



# **MERU UNIVERSITY OF SCIENCE AND TECHNOLOGY**

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## **University Examinations 2013/2014**

FIRST YEAR, SECOND SEMESTER EXAMINATIONS FOR DIPLOMA IN  
AGRICULTURE

AND

FIRST YEAR, SECOND SEMESTER EXAMINATIONS FOR CERTIFICATE IN  
AGRICULTURE

### **BIO 0113: PLANT PHYSIOLOGY**

**DATE: APRIL 2014**

**TIME: 1 ½ HOURS**

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**INSTRUCTIONS:** *Answer question one and any other two questions*

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#### **QUESTION ONE – (30 MARKS)**

- (a) Explain the importance of plant physiology in agriculture. (4 Marks)
- (b) Highlight the importance of Gibberilic acid in crop production. (4 Marks)
- (c) Describe the characteristics of  $c_4$  plants. (4 Marks)
- (d) Discuss the importance of transpiration in plants. (8 Marks)
- (e) Discuss the factors that affect respiration in plants. (6 Marks)
- (f) Outline the importance of osmosis in plants. (4 Marks)

#### **QUESTION TWO – (15 MARKS)**

- (a) Describe the effect of water stress on plant performance and product quality. (6 Marks)
- (b) Discuss the application of respiration process in agriculture. (6 Marks)
- (c) State three components of water potential in plants. (3 Marks)

**QUESTION THREE – (15 MARKS)**

- (a) Explain how water is absorbed by plants. (5 Marks)
- (b) Discuss the factors influencing water absorption. (10 Marks)

**QUESTION FOUR – (15 MARKS)**

- (a) State the criteria of mineral essentiality. (3 Marks)
- (b) Describe the hydroponic method of mineral determination in plants. (7 Marks)
- (c) State the functions and deficiencies of Nitrogen in plants. (5 Marks)

**QUESTION FIVE – (15 MARKS)**

- (a) Discuss mechanisms of water stress adaptation in plants. (10 Marks)
- (b) Describe the advantages of hydroponic farming. (5 Marks)