18154

BRAINWARE UNIVERSITY

Term End Examination 2025-2026
Programme – B.Sc.(Ag)-Hons-2025
Course Name – Fundamentals of Soil Science
Course Code - BAG17103(T)
(Semester I)

Full Marks : 40 **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 10=10

1. *Choose the correct alternative from the following :*

(i) What is the predominant element on earth crust?

a) Oxygen b) Aluminium
c) Iron d) Silicon

(ii) Select the correct average density of the Earth as a whole (in g/cc).

a) 3.5 b) 4.5
c) 5.5 d) 6.5

(iii) Select the lowest category of Soil Taxonomy.

a) Order b) Suborder
c) Family d) Series

(iv) Select the names of soil having at least 35% clay separate.

a) Sandy soil b) Silty soil
c) Clayey soil d) Loamy soil

(v) According to USDA classification, what is the size range (in mm) of silt particle?

a) 0.002–0.02 b) 0.002–0.01
c) 0.002–0.05 d) 0.002–0.1

(vi) Which of the following cation has the tendency to disperse soil particles?

a) Na b) K
c) Ca d) Mg

(vii) What is the most important process of chemical weathering?

a) Hydration b) Hydrolysis
c) Carbonation d) Oxidation

(viii) Classify the silicate mineral that forms a honeycomb structure.

a) Orthosilicate b) Phyllosilicate
c) Nesosilicate d) Tectosilicate

(ix) Identify the active factor in soil formation among the following.

a) Time b) Relief
c) Parent material d) Climate

(x) Summarize the CEC value of vermiculite (cmol(p^+)/kg).

a) 50–70 b) 70–80
c) 90–100 d) 100–150

Group-B

(Short Answer Type Questions) 2.5 x 10=25

2. Apply Hans Jenny's soil formation equation (S = f(cl, o, r, p, t)) to explain why desert soils differ from alluvial soils. (2.5)
3. Summarize how rocks transform into soil through weathering and pedogenic processes. (2.5)
4. Define soil texture. (2.5)
5. Explain why chemical weathering dominates in tropical regions. (2.5)
6. Name the three main types of weathering with definition. (2.5)
7. What is Cation Exchange Capacity (CEC)? (2.5)
8. Differentiate between capillary and hygroscopic water. (2.5)
9. Why is organic matter important for soil structure? (2.5)
10. How can you improve water retention in a sandy soil used for vegetable cultivation? (2.5)
11. How would you manage phosphorus deficiency in highly alkaline soils? (2.5)

Group-C

(Long Answer Type Questions) 5 x 1=5

12. Critically assess the impact of continuous use of chemical fertilizers on soil biological activity. (5)

OR

Explain with an example how chemical weathering and biological weathering work together in soil formation. (5)

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