# The Open University of Sri Lanka
## Faculty of Natural Sciences
## B.Sc./B.Ed. Degree Programme

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| Department | : **Botany** |
| Level | : **05** |
| Name of the Examination | : **Final Examination** |
| Course Code and Title | : **BYU5304** **Soils and Plant Growth** |
| Academic Year | : **2024/25** |
| Date | : **10.05.2025** |
| Time | : **9:30 am – 11:30 am** |
| Duration | : **2 hrs** |

1. Read all instructions carefully before answering the questions.
2. This question paper consists of six **(06)** questions in **01** page.
3. Answer any four **(04)** questions only. All questions carry equal marks.
4. Answers for each question should commence from a new page.
5. Draw fully labelled diagrams where necessary.
6. Involvement of any activity that is considered as an exam offence will lead to punishment.
7. Use blue or black ink to answer the questions.
8. Clearly state your index number in your answer script.

1) i) What is meant by a mineral? (10 marks)
   ii) Explain the different types of parent materials which derive soil (50 marks)
   iii) Describe the soil development in relation to parent material (40 marks)

2) i) Define rock weathering (10 marks)
   ii) Explain how biological activities affect soil development (50 marks)
   iii) Describe the layers of a soil profile (40 marks)

3) Write an account of how soil physical, chemical, and biological properties effect on soil fertility (100 marks)

4) i) Briefly describe the various types of microbes in soil (50 marks)
   ii) Discuss the factors affecting the abundance and distribution of microbes in soil (50 marks)

5) Write short notes on **any two** of the following (50 marks each)
   i) Decomposition of organic matter
   ii) Factors effect on soil erosion
   iii) Green manure and cover crops

6) Explain the following giving reasons
   i) Kaolinite clay has a high water and cation exchange capacity (CEC) compared to Montmorillonite clay (20 marks)
   ii) When the entire profile is considered, grassland soils have more organic matter than soils developed in forests under trees (20 marks)
   iii) Dark coloured soils are not always a sign of high fertility (20 marks)
   iv) Tillage has both unfavourable and favourable effects on granulation (20 marks)
   v) The availability of soil phosphorus will depend on not only the amount of phosphorus applied, but also soil texture and pH (20 marks)