## UNIVERSITY OF RUHUNA
BACHELOR OF SCIENCE (GENERAL) DEGREE LEVEL II - (SEMESTER II)
### EXAMINATION – JANUARY 2018

SUBJECT: BOTANY

COURSE UNIT: BOT 2231 (Soil-Plant Relationships)

**Answer two (02) questions including question 1.**                **Time : One hour**

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1. A). What do you mean by "water retention system" of soil?

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    B). According to Panabokke classification, name the two soil types that occupy the largest area in Sri Lanka?

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    C). Is it possible to observe "Eluviation process" in a desert soil? Verify your answer.

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    D). Soil sample "A" is black in colour and Sunil mentions that colour should be due to calcite content in the soil. Do you agree with him? Briefly explain your answer.

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E). Describe the Munshell notation given "10GY 0/10"

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F). Write two important functions of the element Ca in plants.

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G). How do you distinguish potassium deficient plants from phosphorous deficient plants by observing the plants?

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H). What do you understand by mineralization of nutrients?

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I). What is a bio-fertilizer? Describe briefly.

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J). Give a definition for 'Biological N-fixation.

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(Each A to J: 10 marks)

2.

a). Explain what do you understand by 'Nutrient bio-availability'. (10 marks)

b). Describe briefly the nutrient pools in the soil and sources of available nutrients. (40 marks)

c). Discuss how earthworms, micorrhizae, and other microorganisms contribute to making nutrients available for plants. (50 marks)


3.

a). Explain the correlation of particle density (PD) and bulk density (BD) of a given soil sample. (20 marks)

b). Two sub-soil samples namely "A" and "B" were collected at the depths of 5 cm and 50 cm from a same place, respectively. The sample A, packed to a bulk density 1.25 while the sample B was 2.10.

i) Do you recommend this soil for a tree growth? Explain your answer          (30 marks)

ii) What would happen to PD of sub-soil sample A, if you added organic matter to that layer? (10 marks)

iii) What would you expect in PD and BD, if you did the same thing what is mentioned in (ii), to sub-soil sample B (10 marks)

iv) How does such change (addition of organic matter to the sample A & B) affect plant growth in that particular soil? (30 marks)