



MERU UNIVERSITY COLLEGE OF SCIENCE & TECHNOLOGY

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University Examinations 2010/2011

FIRST YEAR, FIRST/SECONDESEMESTER EXAMINATIONS FOR DIPLOMA IN AGRICULTURAL EDUCATION AND EXTENSION/CERTIFICATE AGRICULTURE

BIO 0113: PLANT PYSIOLOGY

DATE: DECEMBER 2010

TIME: 1½ HOURS

INSTRUCTIONS: Answer Question *one* which is Compulsory and any other *two* question

QUESTION ONE – (30 MARKS)

- (a) Explain the Crussulacean Acid Metabolism (CAM) carbon dioxide fixation. (5 Marks)
- (b) State the physiological plant disorder due to nitrogen deficiency. (5 Marks)
- (c) Discuss the role of Ethylene in plants. (10 Marks)
- (d) State the functions of the following plant organelles:
- (i) Epidermis
 - (ii) Cell membrane
 - (iii) Mitochondria
 - (iv) Nucleus (6 Marks)
- (e) Distinguish between differentiation and specialization of plant cells in growth and development. (4 Marks)

QUESTION TWO – (15 MARKS)

- (a) Describe the environmental factors that affect photosynthesis of higher plants. (10 Marks)
- (b) State the differences between C₃ and C₄ plants. (5 Marks)

QUESTION THREE – (15 MARKS)

- (a) Explain the physiological effect of auxins as a plant growth regulator substances. (10 Marks)
- (b) Describe the effect of abscisic acid on moisture stress. (5 Marks)

QUESTION FOUR – (15 MARKS)

- (a) Describe the effect of water stress in plant. (10 Marks)
- (b) State the plants adaptation to water stress. (10 Marks)

QUESTION FOUR – (15 MARKS)

- (a) Explain with the aid of a diagram how the pressure chamber method is used to measure water potential in plant cells. (10 Marks)
- (b) Outline the water movement from the soil to the atmosphere. (5 Marks)