

**UNIVERSITY OF KABIANGA**

**UNIVERSITY EXAMINATIONS**

**2017/2018 ACADEMIC YEAR**

**SECOND YEAR FIRST SEMESTER EXAMINATION**

**FOR THE DEGREE OF BACHELOR OF SCIENCE IN AGRICULTURE/BACHELOR OF SCIENCE IN HORTICULTURE/BACHELOR OF SCIENCE IN AGRICULTURAL EXTENSION EDUCATION**

**COURSE CODE: ABT 211**

**COURSE TITLE: PRINCIPLES OF AGRICULTURAL BIOTECHNOLOGY**

**DATE: 2ND FEBRUARY, 2018**

**TIME: 2.00 P.M-5.00 PM**

**INSTRUCTIONS:**

Answer **ALL** Questions in section A and any other **THREE** Questions in section B.

**SECTION A (40 MARKS)**

**QUESTION ONE**

1. Explain the following terms as used in biotechnology:
2. Totipotency. (4 marks)
3. The “gene” technology. (4 marks)
4. The “ploidy level” of an organism. (4 marks)
5. Explain any FOUR areas of crop improvement where tissue culture technique has been used. (8 marks)
6. Discuss the merits and demerits of using the following techniques in genomic DNA extraction:
7. The organic solvent method. (8 marks)
8. The FTA paper technique. (4 marks)
9. Briefly explain roles of the following in DNA extraction:
10. Proteinase K. (4 marks)
11. Sodium dodecyl sulfate. (4 marks)

**SECTION B (60 MARKS)**

**QUESTION TWO**

1. Using any TWO examples, briefly explain what you understand by the term “transgenic plant.” (10 marks)
2. Write short notes on the following DNA markers:
3. Simple sequence repeats. (5 marks)
4. Diversity arrays technology (DArTs). (5 marks)

**QUESTION THREE**

1. Briefly explain the roles of the following in DNA replication.
2. DNA helicase enzyme. (4 marks)
3. DNA ligase enzyme. (4 marks)
4. Describe the steps in polymerase chain reaction (PCR). (12 marks)

**QUESTION FOUR**

1. Write short notes on the significance of chloroplast DNA in crops. (8 marks)
2. Briefly explain any FIVE major applications of genetic markers. (12 marks)

**QUESTION FIVE**

1. State and briefly explain any FOUR advantages of micro propagation in banana cultivation. (8 marks)
2. Using an illustration, explain the term “central dogma of molecular biology” and its significance in life sciences. (12 marks)