

MIC 415



OFFICE OF THE DEPUTY PRINCIPAL  
ACADEMICS, STUDENT AFFAIRS AND RESEARCH

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# UNIVERSITY EXAMINATIONS

## 2020 /2021 ACADEMIC YEAR

FOURTH YEAR SECOND SEMESTER REGULAR EXAMINATION

**FOR THE DEGREE OF BACHELOR OF SCIENCE  
IN MICROBIOLOGY**

**COURSE CODE: MIC 415**

**COURSE TITLE: BIOTECHNOLOGY**

**DATE: 13<sup>TH</sup> JULY, 2021**

**TIME: 08.00AM – 11.00AM**

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### INSTRUCTIONS TO CANDIDATES

- SEE INSIDE

**THIS PAPER CONSISTS OF 3 PRINTED PAGES**

**PLEASE TURN OVER**

**REGULAR – MAIN EXAM**  
**MIC 415: BIOTECHNOLOGY**

**STREAM: BSc Microbiology**

**DURATION: 3 Hours**

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**INSTRUCTIONS TO CANDIDATES**

- i. Answer ALL questions from section A and any **THREE** from section B.*
  - ii. Diagrams should be used whenever they serve to illustrate the answer.*
  - iii. Do not write on the question paper.*
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**SECTION A (24 MARKS)**

**Question One**

- a) Outline four advantages of genetically modified organisms (GMOs) in agriculture. (4 Marks)
- b) Highlight four industrial applications of biotechnology. (4 Marks)
- c) What are the characteristics of an ideal vaccine? (4 Marks)

**Question Two**

- a) Write notes on the following:-
  - i. Epithelial tissues (2 Marks)
  - ii. DNA clone (2 Marks)
- b) Outline four requirements for a cloning vector. (4 Marks)
- c) Using examples, highlight four roles of microorganisms as bio-fertilizer. (4 Marks)

**SECTION B (36 MARKS)**

**Question Three**

- a) Discuss four safety issues associated with biotechnology products. (8 Marks)
- b) Describe the microbial activities in Nitrification. (4 Marks)

**Question Four**

- a) What is biotechnology? (2 Marks)
- b) Discuss the procedures involved in making a recombinant DNA. (10 Marks)

**Question Five**

- a) Describe the process of Biogas Production. (10 Marks)
- b) Give account for two physiological processes facilitated by cells. (2 Marks)

**Question Six**

Give a detailed account of the procedures involved in genetic engineering highlighting the benefits of this science (12 Marks)

**Question Seven**

Discuss the basic stages involved in the manufacturing process of a vaccine. (12 Marks)

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