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BRAINWARE UNIVERSITY

Term End Examination 2024-2025
Programme – B.Sc.(Ag)-Hons-2021/B.Sc.(Ag)-Hons-2022/B.Sc.(Ag)-Hons-2023
Course Name – Problematic Soils and their Management/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 Al3+ 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) Which element's toxicity is responsible for Akiochi disease?
a) Sulphide b) sulphate
c) Chloride d) Zinc

(v) Which is not a liming material for acid soil reclamation?
a) Gypsum b) Burnt lime
c) Slaked lime d) Calcite and Dolomite

(vi) Which of the following sieve having 100% efficiency for liming?
a) 60 mesh b) 20 mesh
c) 08 mesh d) 50 mesh

(vii) What is the appropriate method for determination of Lime requirement of a soil?
a) SMP buffer method b) PMP buffer method
c) SP buffer method d) Permanaganate method

(viii) What will be very active bacteria in acid sulphate soils if pH become below 4 ?
a) Thiobacillus thiooxidans b) Thiobacillus ferroxidans

c) Thiobacillus denitrificans d) Bacillus

(ix) Which define the Sodicity of irrigation water ?

a) Base saturation b) SAR
c) AEC d) CEC

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

a) EC b) pH
c) AEC d) CEC

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

a) Saline soil b) Alkali soil
c) Saline Alkali soil d) Calcareous soil

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

a) [Exchangeable Na/CEC] x 100 b) [Exchangeable Na/CEC] x 10
c) [Exchangeable Na/AEC] x 100 d) [Exchangeablebases/CEC] x 100

(xiii) Choose the Safe limit for Residual Sodium Carbonate.

a) <1.25 b) 1.5
c) 1.75 d) 2

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

a) Leaching b) Drainage
c) Laterization d) Podzolization

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

a) Active Sensing b) Passive sensing
c) Both Active and Passive d) EMR sensing

(xvi) What of the following Colour for the Land Capability Class-II on LCC maps?

a) Yellow b) Red
c) Blue d) Green

(xvii) What is the relationship of pE and redox potential?

a) pE = Redox potential/0.0493 b) pE = Redox potential/0.0569
c) pE = Redox potential/0.189 d) pE = Redox potential/0.0591

(xviii) Choose the correct answer: Black Alkali soil is also called as-

a) Sodic soil b) Calcareous soil
c) Saline soil d) None

(xix) What happen the addition of water to burnt lime is produced?

a) Gypsum b) CAN
c) Slaked lime d) Calcite

(xx) The following is related to water erosion:

a) Rill erosion b) Surface creep
c) Suspension d) Saltation

Group-B

(Short Answer Type Questions) 2.5 x 10=25

2. Discuss the acid soil distribution in India. (2.5)
3. Explain the liming reaction in the soil by using lime. (2.5)
4. Explain the term lime requirement. (2.5)
5. Explain the names of liming material. (2.5)
6. Estimate the CCE value of dolomite. (2.5)
7. Explain the chemical factors of saline soils. (2.5)
8. Explain the EC values (ds/m) for the assesment of the saline soil for the plant growth. (2.5)
9. Explain the term SAR. (2.5)

10. Estimate the leaching requirement (LR) of an irrigation water having electrical conductivity of 3 ds/m. When electrical conductivity of drainage water is 8 ds/m. (2.5)

11. Elaborate the reason of Soil Acidity development. (2.5)

OR

Discuss the different stages of implementation of INM activities. (2.5)

Group-C

(Long Answer Type Questions) 5 x 1=5

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

OR

Explain the principles of liming reaction (5)

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