KISII UNIVERSITY

UNIVERSITY EXAMINATIONS

THIRD YEAR EXAMINATION FOR THE AWARD OF THE DEGREE OF BACHELOR OF SCIENCE LABORATORY SCIENCE
SECOND SEMESTER 2021/2022
(FEBRUARY-JUNE, 2022)

BSLT 338: MICROBIAL GENETICS

STREAM: Y3 S2 **TIME: 2 HOURS**

DAY: WEDNESDAY, 12:00 PM – 2:00 PM **DATE: 25/05/2022**

INSTRUCTIONS:

1. Do not write anything on this question paper.
2. Answer all questions in section A and any TWO in section B.

SECTION A: ANSWER ALL QUESTIONS (40 MARKS)

1) Define the following terms as applied in microbial genetics. (3 marks)

a) Mutation
b) Genetic material
c) Genetic code

2) Explain the termination of transcription process in prokaryotes (3 marks)

3) Briefly describe the different types of gene regulation (3 marks)

4) State the function of the following enzymes (5 marks)

a) Helicase
b) Topoisomerase
c) DNA polymerase I
d) Ligase
e) RNA polymerase III

5) What are restriction enzymes? Discuss the characteristics of different types of endonucleases. (5 marks)

6) Outline the basic principle of recombinant DNA technology. (5marks)

7) What are plasmids? Briefly describe the structure of p^{BR322} plasmid vector. (8 marks)

8) Discuss the functions of different types of RNA (8 marks)

SECTION B: ANSWER ANY TWO QUESTIONS (30 marks)

1. Discuss in details the following gene transfer methods in bacteria (15 marks)

a) Transformation

b) Conjugation

c) Transduction

2. Explain the regulation of gene expression in prokaryotes (15 marks)

3. Illustrate the processes of replication and transcription? (15 marks)