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University Examinations 2012/2013

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

BIO 0111: GENETICS AND PLANT BREEDING

DATE: AUGUST 2013 **TIME: 1½HOURS**

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

QUESTION ONE – (30 MARKS)

a. State the first Mendel's law. (2 Marks)
b. Discuss the importance of genetic engineering technology. (10 Marks)
c. Describe the pureline method of crop improvement. (5 Marks)
d. Outline the significance of meiosis cell division. (3 Marks)
e. State the reasons why polyplidy is rare in animals than in plants. (3 Marks)
f. State three characteristics of mutation. (3 Marks)
g. Define the term plant breeding. (2 Marks)
h. State the effects of chromosome structure changes in an organism. (2 Marks)

QUESTION TWO – 15 MARKS

a. What is parthenocarpy? (2 Marks)
b. In a peas, the allele for round seed (R) is dominant over the allele for wrinkled seed (r). The allele for yellow seed (Y) is dominant over the allele for green seed (y). If two peas plants are crossed together, what ratio of phenotype is expected in the offspring? (8 Marks)
c. State the major activities involved in plant breeding. (5 Marks)

QUESTION THREE – 15 MARKS

a. With an illustration, write short notes on the following chromosome mutation. (8 Marks)
   i. Inversion
   ii. Translocation
b. Discuss the factors that cause change in chromosome structure. (7 Marks)

QUESTION FOUR – 15 MARKS

a. What is self pollination? (2 Marks)
b. Discuss the mechanism that facilitates self pollination. (10 Marks)
c. State the characteristic of prophase 1 in meiotic cell division. (3 Marks)

QUESTION FIVE – 15 MARKS

a. Discuss two types of disease resistance. (7 Marks)
b. Discuss the mechanisms of insect breeding resistance. (8 Marks)