



“Investing in Africa’s Future”

COLLEGE OF HEALTH, AGRICULTURE AND NATURAL SCIENCES

AAE 302: IRRIGATION AND WATER MANAGEMENT

END OF SECOND SEMESTER FINAL EXAMINATIONS

MAY/JUNE 2020

LECTURER: MS. M. C. KUREHWATIRA

DURATION: 48 HRS

INSTRUCTIONS

- Do NOT write your name on the answer sheet.
- Answer (fully) any **one question** of your choice.
- Begin your answer for each question on a new page.
- Each full question carries 100 marks.
- Font: Times New Roman; Font size 12; Line space: 2.0.
- Credit is given for neat, well-written and lucid work.

Question 1

- a) Using relevant examples critically analyse the role of irrigation in Africa.
[20 marks]
- b) Assuming you are an irrigation consultant for Mutasa District, Zimbabwe and a new farmer approaches you in need of advice on the best irrigation method for his farm.
- i. Discuss in detail the factors that will inform your advice to the farmer.
[40 marks]
- ii. With the aid of a diagram, describe the main components of an irrigation system of your choice. Your diagram must clearly highlight the layout of the irrigation system from the water source to the drainage system. **[40 marks]**

Question 2

- a) Using relevant examples, comment on the notion that irrigation is the biggest user of water in the world.
[20 marks]
- b) Africa University wishes to improve their livestock feed by growing ryegrass. As an irrigation student, you are required to advise the farm manager on the irrigation water requirement for pasture. Describe in detail the steps you will take to determine the irrigation water requirement for ryegrass. **[40 marks]**
- a) Critically discuss the constraints to irrigation development in Africa and suggest possible solutions to these constraints.
[40 marks]

Question 3

- a) Using relevant examples give a critical discussion on the water resources challenges in Africa.
[20 marks]

- b) With the aid of diagrams, give a detailed description of the layout of a sprinkler irrigation system. You should also compare and contrast sprinkler irrigation system with drip and surface irrigation systems. **[40 marks]**
- c) A smallholder farmer wishes to invest in a surface irrigation system for their agro forestry plot. They want to grow maize, soya beans and fruit trees. Their plot is located in an area with loamy clay soils; the slope is 0.2% and the plot is 50 metres away from a perennial river.
- i. You are required to advise this farmer on the best surface irrigation method to use for his plot. Give a detailed discussion of what informed your decision. **[20 marks]**
- ii. With the aid of a diagram, describe in detail the phases of the surface irrigation method in question, 3 c) i. **[20 marks]**

END OF EXAMINATION PAPER