JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY
SCHOOL OF BIOLOGICAL AND PHYSICAL SCIENCES
UNIVERSITY EXAMINATIONS FOR THE DEGREE OF BACHELOR OF
BIOLOGICAL SCIENCES
FOURTH YEAR FIRST SEMESTER 2018/2019 ACADEMIC YEAR
MAIN CAMPUS - REGULAR

COURSE CODE:	**SBI 3432**
COURSE TITLE:	**GENE REGULATION**
EXAM VENUE…	**STREAM: BSC. BIOLOGICAL SCIENCES**
DATE:	**EXAM SESSION:**
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 ASWER QUESTIONS (30 MARKS)

1. Explain why the efficiency with which the gene is transcribed is influenced by promoter activity. (3 marks)

2. Giving examples, describe a regulon. (3 marks)

3. Describe any three categories of regulatory mutants of the *lac* operon. (3 marks)

4. Outline the differences between *ara* operon and *trp* operon. (3 marks)

5. Explain why the effectiveness of translation can also be influenced by the nature of the codons used throughout the gene. (3 marks)

6. State the role of stringent response in translational control. (3 marks)

7. With examples, describe any three mechanisms involved in global regulatory systems. (3 marks)

8. Outline the roles of terminators and anti-terminators in transcription control .(3 marks)

9. Explain why the stability of mRNA is an important factor in gene regulation. (3 marks)

10. Describe catabolite repression. (3 marks)

SECTION B: ESSAY QUESTIONS (40 MARKS)

11. Using specific examples, describe the role of alternative promoters and σ-factors in bacterial gene regulation. (20 marks)

12. Describe a two component regulatory systems (20 marks)

13. With specific examples, describe quorum sensing in bacteria (20 marks)

14. Describe attenuation control of the *trp* operon (20 marks)