

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR  
OF SCIENCE IN BIOLOGICAL SCIENCE

**BOTA 412: PLANT BIOTECHNOLOGY**

**STREAMS: BSC (BIO)**

**TIME: 2 HOURS**

**DAY/DATE: MONDAY 09/12/2019**

**2.30 P.M. – 4.30 P.M.**

**INSTRUCTIONS: ANSWER ALL QUESTIONS IN SECTION A AND ANY TWO IN SECTION B**

**SECTION A (30 MARKS)**

1. List three practices that fall under the following categories
  - (i) Classical biotechnology [3 marks]
  - (ii) Modern biotechnology [3 marks]
2. Outline five characteristics that are targeted for improvement of crops through genetic engineering [5 marks]
3. Define the following [6 marks]
  - (i) Direct organogenesis
  - (ii) Somatic embryogenesis
  - (iii) Somaclonal variations
4. Explain the role of the following growth regulator during tissue culture [4 marks]
  - (i) BAP
  - (ii) 2, 4 – D
5. Identify four features of the Ti plasmid as it occurs in nature [4 marks]
6. Differentiate between conventional breeding and genetic engineering [5 marks]

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**SECTION B (40 MARKS)**

7. Discuss the methods used during genetic engineering of plants [20 marks]
  8. Describe the steps of the plant tissue culture process [20 marks]
  9. Describe the process of recombinant DNA technology [20 marks]
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