



**MERU UNIVERSITY COLLEGE
OF SCIENCE & TECHNOLOGY**

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University Examinations 2010/2011

FIRST YEAR, FIRST SEMESTER EXAMINATIONS FOR CERTIFICATE/DIPLOMA IN
AGRICULTURE

BIO 0110: AGRICULTURAL BOTANY

DATE: AUGUST 2011

TIME: 1½ HOURS

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

QUESTION ONE – (30 MARKS)

- (a) Name the recognized kingdoms for the classification of living things? (2½Marks)
- (b) Distinguish between obligate and facultative microorganisms. (2 Marks)
- (c) (i) Sketch and label a typical plant cell (3½Marks)
- (ii) Describe the functions of the following organelles (5 Marks)
- Nucleus
 - Rough endoplasmic reticulum
 - Protoplasm
 - Lysosome
 - Plastids
- (d) Differentiate between the following tissues. (3 Marks)
- (i) Parenchyma
 - (ii) Sclerenchyma
 - (iii) chlorenchyma
- (e) (i) What is the difference between a “true” and “false” fruit? (2 Marks)
- (ii) In which category of fruits does each of the following belong? (4 Marks)
- Coconut, *Cocos nucifera*
 - Banana, *Musa acuminata*
 - Strawberry, *Fragaria annaniasa*
 - Maize, *Zea mays*
- (f) (i) Why is plant taxonomy important in agriculture? (3 Marks)
- (ii) You have been assigned a field work task to collect some plant specimens. Briefly mention five details you would include in your field notes. (5 Marks)

QUESTION TWO – (15 MARKS)

- (a) Identify any five specialized stems pointing out clearly their modifications. (5 Marks)
- (b) Using suitable examples describe the following specialized roots. (5 Marks)
- (i) Adventitious
 - (ii) Aerating
 - (iii) Haustorial
 - (iv) Tuberous
 - (v) aerial
- (c) (i) External leaf characteristics are important for identifying plants. What is the manner in which leaves are arranged in a stem called? (1 Mark)
- (ii) Describe four major types of leaf placement on the stem. (4 Marks)

QUESTION THREE – (15 MARKS)

- (a) Summarize using a sigmoid curve the growth phases exhibited by annual plants and their individual parts. (5 Marks)
- (b) What is the relationship between vegetative and reproductive growth? (3 Marks)
- (c) Point out the difference between quiescence and dormancy. (2 Marks)
- (d) Mention five characteristics of adaptation of seeds and seedlings for dispersal and survival. (5 Marks)

QUESTION FOUR – (15 MARKS)

- (a) Using a suitable diagram, demonstrate the components of the following parts of a flower.
- (i) Androecium
 - (ii) Perianth
 - (iii) Carpel (6 Marks)
- (b) (i) What is an inflorescence? (2 Marks)
- (ii) Describe two major types of inflorescence. (4 Marks)
- (c) Interpret the following floral formula (3 Marks)
- $$* ; \underset{\text{♀}}{\text{Q}} ; \text{K } 3 - 6 ; \text{C } 0 ; \underline{\text{G}} 5 - 9 ; \text{ach}$$

QUESTION FIVE – (15 MARKS)

- (a) Using specific examples describe the economic importance of flowering plants. (5 Marks)
- (b) Describe the characteristics and distribution of the following plant families. (10 Marks)
- (i) Poaceae
 - (ii) Asteraceae
 - (iii) Brassicaceae