

KATHMANDU UNIVERSITY  
End Semester Examination  
March, 2025

Marks Scored:

Level : B.Sc.  
Year : II

Course : ENVS 209  
Semester : I

Exam Roll No. :

Time: 30 mins.

F. M. : 20

Registration No.:

Date : 11 MAR 2025

SECTION "A"

[10Q. × 1 = 10 marks]

**Choose and mark [X] encircle the most appropriate option from each set of choices**

- Rich organic material of plant and animal origin in a stage of decomposition is  
 Humus       Leaf litter       Surface horizon       Soft texture
- Topsoil is also known as  
 Soft soil       Clay soil       Biomantle       None
- Loam soil composed of sand, silt and clay in relatively even concentration.  
 40-40-20%       10-40-50%       30-30-40%       40-30-30%
- This soil occurs in humid region.  
 Red soil       Laterite soil       Desert soil       Peaty & marshy
- Soil colloids are particles less than \_\_\_\_\_ mm in size.  
 0.001       0.01       0.002       0.02
- Ions with positive electric charge is called as  
 Anion       Cation       Ionic       Non-ionic
- The pH range of extremely acidic soil is from  
 3.5 to 4.5       4.5 to 5.0       5.1 to 5.5       6.1 to 6.5
- The path atoms take from the biotic to abiotic world and back again is called \_\_\_\_ cycle.  
 Nutrient       Biogeochemical  
 Nitrogen       Carbon
- The least weathered portion that lies directly above the solid parental bedrock is  
 Solum       Saprolite       upper horizon       Parent material
- The subsoil horizon has depth of \_\_\_\_\_ feet.  
 10-30       20-40       15 -35       10-40

SECTION "B"  
[10Q. × 1 = 10 marks]

**Fill in the blanks.**

11. The leaching layer is called \_\_\_\_\_ horizon.
12. The red/brown in color of B horizon is due to oxides of \_\_\_\_\_.
13. The bedrock horizon at depth of 48+ feet is called as \_\_\_\_\_.
14. The most important of the materials moved and redeposited by water is called \_\_\_\_\_.
15. All the material picked up, mixed, disintegrated, transported, and deposited through the action of glacial ice or of water is called as \_\_\_\_\_.
16. The unsorted or slightly sorted material at the base of slopes, accumulated largely as rock fragments that have fallen down slope under influence of gravity is called \_\_\_\_\_.
17. Soil acidity determined by pH measurement during a routine soil test is known as \_\_\_\_\_ acidity.
18. Gas exchange is by partial pressure, is called \_\_\_\_\_.
19. The process in which heat is transmitted from the hotter to the colder part of the body in contact with each other by internal molecular motion is \_\_\_\_\_.
20. The upper horizons with the most weathered portion of the profile is known as \_\_\_\_\_.

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1 MAR 2025

SECTION "C"

[3 Q. × 7 = 21 marks]

Attempt *ANY THREE* questions.

1. What are different steps on evolution of the soil? How different factors affect soil formation?
2. Explain different types of nutrient cycling that occurs in ecosystem. Why these cycles are important for soil?
3. Describe about soil classification of Nepal. What are specific soil problems and threats to Nepalese soil?
4. What are types of soil acidity? Explain about management of acid soil.

SECTION "D"

5. Write short notes on [4Q × 4=16]
  - a. Soil colloids and its types.
  - b. Importance of phosphorus cycle in ecosystems.
  - c. Explain Graham' law of diffusion.
  - d. Components of soil profile
6. Justify the following statements [4Q × 3=12]
  - a. R-horizon is considered as "Bedrock" horizon.
  - b. Alluvium is most important of the materials moved and redeposited by water.
  - c. Air in soil is determined by rate of soil respiration.
  - d. Oxidation states of chemical elements depend on the soil aeration.
7. Differentiate between [2Q × 3=6]
  - a. Sedimentary rocks and metamorphic rocks
  - b. Solum and saprolite

