total cation exchange capacity, expressed as a percentage, is known as:

- a. Base saturation
- b. Buffer index
- c. Electrical conductivity
- d. Exchange ratio

14. A soil with a pH of 4.8 can be classified as:

- a. Slightly acidic
- b. Moderately acidic
- c. Strongly acidic
- d. Neutral

15. When lime is applied to acidic soil, the neutralization reaction primarily involves the conversion of:

- a. Hydrogen ions to water
- b. Sodium ions to calcium
- c. Magnesium to bicarbonate
- d. Carbonates to oxides

16. A soil is considered saline when its electrical conductivity (EC) of the saturation extract exceeds:

- a. 2 dS/m
- b. 4 dS/m
- c. 8 dS/m
- d. 15 dS/m

17. Gypsum ($\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$) is commonly applied to sodic soils mainly to:

- a. Lower soil pH
- b. Replace exchangeable sodium with calcium
- c. Increase soil organic matter
- d. Improve nitrogen fixation

18. In nutrient transformations, the conversion of ammonium (NH_4^+) to nitrate (NO_3^-) under aerobic conditions is known as:

- a. Denitrification
- b. Mineralization
- c. Nitrification
- d. Ammonification

19. The buffering capacity of soil is primarily due to the presence of:

- a. Exchangeable sodium ions
- b. Organic matter and clay colloids
- c. Soluble salts
- d. Iron and aluminum oxides

20. The sodium adsorption ratio (SAR) is a useful indicator in evaluating:

- a. Soil acidity levels
- b. Soil salinity hazard
- c. Soil sodicity hazard
- d. Soil fertility index

21. The type of soil survey that provides general information about large areas and is commonly used for regional planning is known as:

- a. Semi-detailed soil survey
- b. Reconnaissance soil survey
- c. Detailed soil survey
- d. Cadastral soil survey

22. In a detailed soil survey, the scale of the base map commonly used is approximately:

- a. 1:10,000 to 1:25,000
- b. 1:50,000 to 1:100,000
- c. 1:200,000 or smaller
- d. 1:1,000,000

23. In the USDA Soil Taxonomy, the highest category in the soil classification hierarchy is the:

- a. Order
- b. Family
- c. Series
- d. Subgroup

24. The soil order that is characterized by high organic matter accumulation under wet, anaerobic conditions is known as:

- a. Andisols
- b. Oxisols
- c. Histosols
- d. Alfisols

25. In the FAO soil classification system, the term “Leptosols” refers to soils that are:

- a. Deep and well-drained
- b. Shallow and stony
- c. Highly saline
- d. Formed in volcanic ash

26. The Philippine soil classification system is primarily based on:

- a. Soil color and parent material
- b. Soil texture and fertility level
- c. Soil series and geographic distribution
- d. Soil depth and drainage

27. In a soil survey report, a “mapping unit” refers to:

- a. The number of soil pits studied
- b. The basic cartographic area representing a soil type or association
- c. The average fertility rating of a region
- d. The amount of land suitable for irrigation

28. Which soil order is dominant in volcanic regions of the Philippines such as Bukidnon and Batangas?

- a. Vertisols
- b. Entisols
- c. Andisols
- d. Ultisols

29. In land capability classification, lands belonging to Class VIII are generally suitable for:

- a. Intensive cultivation
- b. Limited cropping with conservation
- c. Permanent pasture or forest use
- d. Urban and recreational purposes

30. The most suitable land use for Class II lands according to the USDA Land Capability Classification is:

- a. Cropland with simple conservation practices
- b. Forest land only
- c. Pasture or range land
- d. Land unsuitable for agriculture

31. Which of the following elements is classified as a secondary macronutrient essential for plant growth?

- a. Zinc (Zn)
- b. Sulfur (S)
- c. Molybdenum (Mo)
- d. Iron (Fe)

32. The primary function of potassium (K) in plants is to:

- a. Promote cell wall formation
- b. Regulate stomatal opening and enzyme activation
- c. Act as a structural component of chlorophyll
- d. Stimulate nitrogen fixation

33. Deficiency of which micronutrient commonly causes interveinal chlorosis in young leaves of crops like maize and rice?

