



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

Study Programme	: Bachelor of Science Honors in Engineering (Agricultural Engineering)
Name of the Examination	: Final Examination
Course Code and Title	: AGX5510-Design and Management of Irrigation and Drainage
Academic Year	: 2024/2025
Date	: 05-02-2026
Time	: 0930-1230hrs

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

- Contain 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. Define Irrigation with respect to **five (05)** purposes

2. List five (05) considerations must be taken into account in the selection of an irrigation system.

3. Write the average value of duty for the following crops.

Rice

Vegetable

Cotton

Sugarcane

Wheat

4. Write the relationship between Potential and Crop Evapo transpiration by an equation and name the parameters.

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5. Give **three (03)** basic requirements to be established before designing a sprinkler irrigation system

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6. Define the following Dams.

Saddle Dam

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Overflow Dam

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Check Dam

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Dry Dam

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7. What is meant by "Irrigation Duty"?

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8. What is the testing done in the site laboratories in the construction of earth dams?

9. Name **five (05)** types of hydraulic structures used in flow regulation in Irrigation.

10. Classify the salt affected soils based on EC and ESP according to United States Classification.

11. Determine the drainage coefficient of an irrigated area where deep percolation from irrigation is 20% and the seepage from watercourses is 10% of the water applied. A 150mm irrigation depth is applied every 14 days.

12. Name the solutions for drainage problems in the following situations.

Impermeable soils

Digressional areas

Seepage

13. Briefly explain the following Drainage methods and practices.

Flood Control

Leeves

Local drainage

Flood protection bunds

Groynes

14. Name **two (02)** drainage spacing formulae for Unsteady State condition.

15. Write **five (05)** types of subsurface drainage systems.

END OF SECTION



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

1. (a). Define the Potential evapotranspiration and explain the relationship between the potential evapotranspiration and crop evapotranspiration. (15 marks)
 (b). Briefly explain the crop growth stages with suitable diagram and its importance on crop evapotranspiration. (10 marks)
2. (a) Briefly describe the design and operation of Drip Irrigation system with suitable diagram (15 marks)
 (b) Explain the advantages and disadvantage of drip irrigation system. (10 marks)
- 3.(a) Briefly explain the ‘Tank Cascade System’ with suitable diagram. (15 marks)
 (b) Compare the Traditional water distribution system with present water distribution system. (10 marks)
- 4.(a). Briefly describe the effect of irrigation on public health. (15 marks)
 (b). Describe the environmental management for vector control in Irrigation projects. (10marks)
5. Briefly discuss the historical background of irrigation during Polonaruwa period in Sri Lanka. (25 marks)

6. Write short notes on any **three (03)** of the following.

- (i) Lysimeters
- (iii) Unsteady state design criteria for drainage.
- (iv) Selection of drainage machine
- (v) Surface irrigation practices

(25 marks)

END OF PAPER