



(Knowledge for Development)

KIBABII UNIVERSITY

UNIVERSITY EXAMINATIONS

2015/2016 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: 11TH MAY 2016

TIME: 2PM – 4PM

INSTRUCTIONS TO CANDIDATES

Answer Question One in Section A and Any other TWO (2) Questions in Section B

TIME: 2 Hours

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

KIBU observes ZERO tolerance to examination cheating

SECTION A: Answer All Questions (COMPULSORY) (30 MKS)

QUESTION ONE

a) Define the following terms in relation to plant biotechnology and crop improvement;

- i. Genetic engineering (4 MKS)
 - ii. Phenotype (3 MKS)
 - iii. Clone (2 MKS)
 - iv. Gene (3 MKS)
 - v. Gene expression (2 MKS)
 - vi. Transgenic organism (2 MKS)
- b) Define Recombinant DNA technology using examples. (5 MKS)
- c) Briefly describe the following Vectorless or direct gene transfer methods:
- i. Chemical mediated gene transfer (2 MKS)
 - ii. Liposome mediated gene transfer or Lipofection (2 MKS)
- d) List any five advantages of Genetically Engineered Crops (5 MKS)

SECTION B: Answer ANY Two Questions (40 MKS)

QUESTION TWO

Analyze Genetically Engineered Crops (GE Crops) under the following topics;

- a) Environmental impacts of Genetically Engineered Crops (10 MKS)
- b) Economic effects of Genetically Engineered Crops (10 MKS)

QUESTION THREE

- a) Describe the following kinds of gene transfer methods in plants
 - i. Vector-mediated or indirect gene transfer (5 MKS)
 - ii. Vectorless or direct gene transfer (10 MKS)
- b) Differentiate between traditional plant breeding and Genetic Engineering (5 MKS)

QUESTION FOUR

Using examples of Genetically Engineered Crops being grown, give an account of how biotechnology has been applied towards genetic improvement of crops. (20 MKS)

QUESTION FIVE

- a) Describe briefly how molecular markers have been used in crop improvement. (6 MKS)
- b) Briefly explain any two factors that influence the success of genetic engineering (4 MKS)
- c) As an agricultural Biotechnology expert, discuss whether or not we should adopt Genetic Engineering of Crops. (10 MKS)

-GOOD LUCK-