



THE CATHOLIC UNIVERSITY OF EASTERN AFRICA

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MAIN EXAMINATION

SEPTEMBER –DECEMBER 2021

FACULTY OF SCIENCE

DEPARTMENT OF BIOLOGY

REGULAR PROGRAMME

BIO 212: ESSENTIALS OF BIOTECHNOLOGY

Date: DECEMBER 2021

Duration: 2 Hours

INSTRUCTIONS: Answer Question ONE and any TWO Questions

- Q1.a) Define the following terms **(5Marks)**
- a) Biotechnology
 - b) rDNA technology
 - c) Plasmids
 - d) RNAi technology
 - e) Marker assisted selection
- b) i) Explain why Biotechnology has been described as "Janus-faced" **(2Marks)**
- ii) Highlight three of the goals of plant genetic engineers **(3Marks)**
- c) i) Describe the stages of biotechnology development **(2Marks)**
- ii) Differentiate genetic and protein engineering **(3Marks)**
- d) i) Explain the 3 basic requirements for successful genetic engineering **(3Marks)**
- ii) Describe two gene transfer techniques used in genetic engineering **(2Marks)**
- e) Explain the general steps of a model genetic engineering of a plant **(5Marks)**
- f) Describe the 5 High-throughput technologies (the -omics) **(5Marks)**

Q2. Describe the historical evolution of biotechnology from 1797 to 2006 **(20Marks)**

Q3. i) Explain any six properties of DNA vectors (6Marks)
ii) Describe the various types of DNA vectors (14Marks)

Q4. Describe the various applications of biotechnology and genomics (20Marks)

Q5. a) Describe the six biotechnologies and their uses (12Marks)
b) Explain field of studies improved by tissue culture technique (8Marks)

DTE DEC 2021

END