



ZIMBABWE

**MINISTRY OF HIGHER AND TERTIARY EDUCATION,
INNOVATION, SCIENCE AND TECHNOLOGY
DEVELOPMENT**

**HIGHER EDUCATION EXAMINATIONS COUNCIL
(HEXCO)**

NATIONAL CERTIFICATE

IN

IRRIGATION AND WATER RESOURCES ENGINEERING

MODULE: Soil Plant Water Relations

PAPER NO: 384/22/M06

DURATION: 3 Hours

NOVEMBER/ DECEMBER 2025 EXAMINATION

REQUIREMENTS

INSTRUCTIONS TO CANDIDATE

1. Answer any four (4) questions.
2. Number of marks is given in brackets at the end of each question.
3. Each question carries twenty- five (25) marks.

QUESTION 1

- a) Define irrigation scheduling (3 marks)
- b) Outline the benefits of irrigation scheduling. (10 marks)
- c) Describe the steps in irrigation scheduling (12 marks)

QUESTION 2

- a) Define the terms: evaporation and transpiration. (4 marks)
- b) Outline the benefits of irrigation scheduling. (15 marks)
- c) Describe the role or importance of transpiration in plants. (6 marks)

QUESTION 3

- a) Outline three (3) forms of soil water or, moisture in irrigation and agriculture. (3 marks)
- b) Describe the roles / importance of soil water or moisture in irrigation and agriculture. (12 marks)
- c) Describe the role or importance of transpiration in plants. (10 marks)

QUESTION 4

- a) Define the terms with aid of formulas:
 - i) Bulk density (2 marks)
 - ii) Porosity (2 marks)
 - iii) Particle density (2 marks)
- b) Describe factors affecting soil bulk density. (12 marks)
- c) What practices can a farmer do to improve soil bulk density. Explain each practice. (7 marks)

QUESTION 5

- a) Describe fully the criteria concept. Include fully labelled diagram. (13 marks)
- b) Explain how soil colour is related to soil catena (8 marks)
- c) Differentiate between elliviation and illustration (4 marks)

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