



"Investing in Africa's Future"

FACULTY OF AGRICULTURE AND NATURAL RESOURCES

ACP201: CROP PHYSIOLOGY

END OF FIRST SEMESTER EXAMINATIONS

NOVEMBER/DECEMBER 2016

LECTURER: MR. T. A. MTAITA

DURATION: (3HRS)

INSTRUCTIONS

1. Do Not Write Your Name On The Answer Sheets.
2. Use Answer Sheets Provided.
3. Begin Your Answer For Each Question On A New Page.
4. Credit Is Given For Neat Presentation Of Answers.



Course Code: ACP201

Course NAME: Crop Physiology = **Supplementary Examination**

Answer four questions only

Question one

- a) What makes crop physiology an indispensable course in any agricultural curriculum? [5]
- b) Explain the importance of water in plant growth. [10]
- c) Differentiate between the following.
 - i. Growth analysis and sequential yield analysis [2]
 - ii. Sink capacity and sink activity [2]
 - iii. Biological yield and economical yield [2]
 - iv. Leaf area duration and leaf area index [2]
 - v. Net assimilation rate and Crop growth rate [2]

Question two

- a) Use the formula $Y = Q \times I \times e \times H$ to explain why growing of a crop is considered to be an exercise in energy transformation [5]
- b) Explain the main concerns of a crop physiologist in agricultural science [10]
- c) Explain why there is no one set of characteristics and no one path to high yield and success as a crop plant [10]

Question three

- a) Identify the four classic theories that attempt to explain how the process of growth is limited by external factors. Provide a concise explanation of each theory and describe any relationship each law has with any of the other three laws. [9]
- b) What determines the leaf area of a plant at a given time in growing a crop? [5]
- c) Describe the physiological attributes conferring competitiveness through morphological characters [5]
- c) Explain different methods that plants deploy in adapting to dry conditions [6]

Question four

- a) Discuss the concept of ideotype in agricultural science [15]
- b) Explain the physiological basis for training and pruning of an agricultural crop of your own choice. [10]

Question five

- a) Express grain yield as a product of yield components and explain the factors which influence the yield components. [6]
- b) Explain the three strategies of crop adaptation to dry conditions. [9]
- c) Explain the strategies that a professional farmer can adopt to maximize solar radiation interception and utilization with the aim of attaining maximum yield. [10]