JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL OF BIOLOGICAL SCIENCES

UNIVERSITY EXAMINATIONS FOR THE DEGREE OF MASTER OF SCIENCE IN MICROBIOLOGY

FIRST YEAR FIRST SEMESTER 2018/2019 ACADEMIC YEAR

MAIN CAMPUS - REGULAR

COURSE CODE: SBT 835

COURSE TITLE: **MICROBIAL GENETICS**

EXAM VENUE: **STREAM: (MSC)**

DATE: **EXAM SESSION:**

TIME: 3 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: COMPULSORY QUESTIONS (30 MARKS)

1)

a) Describe the organization of prokaryotic genetic material. (6 marks)

b) Describe the process of theta replication in E. coli. (6 marks)

c) Describe the sequence of events in the elongation stage of prokaryotic protein synthesis. (6 marks)

d) Give an illustration of the ternary complex at the replication fork during the elongation step of messenger RNA transcription. (6 marks)

e) Describe how the lysogenic cycle is maintained in bacteria. (6 marks)

SECTION B: ESSAY QUESTIONS (30 MARKS)

2) Discuss the mechanisms of horizontal gene transfer in prokaryotes. (15 marks)

3) Give an account of transcriptional control of gene regulation in prokaryotes. (15 marks)

4) Describe the mechanisms of antibiotic resistance in bacteria. (15 marks)

5) Give a synthesis of gene mapping in bacteria using transformation. (15 marks)