(*Knowledge for Development*)

# KIBABII UNIVERSITY

## UNIVERSITY EXAMINATIONS
## 2022/2023 ACADEMIC YEAR

## THIRD YEAR SECOND SEMESTER
## MAIN EXAMINATIONS

**FOR THE DEGREE OF BACHELOR OF SCIENCE IN AGRICULTURE ECONOMICS AND RESOURCE MANAGEMENT**

**COURSE CODE:** AAP 322

**COURSE TITLE:** BIOTECHNOLOGY IN RUMINANT PRODUCTION

**DATE:** 25TH APRIL 2023 **TIME:** 9 – 11 AM

**INSTRUCTIONS TO CANDIDATES**

**Answer Question ONE and any other TWO Questions.**

**TIME: 2 Hours**

**This paper consists of 3 printed pages. Please Turn Over**

## QUESTION ONE

*a.* Outline the three major constraining factors that influence the productivity in the livestock sector **(3 marks)**

*b.* Explain the term gene mapping and list types of genetic maps **(3 marks)**

*c.* Define the following terms

i. Prebiotics **(2 marks)**

ii. Probiotics **(2 marks)**

iii. Biotechnology **(2 marks)**

*d.* Briefly describe the following Antigen-antibody interaction-based techniques

**i.** Monoclonal antibodies **(4 marks)**.

**ii.** Enzyme-Linked Immunosorbent **(4 marks)**

*e.* Which of the following statement is NOT true for genetic markers? Explain **(4 marks)**

a) A gene or a DNA sequence

b) Associated with a particular trait

c) Anything can be used as a genetic marker

d) The first genetic map was prepared was of fruit fly

*f.* Outline the advantages of using embryo transfer technology in animal breeding **(2 marks)**

*g.* Which of the following technique is used for the amplification of DNA fragments? Explain. **(4 marks)**

a) AFLP

b) RFLP

c) RAPD

d) SNP

## QUESTION TWO

Discuss different methods of gene mapping **(20 marks)**

## QUESTION THREE

Write short notes on

i. Immunotherapy **(4 marks)**
ii. Nanotechnology **(4 marks)**
iii. Vaccination **(4 marks)**

iv. Cytokine Therapy (**4 marks)**
v. Proteomics (**4 marks)**

## QUESTION FOUR

i. Discuss different DNA-based diagnostic techniques (**10 marks)**

ii. Discuss the application of biotechnology in animal breeding (**10 marks)**

## QUESTION FIVE

i. Discuss the approaches to automate oestrus detection in animal breeding **(10 marks)**
ii. Describe different types of molecular markers and their shortcomings **(10 marks)**