



*"Investing in Africa's Future"*

**COLLEGE OF HEALTH, AGRICULTURE & NATURAL SCIENCES**

**NACP 211: Crop Physiology**

**END OF SECOND SEMESTER EXAMINATIONS**

**November/December 2019**

**LECTURER: MTAITA TA**

**DURATION: 3 HOURS**

***INSTRUCTIONS***

1. Write your Registration Number[**NOT YOUR NAME**] on the answer sheet

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2. Use Answer Sheets Provided To Answer **Four** Questions Only

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3. Begin your answer for Each Question on a New Page

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4. Credit is Given for Neat Presentation

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### **Question one**

Discuss the factors affecting the following physiological processes:

- i. Partitioning of assimilates, [5]
- ii. Transpiration, [5]
- iii. Photosynthesis, [5]
- iv. Nutrient uptake, and [5]
- v. Interception of solar radiation. [5]

### **Question Two**

a) Discuss why crop physiology is an imperative course for any one studying agriculture [5]

b) Discuss the processes and attributes governing yield when;

- i) A crop is growing on a reserve of water and saturation deficit is typically greater than 2 kPa [10]
- ii) The soil is moist and the saturation deficit < 1.5 kPa. [10]

### **Question three**

Critique the following physiological observations

- i) There are different yield components in different crops [5]
- ii) Production of a crop is considered to be an exercise of energy transformation [10]
- iii) Crop ideotypes are crucial in improved crop production [10]

### **Question Four**

a) Discuss the main concerns of a crop physiologist in Agriculture Science [15]

b) Explain why there is no one set of characteristics and no one path way to high yield in crop production [10]



### **Question Five**

- a) Account for the different approaches a farmer can use to improve solar radiation interception and utilization **[10]**
- b) Elucidate your understanding of the source-sink relationship concept and show how a farmer can benefit from such knowledge **[5]**
- c) With the aid of classic examples, discuss different mechanisms that crop plants have developed to absorb nutrients from poor soils **[10]**

### **Question Six**

- a) Critique the External factors affecting plant growth and development **[5]**
- b) With the aid of an appropriate crop physiology flow diagram, explain the main processes in growth and development of a crop. **[6]**
- c) Elucidate the four theories on plant growth limitation and plant response **[8]**
- d) Explain why are the concepts (covered in 'c' above) to explain the growth limiting factors are only theories and not accepted laws? **[6]**