JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE & TECHNOLOGY

SCHOOL OF BIOLOGICAL AND PHYSICAL SCIENCES

UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR SCIENCE IN BIOLOGICAL SCIENCE

4TH YEAR 2ND SEMESTER 2018/2019 ACADEMIC YEAR

MAIN CAMPUS - REGULAR

COURSE CODE:	**SBI 3442**	
COURSE TITLE:	**MICROBIAL GENETICS**	
EXAM VENUE:	**BIO LAB**	**STREAM: (BIO)**
DATE:	**02/05/2019**	**EXAM SESSION: 12.00-2.00PM**

TIME: 2 HOURS

Instructions:

1. **Answer ALL questions in Section A and Any two questions in Section B**
2. **Candidates are advised not to write on question paper**
3. **Candidates must hand in their answer booklets to the invigilator while in the examination room**

SECTION A: SHORT ANSWER QUESTIONS (30 MARKS)

1. Describe the mode or replication in bacterial cells. (3 marks)
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: ESSAY QUESTIONS (40 MARKS)

11. Give a comparative account of the organization of bacterial and viral genomes. (20 marks)
12. Discuss how gene regulation is achieved in the arabinose and tryptophan operons. (20 marks)
13. Give an account of translational control of gene regulation in bacteria. (20 marks)
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)