- a. Iron (Fe)
- b. Boron (B)
- c. Manganese (Mn)
- d. Zinc (Zn)

34. Which nutrient deficiency leads to "whip-tail" disorder in cauliflower?

- a. Boron
- b. Molybdenum
- c. Calcium
- d. Magnesium

35. The process by which nitrogen is lost from the soil as ammonia gas is known as:

- a. Nitrification
- b. Volatilization
- c. Denitrification
- d. Mineralization

36. The conversion of ammonium (NH_4^+) to nitrate (NO_3^-) in soil is called:

- a. Immobilization
- b. Nitrification
- c. Ammonification
- d. Denitrification

37. Which of the following fertilizers contains nitrogen in both ammoniacal and nitrate forms?

- a. Ammonium sulfate
- b. Calcium nitrate
- c. Ammonium nitrate
- d. Urea

38. Soil test values are generally expressed in which unit to indicate nutrient availability?

- a. ppm or kg/ha
- b. mg/g soil
- c. % of total soil volume
- d. cmol/kg

39. Integrated Nutrient Management (INM) primarily aims to:

- a. Use only chemical fertilizers
- b. Maximize crop yield using balanced use of organic and inorganic sources
- c. Eliminate use of manures completely
- d. Rely solely on biological nitrogen fixation

40. Which nutrient is most susceptible to leaching losses in humid tropical soils due to its high solubility?

- a. Nitrogen (N)
- b. Potassium (K)
- c. Phosphorus (P)
- d. Calcium (Ca)

41. Which of the following clay minerals has the highest cation exchange capacity (CEC)?

- a. Kaolinite
- b. Montmorillonite
- c. Illite
- d. Chlorite

42. The property of soil that allows it to resist sudden changes in pH when acids or bases are added is called:

- a. Base saturation
- b. Buffering capacity
- c. Exchangeable acidity
- d. Ion selectivity

43. The primary source of negative charge in 2:1 clay minerals such as smectite is due to:

- a. Isomorphous substitution
- b. Organic acids in soil
- c. Adsorbed cations
- d. Hydrogen ion activity

44. The exchangeable sodium percentage (ESP) of a soil is used to indicate:

- a. Soil organic carbon content
- b. Degree of soil salinity
- c. Degree of soil sodicity
- d. Level of soil acidity

45. A soil with pH above 8.5, poor structure, and high sodium content is classified as:

- a. Saline soil
- b. Sodic soil
- c. Acidic soil
- d. Neutral soil

46. The most suitable amendment for reclaiming sodic soils is:

- a. Gypsum ($\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$)
- b. Lime (CaCO_3)
- c. Elemental sulfur (S)
- d. Ammonium sulfate

47. The pH range in which most essential plant nutrients are optimally available is:

- a. 4.0–5.0
- b. 5.5–7.0
- c. 7.5–9.0
- d. 3.0–4.0

48. In saline soils, the electrical conductivity (ECe) of the saturated paste extract is greater than:

- a. 2 dS/m
- b. 4 dS/m
- c. 8 dS/m
- d. 10 dS/m

49. The measure of total cations that a soil can adsorb per unit weight is known as:

- a. Base saturation
- b. Cation Exchange Capacity (CEC)
- c. Anion Exchange Capacity (AEC)
- d. Buffering power

50. Which compound is commonly used to correct soil acidity and increase base saturation?

- a. Gypsum
- b. Lime (CaCO_3)
- c. Elemental sulfur
- d. Ferric sulfate

Answer Key

1. B	14. C	27. B	40. A
2. C	15. A	28. C	41. B
3. B	16. B	29. D	42. B
4. C	17. B	30. A	43. A
5. A	18. C	31. B	44. C
6. B	19. B	32. B	45. B
7. B	20. C	33. A	46. A
8. B	21. B	34. B	47. B
9. B	22. A	35. B	48. B
10. B	23. A	36. B	49. B
11. A	24. C	37. C	50. B
12. B	25. B	38. A	
13. A	26. C	39. B	