



42707

Library
Brainware University
398, Ramkrishnapur Road, Barasat
Kolkata, West Bengal-700125



BRAINWARE UNIVERSITY

Term End Examination 2025-2026

Programme – B.Sc.(Ag)-Hons-2024

Course Name – Problematic Soils and their Management

Course Code - CC-BAG401

(Semester IV)

Full Marks : 50

Time : 2:0 Hours

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A

(Multiple Choice Type Question)

1 x 20=20

1. Choose the correct alternative from the following :

- (i) What will be the nature of soil, if parent material is granite?
 - a) Acidic in nature
 - b) Basic in nature
 - c) Neutral in nature
 - d) Calcareous in nature
- (ii) Show the appropriate term: The acidity that is developed due to H^+ and Al^{3+} ions in soil solution is called as:
 - a) Active acidity
 - b) Potential acidity
 - c) Residual acidity
 - d) Total acidity
- (iii) Show the appropriate depth: The recommended soil depth for lime application is:
 - a) 2 inches
 - b) 4 inches
 - c) 6 inches
 - d) 12 inches
- (iv) Show the appropriate term: The measurement used to determine soil pH is:
 - a) Active acidity
 - b) Exchangeable or small replaceable acidity
 - c) Residual acidity
 - d) Total acidity
- (v) Acid sulphate soils are showed mainly due to:
 - a) Reduction of sulphates
 - b) Oxidation of sulphides
 - c) Evolution of Hydrogen sulphide
 - d) Rice cultivation using ammonium sulphate
- (vi) Which element's toxicity is responsible for Akiuchi disease?
 - a) Sulphide
 - b) sulphate
 - c) Chloride
 - d) Zinc
- (vii) Which is not a liming material for acid soil reclamation?
 - a) Gypsum
 - b) Burnt lime
 - c) Slaked lime
 - d) Calcite and Dolomite
- (viii) Show the appropriate value: The Calcium Carbonate Equivalent (Neutralizing Value) of CaO is:

- 398, Nanima
Kolkata, West Bengal-700123

a) 169
c) 179

b) 170
d) 180

(ix) Which of the following sieve having 100% efficiency for liming?

a) 60 mesh
c) 08 mesh

b) 20 mesh
d) 50 mesh

(x) What is the appropriate method for determination of Lime requirement of a soil?

a) SMP buffer method
c) SP buffer method

b) PMP buffer method
d) Permanaganate method

(xi) What will be very active bacteria in acid sulphate soils if pH become below 4 ?

a) Thiobacillus thiooxidans
c) Thiobacillus denitrificans

b) Thiobacillus ferrooxidans
d) Bacillus

(xii) The process by which alkali soil or sodic soil will develop:

a) Alkalization
c) Gleization

b) Salinization
d) Pedoturbation

(xiii) Which define the Sodicty of irrigation water ?

a) Base saturation
c) AEC

b) SAR
d) CEC

(xiv) What is the term by which salinity is measured ?

a) EC
c) AEC

b) pH
d) CEC

(xv) $pH < 8.5$, $ESP < 15$ and $EC > 4$ related to:

a) Saline soil
c) Saline Alkali soil

b) Alkali soil
d) Calcareous soil

(xvi) EC of irrigation water is 4 and EC of drainage water is 2 then what is the leaching requirement?

a) 100
c) 150

b) 200
d) 250

(xvii) By which formula Exchangeable Sodium Percentage (ESP) can be calculate ?

a) $[Exchangeable\ Na/CEC] \times 100$
c) $[Exchangeable\ Na/AEC] \times 100$

b) $[Exchangeable\ Na/CEC] \times 10$
d) $[Exchangeable\ bases/CEC] \times 100$

(xviii) What is the value of RSC (me/L) in irrigation water is injurious for plant growth?

a) < 2.5
c) < 3.0

b) > 2.5
d) > 1.5

(xix) Which of the following is called Removal of excess water?

a) Leaching
c) Laterization

b) Drainage
d) Podzolization

(xx) When the sensing device detects EMR (Electro Magnetic Radiation) originating from another source, primarily from sun is called?

a) Active Sensing
c) Both Active and Passive

b) Passive sensing
d) EMR sensing

Group-B

(Short Answer Type Questions)

$$2.5 \times 10 = 25$$

2. Explain the Iron or Aluminium ion effects in soil acidity (give the reaction). (2.5)
3. Explain the factors that relate the efficiency of liming materials. (2.5)
4. Estimate the CCE value of dolomite. (2.5)
5. Explain the effect of overliming in the soil. (2.5)
6. Explain the characteristics of Acid sulphate soils. (2.5)

7. Explain the chemical factors of alkali soils. (2.5)
8. Explain the term SAR. (2.5)
9. Explain the use of acidic fertilizers contributes to the development of soil acidity and its effects on soil health. (2.5)
10. Explain the term "Eutrophication". (2.5)
11. Discuss the acid soil distribution in India. (2.5)

OR

Discuss the reason of Fe or Mn toxicity development in acid soil. (2.5)

Group-C

(Long Answer Type Questions)

5 x 1=5

12. Explain the different range of soil acidity. (5)

OR

Explain the term "Land capability classification" (5)
