



*(Knowledge for Development)*

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# **KIBABII UNIVERSITY**

**UNIVERSITY EXAMINATIONS**

**2017/2018 ACADEMIC YEAR**

**SECOND YEAR SECOND SEMESTER**

**MAIN EXAMINATION**

**FOR THE DEGREE OF BACHELOR OF SCIENCE IN  
AGRICULTURE AND BIOTECHNOLOGY**

**COURSE CODE: SAB 232**

**COURSE TITLE: BIOTECHNOLOGY AND CROP IMPROVEMENT**

**DATE: 8<sup>TH</sup> AUGUST 2018**

**TIME: 2 PM – 4 PM**

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## **INSTRUCTIONS TO CANDIDATES**

Answer Question One and Any other TWO (2) Questions

TIME: 2 Hours

This Paper Consists of **2 Printed Pages**. Please Turn Over. 

KIBU observes ZERO tolerance to examination cheating

**QUESTION ONE (COMPULSORY)****(30 MKS)**

- a) List any TWO properties of a Genetic code (2 MKS)
- b) Outline any TWO functions of the following structures and organelles of a cell;
- i. Chromatin (2 MKS)
  - ii. Cytoplasm (2 MKS)
  - iii. DNA (2 MKS)
  - iv. RNA (2 MKS)
- c) List any TWO advantages of Genetically Modified foods(2 MKS)
- d) Outline any TWO activities that occur under the following steps in cell division;
- i. Metaphase of Meiosis I (2 MKS)
  - ii. Metaphase of Meiosis II (2 MKS)
  - iii. Anaphase of Meiosis I (2 MKS)
- e) Describe the following terminologies as applied in agricultural biotechnology;
- i. Transgene (1 MKS)
  - ii. Clone (1 MKS)
  - iii. Polymerase Chain Reaction (PCR) (2 MKS)
  - iv. Gene silencing (2 MKS)
  - v. Gene flow (2 MKS)
- f) Briefly describe the following processes under Central Dogma Concept;
- i. Transcription (2 MKS)
  - ii. Translation (2 MKS)

**QUESTION TWO**

- a) List any FIVE properties of DNA carrier vectors (5 MKS)
- b) Analyze the impacts of Genetically Engineered Crops to the environment(10 MKS)
- c) Outline differences between DNA and RNA under the following subtitles;
- i. Forms (3 MKS)
  - ii. Location (2 MKS)

**QUESTION THREE**

- a) Outline any TWO differences between traditional plant breeding and Genetic Engineering in crop improvement (4 MKS)
- b) Outline any TWO factors that influence the success of genetic engineering (4 MKS)
- c) Describe the following Genetic Engineering methods of Gene/DNA delivery into target cells;
- i. Any TWO vectorless transfer methods (6 MKS)
  - ii. Any TWO vector mediated methods (6 MKS)

**QUESTION FOUR**

Describe any FIVE regulations towards GMOs USE and RESEARCH in Kenya (20 MKS)