



**JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND
TECHNOLOGY**

**UNIVERSITY EXAMINATIONS
RESIT FOR THE 2019/2020 ACADEMIC YEAR**

**YEAR, SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF
SCIENCE (BIOLOGICAL SCIENCES)**

COURSE CODE: SBI 3442

COURSE TITLE: Microbial Genetics

DATE

TIME

DURATION: 2 HOURS

INSTRUCTIONS:

- 1. This paper contains two sections (A and B)**
- 2. Answer ALL questions in Section A and any Two (2) questions in Section B**
- 3. Write ALL answers in the booklet provided**

SECTION A: ANSWER ALL QUESTIONS**30 MARKS**

1. Describe the mode of replication in bacterial cells.
2. Citing examples, outline the classification of phages according to their genetic material. (3 marks)
3. Outline the differences in the replication of bacteriophage T4 and bacteriophage lambda genomes. (3 marks)
4. Describe the functions of genes involved in the control of the lysogenic cycle in bacteriophage lambda. (3 marks)
5. Describe the life cycle of *Saccharomyces cerevisiae*. (3 marks)
6. Describe the attributes of plasmids that make them potential vectors for carrying cloned DNA. (3 marks)
7. Explain the advantage of using phages rather than plasmids as vectors. (3 marks)
8. Describe the process of transformation in *Streptococcus pneumoniae*. (3 marks)
9. Distinguish between generalized and specialized transduction. (3 marks)
10. Define bacterial artificial chromosomes and state their uses. (3 marks)

SECTION B: ANSWER ANY TWO QUESTIONS**(40 Marks)**

- 11) Give a comparative account of the organization of bacterial and viral genomes.
- 12) Discuss how gene regulation is achieved in the arabinose and tryptophan operons.
- 13) Give an account of translational control of gene regulation in bacteria
- 14) With the aid of an illustration, describe the formation of parental ditype (PD), nonparental ditype (NPD), and tetratype (TT) asci in a dihybrid yeast by linkage and independent assortment at meiosis. (20 marks)