(*Knowledge for Development*)

KIBABII UNIVERSITY

UNIVERSITY EXAMINATIONS
2023/2024 ACADEMIC YEAR

SECOND YEAR FIRST SEMESTER

MAIN EXAMINATIONS

FOR THE DEGREE OF BACHELOR OF EDUCATION

COURSE CODE: ABI 211

COURSE TITLE: INTRODUCTION TO BIOTECHNOLOGY

DATE: 8TH DECEMBER 2023 **TIME:** 2 – 4 PM

INSTRUCTIONS TO CANDIDATE

Answer Question ONE and any other TWO Questions.

TIME: 2 Hours

This paper consists of 2 printed pages. Please Turn Over

QUESTIONS ONE

a. Explain why it is necessary for microbial production of single-cell protein. **(4mks)**

b. a. Define the following terms: **(2mks)**
   i. Electroporation
   ii. Selectable marker
   iii. Restriction enzymes
   iv. Biotechnology

c. Outline the advantages of particle bombardment over Agrobacterium-mediated DNA transfer **(4mks).**

d Outline the role of genetic engineering in the promotion of food security **(4mks).**

e Outline the concerns of Genetically Modified Organisms on Human Health **(4mks).**

f Explain the role of a marker gene in plant transformation experiments **(4mks).**

g Explain how biotechnology can be applied for maximum usage of land for agricultural purposes **(4mks).**

h Outline the applications of biotechnology in regard to the environment **(4mks).**

QUESTION TWO

Discuss the components of the tissue culture medium **(20mks).**

QUESTION THREE

Discuss factors affecting single-cell protein production **(20mks).**

QUESTION FOUR

Describe the steps involved in recombinant DNA technology **(20mks).**

QUESTION FIVE

Discuss the features that are required to facilitate cloning into a vector. **(20mks).**