



(Knowledge for Development)

KIBABII UNIVERSITY

UNIVERSITY EXAMINATIONS

2017/2018 ACADEMIC YEAR

SECOND YEAR SECOND SEMESTER

SUPPLEMENTARY/SPECIAL EXAMINATION

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

COURSE CODE: SAB 232

COURSE TITLE: BIOTECHNOLOGY AND CROP IMPROVEMENT

DATE: 18TH OCTOBER 2018

TIME: 11:30 – 1:30 AM

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) Briefly describe the THREE forms of RNA (6 MKS)
- b) List the THREE components of Nucleotides (3 MKS)
- c) List any THREE advantages of PCR process (3 MKS)
- d) Using examples, differentiate between purines and pyrimidines (6 MKS)
- e) Describe the following terminologies as used in genetic engineering;
 - i. Embryo rescue (2 MKS)
 - ii. Gene (2 MKS)
 - iii. Genomics (2 MKS)
- f) Outline the functions of the following in DNA replication;
 - i. Topoisomerase (2 MKS)
 - ii. Helicase (2 MKS)
 - iii. Ligase (2 MKS)

QUESTION TWO

- a) Using diagrams, Outline the FOUR steps of PCR process. (12 MKS)
- b) Outline any TWO advantages and TWO disadvantages in crops Genetically Engineered crops for;
 - i. Insect resistance (4 MKS)
 - ii. Delayed fruit ripening (4 MKS)

QUESTION THREE

- a) Briefly outline the CTAB procedure of DNA extraction in the laboratory (10 MKS)
- b) Using diagrams, briefly describe the following gene transfer tools:
 - i. Conjunction (4 MKS)
 - ii. Phasmids (3 MKS)
 - iii. Bacterial Artificial Chromosomes (BAC) (3 MKS)

QUESTION FOUR

- a) Describe briefly the Central Dogma Concept (6 MKS)
- b) List any THREE properties of a genetic code (3 MKS)
- c) Using examples of genetic crossing, briefly describe the following genetic principles;
 - i. The law of segregation (5 MKS)
 - ii. Mendels second law (6 MKS)