



**MERU UNIVERSITY COLLEGE  
OF SCIENCE & TECHNOLOGY**

P.O. Box 972-60200 Meru - Kenya. Tel: 020-2092048, 020 2069349  
Fax: 020-8027449

University Examinations 2011/2012

FIRST YEAR, FIRST SEMESTER EXAMINATION FOR DIPLOMA IN  
AGRICULTURAL EDUCATION AND EXTENSION AND FIRST YEAR, SECOND  
SEMESTER FOR CERTIFICATE IN AGRICULTURE

**BIO 0113: PLANT PHYSIOLOGY**

**DATE: DECEMBER 2011**

**TIME: 1½ HOURS**

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

**QUESTION ONE – (30 MARKS)**

- (a) State the differences of C<sub>3</sub> and C<sub>4</sub> plants giving two examples of each. (6 Marks)
- (b) State the functions of the following organs of plant cell. (4 Marks)
- (i) Leucoplast
  - (ii) Chromoplast
  - (iii) Cell wall
- (c) Distinguish between the following: (6 Marks)
- (i) Light-dependent reactions and light-independent reactions
  - (ii) Photolysis and photophosphorylation.
- (d) Explain two types of meristems stating their functions in growth of plants. (6 Marks)
- (e) Discuss the physiology of seed germination. (8 Marks)

**QUESTION TWO – (15 MARKS)**

- (a) What is translocation? (2 Marks)
- (b) With the aid of diagram explain the mass flow hypothesis of phloem transport. (13 Marks)

**QUESTION THREE – (15 MARKS)**

- (a) Define the term photolysis (2 Marks)
- (b) Explain the concept of limiting factors in photosynthesis with reference to light intensity and the concentration of Carbon dioxide. (8 Marks)
- (c) State the structural features of xerophytes stating their effects on plants. (5 Marks)

**QUESTION FOUR – (15 MARKS)**

- (a) State the chemical and physical properties of water. (4 Marks)
- (b) Explain why plants often fail in soils which is persistently waterlogged. (3 Marks)
- (c) Discuss how water and mineral salts are absorbed from the soil and transported to the plant leaves. (8 Marks)

**QUESTION FIVE – (15 MARKS)**

- (a) Discuss the role of auxins in plants (10 Marks)
- (b) Explain one method of assessing plant nutrients. (5 Marks)