



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	: AGI6478-Hydrology and Water Resources
Academic Year	: 2024/2025
Date	: 30-01-2026
Time	: 1400-1700hrs
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

- 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. What is the principle behind the Radar measurement of precipitation

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2. Name **four (04)** features consisted in the Cook's method to calculate surface runoff.

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3. Define the Unit Hydrograph theory of "Principle of proportionality"

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4. Draw and label the Wenner configuration of resistivity survey of Geophysical methods.

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5. Write **two (02)** main ways that aquifers may be artificially replenished.

6. Write **three (03)** characteristics of an artesian aquifer

7. What are the **four (04)** conditions must be present for the production of precipitation.

8. Write the Rational formula to predict the peak runoff rate and name the parameters.

9. Write the equation to determine the runoff co efficient if W index is known and name the parameters.

10. Define "Unit Hydrograph"

11. Give an equation to show the relationship between specific yield and porosity.

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12. Name **four (04)** factors that affect the hydrograph shape and the flood magnitude.

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13. Give the World Health Organization (WHO) standard of the following

(i) Dissolved Oxygen

(ii) Arsenic

(iii) Lead

(iv) Chlorides

(v) Total dissolved solids

14. What is meant by "Aquitard"?

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15. List five (05) chemical features for water quality tests for domestic purposes.

END OF SECTION I



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

1. (a) What is correlation and explain the types of correlation used and its importance in Hydrological studies.
 (b) In a correlation study x and y have the following values. Calculate the Pearson's correlation of coefficient.

x	y
1	150
2	100
3	200
4	221
5	170

2. (a) Briefly explain the atmospheric factors affecting transpiration.
 (b) Describe the interception of rainfall with suitable diagram.
3. (a) Briefly explain the aquifer characteristics influencing yield of wells.
 (b) Describe the geophysical methods used to obtain accurate information about the sub surface conditions.
4. (a) Briefly define the following terms used in Well Hydraulics
 - (i) Static Water Level
 - (ii) Pumping Water Level
 - (iii) Draw down

- (iv) Well Yield
- (v) Cone of Depression
- (vi) Aquifer loss and well loss

(b) An alluvial valley which is 5000 m wide and 30 m deep is recharged at the head of valley. The average hydraulic conductivity of the alluvial aquifer is 25m/day. Two piezometers are installed at 1000 m apart in the centre line of the valley. The water level in the first piezometer is 0.5 m higher than that in the second piezometer. What is the volume rate of groundwater flow?

5. Briefly describe the groundwater contamination and its consequences.
6. Write short notes on any **three (03)** of the following.
 - (i) Types of wells
 - (ii) Aquifer particle size analysis
 - (iii) Hydrological Cycle
 - (iv) Spring water tapping

End of paper