

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

**EXAMINATION FOR THE AWARD OF DEGREE OF
BACHELOR OF SCIENCE**

BOTA 312: PLANT GENETIC RESOURCES MANAGEMENT

STREAMS: BSC Y3S2

TIME: 2 HOURS

DAY/DATE: THURSDAY 18/04/2019

8.30 AM – 10.30 AM

INSTRUCTIONS:

- **Answer ALL Questions in Section 1 and Two Questions in Section II**
- **Do not write anything on the question paper**

SECTION 1 (30 MARKS): ANSWER ALL THE QUESTIONS

1. Explain the following terms as used in plant genetic resources management;
 - (i) Landraces. [2 marks]
 - (ii) Primitive cultivars. [2 marks]
 - (iii) Cryopreservation. [2 marks]
 2. Discuss the following terms:
 - (i) Genetic erosion. [2 marks]
 - (ii) Germplasm collection. [2 marks]
 - (iii) A working collection. [2 marks]
 3. Discuss the generalizations that can be deduced from the 12 centres of origin of cultivated crops. [6 marks]
 4.
 - (i) Define the term plant genetic resources. [2 marks]
 - (ii) Explain why the knowledge on plant mating system is important in plant genetic resources management. [4 marks]
- marks]

- (iii) Explain the equation $\sigma_p^2 = \sigma_g^2 + \sigma_e^2 + \sigma_{gxe}^2$ and state its application in plant genetic management. [6 marks]

SECTION II (40 MARKS): ANSWER ANY TWO QUESTIONS

5. (a) Discuss the major categories of the genetic resources of a crop species. [8 marks]
- (b) Discuss the sources of genetic variation. [12 marks]
6. (a) List any five agricultural organizations under the umbrella of the consultative group of international agriculture research (CGIAR), indicating where they are located and list crop(s) genetic resources they are mandated to handle. [10 marks]
- (b) Discuss the dynamics of crop domestication and its consequence in plant genetic resources management. [10 marks]
7. Discuss application of molecular markers and genomics in conservation of genetic resources and genomic resources management. [20 marks]
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