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The Open University of Sri Lanka
B.Sc./B.Ed Degree Programme-Level 05 – 2016/17
BOU 3104/BOE 5104 – Soils and Plant Growth
Assessment Test I (Open Book Test)

Duration – One (01) hour **Reg. No. .....**

Date: 30th September 2017 **Time: 9.00 – 10.00 a.m.**

Answer all questions on this paper itself.

There are four (04) questions and six (06) pages in this question paper.

01. a. Why does soil air contain more carbon dioxide and less oxygen as compared to atmospheric air?

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b. "Clay minerals are important in maintaining good plant growth". Explain.

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c. Distinguish between physical and chemical weathering.

Physical Weathering	Chemical weathering
1.	
2.	
3.	
4.	
5.	

02. a. What is "Soil genesis"?

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b. List the contributions being made by burrowing animals during soil genesis.

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c. What is meant by "young soil"?

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d. What are the changes happening during the conversion of young soil to mature soil?

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e. With the help of an example, explain the relationship between soil development and parent material.

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f. Draw two **fully labeled soil profile diagrams** in the space below for a soil subjected to heavy water erosion due to sloppiness of the land and for a grassland.

Soil Profile of the sloppy land

Soil profile of the grassland

3. a.. Define the term "soil texture".

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b. Granule formation is an important aspect in developing soil structure. How do activities of plant roots and microorganisms influence on granule formation?

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c. Bulk density and particle density of a soil are 1.5 and 3.0 respectively. Calculate the % pore space for that soil.

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d. Based on the value you obtained in part "c" above, comment on the texture of that soil.

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4. . a. What is Cation Exchange Capacity of a soil?

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b. The Cation Exchange Capacity(CEC), % H^+ concentration, % base saturation and pH of four types of soil are given below.

Soil type	CEC (meq)	% H^+ concentration	% Base Concentration	pH
Soil A	15	50	50	5.5
Soil B	15	20	80	6.5
Soil C	10	20	80	6.5
Soil D	10	60	40	5.0

Based on your knowledge on the availability of acidic and basic cations in soil, how do you explain having different pH values with the same CEC in those soils?

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