

BINDURA UNIVERSITY OF SCIENCE EDUCATION

FACULTY OF SCIENCE AND ENGINEERING

AEH 502

**Department Of Engineering and Physics
Bachelor of Science (Honours) in Agricultural Engineering
Surface Irrigation System Technology**

3 HOURS (100 MARKS)

INSTRUCTIONS

Answer any **FOUR** questions. Each question carries 25 marks.

JUN 2023

Question 1

- a. Briefly explain the following terms as used in irrigation:
- | | |
|------------------------|-----------|
| i. Headworks. | [2 marks] |
| ii. Flumes. | [2 marks] |
| iii. Irrigation depth. | [2 marks] |
| iv. Tertiary unit. | [2 marks] |
| v. Water users. | [2 marks] |
| vi. Orifices. | [2 marks] |
| vii. Field drain. | [2 marks] |
- b. Explain the functions of the different types of control structures [15 marks]

Question 2

- a. Describe in detail the requirements in the technical planning and design of the irrigation network projects. [15 marks]
- b. As an engineer explain why it is necessary to conform to locally used system for the terminology for blocks, canals and structures in an irrigation and drainage network system. [10 marks]

Question 3

- a. Describe in detail the functions of the following structures in irrigation and drainage network system.
- | | |
|--|-----------|
| i. Structures for water level control. | [5 marks] |
| ii. Structures for safety. | [5 marks] |
- b. Explain the importance of a preliminary and final report in the designing of your irrigation and drainage system network. [15 marks]

Question 4

Discuss why irrigation and drainage structures are not designed for eternity. [25 marks]

Question 5

Describe the different levels of interested parties during the planning, designing, construction and operation of an irrigation and drainage network. [25 marks]

Question 6

Explain the importance of defining the objectives of an irrigation system beforehand essential as an irrigation engineer. [25 marks]

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