

University of Ruhuna - Faculty of Technology
Bachelor of Biosystems Technology Honours Degree
Level 4 (Semester I) Examination, July 2023
Academic year 2021/2022

Course Unit: BSTE 4122 Soil Water and Drainage Management Technology (Theory)
Duration: 1 ½ hours

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INSTRUCTIONS

Answer all questions.

Only non-programmable calculators are permitted.

Mobile phones are NOT permitted.

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1. A i) Indicate the most appropriate property of water, which is responsible for each condition given below. (30 marks)
- a) Water can absorb/release large amounts of heat without temperature fluctuations:
 - b) Water flows easily:
 - c) Water allows ions and polar molecules to be evenly spread out:
 - d) Water surface acts like an elastic film that resists deformation:
 - e) Ice floats on water:
- ii) List FIVE important roles of water in soil. (20 marks)
- B i. What are the **critical water levels** in soils? (20 marks)
- ii. "The available water content changes according to the soil texture". Do you **agree or disagree** with this statement? Justify your answer. (30 marks)
2. A. i) What is meant by following terms?
- a. Irrigation: (05 marks)
 - b. Drainage: (05 marks)
- ii) Name the main TWO surface drainage systems. (05 marks)
- iii) Explain briefly the TWO surface drainage systems you mentioned above A. ii). (10 marks)
- iv) Explain briefly the following terms.
- a) Sub-surface drainage (10 marks)
 - b) Pipe drain systems (10 marks)

- B. i) State the soil drainage conditions indicated by the following colors in soils.
- a) Red color: (05 marks)
 - b) Grey color: (05 marks)
 - c) Gray and red mottles: (05 marks)
- ii) Describe Surface Drainage Principles and Practices. (20 marks)
- iii) Describe Sub-surface Drainage Principles and Practices. (20 marks)
3. A. i) Indicate FIVE methods of soil water conservation. (10 marks)
- ii) List down major processes of **unproductive water losses**. (10 marks)
- B. Write a short note on major stages of water evaporation from soil. (30 marks)
- C. Explain briefly the FOUR main irrigation methods. (20 marks)
- D. i) Explain briefly the following terms.
- a) Border irrigation (10 marks)
 - b) Basin irrigation (10 marks)
- ii) Explain briefly the difference between border and basin irrigation (10 marks)

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