



The Open University of Sri Lanka
 Faculty of Engineering Technology
 Department of Agricultural & Plantation Engineering

Study Programme	: Bachelor of Industrial Studies Honours (Agriculture)
Name of the Examination	: Final Examination
Course Code and Title	: AGX6283-Groundwater Resources Management
Academic Year	: 2024/2025
Date	: 11-02-2026
Time	: 1330-1630hrs
Duration	: 3 hours

Registration No :

Instructions

1. This question paper consists of two sections.

SECTION 1

- Contains FIFTEEN (15) questions. You are required to **answer all questions**. Answers should be written in the space provided for each question. No additional paper is provided. You may spend about **one hour** to answer this section.

SECTION 2

- Contains SIX (06) essay type questions. You are required to answer **ONLY FOUR (04)** questions. You may spend about **two hours** to answer the questions in this section.
- Read the questions carefully before answering. In case of doubt, please consult the supervisor or an invigilator conducting the examination.
- It is **EXTREMELY IMPORTANT** that you do not remove the SECTION I of the question paper from the examination hall.

Please note that you should write your registration number in the space provided above. Do not write your name.

SECTION 1: Answer all questions. Use the space give under each question.

1. Write **three (03)** characteristics of Hard rock formations of Crystalline Rock?

2. State **three (03)** characteristics of River Alluvium

3. Name **three (03)** main subdivisions of general geology of the hard-rock aquifer overburden

4. The chemicals present in groundwater can be categorized broadly into four areas. Name those **four (04)** areas.

5. Name **three (03)** methods of estimating groundwater recharge in terms of applicability, data requirements and reliability.

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6. Name **three (03)** mineral dissolving in groundwater?

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7. Briefly indicate the health concerns about fluoride concentration in groundwater.

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8. Name **four (04)** factors affecting the resistivity of a rock?

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9. Name **four (04)** methods to calculate the reference crop evapotranspiration and write the equation and name the parameters for one method.

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10. Name **four (04)** stages of crop development.

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11. Based on the portability, sprinkler systems are classified into five. Write the **five (05)** systems.

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12. Define "Aquifer Vulnerability".

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13. What are the basic components of a drip irrigation system?

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14. Write down the **seven (07)** parameters in the DRASTIC method to estimate aquifer vulnerability.

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15. Write **five (05)** characteristics of Persistent Organic Pollutants.

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END OF PAPER



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SECTION 2: Answer any four (04) questions. All questions carry equal marks.

1. Briefly discuss the status of water for agricultural activities in Sri Lanka
2. (a). Briefly explain the general groundwater recharge mechanism concepts using a flowchart.
 (b). Explain the direct methods for recharge assessment.
3. Briefly discuss the groundwater chemistry of major constituents in the saturated zone.
4. (a). Describe the sprinkler irrigation systems and its components with suitable diagram.
 (b). (i) Determine the required capacity of a sprinkler system to apply water at the rate of 15 mm/hr for the following situation: Two 200 metres long sprinkler lines are required. Fifteen sprinklers are spaced at 10 metre intervals on each line. The spacing between lines is 20 metres. (Indicate the assumptions you make).
 (ii) Allowing 1 hour for moving each 200-metre sprinkler line described above how many hours would be required to apply 50mm irrigation to a 16 hectare field.
5. (a). Write a brief note on Aquifer system management classification and Aquifer contamination susceptibility map.
 (b) Discuss the factors affecting groundwater contamination.

Write a brief note on any **three (03)** of the following.

- (a) Groundwater Protection
- (b) Saltwater intrusion
- (c) Groundwater Modelling
- (d) Blue Baby Syndrome

END OF PAPER