JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY
SCHOOL OF AGRICULTURAL AND FOOD SCIENCES

FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE AGRICULTURE EXTENSION AND EDUCATION

2017/2018 ACADEMIC YEAR

COURSE CODE: AAB 3217

COURSE TITLE: MOLECULAR CELL BIOLOGY

EXAM VENUE: LAB 9 **STREAMS**: BSc. AGED,

DATE: 18/12/17 **EXAM SESSION:2.00 – 4.00PM**

TIME: 2 HOURS

Instructions:

1. **Answer ALL questions in section A and ANY other 2 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 [30 MARKS]

Answer ALL questions in this Section.

1 a. Define pseudo gene (1 mark)

b. Explain the central dogma and illustrate how the three molecules of life are related (3 marks)

c. Name three types of plant genes, their regulation site and function (3 marks)

d. State the benefits of studying molecular biology in life (3 marks)

2 a. Explain polymerase chain reaction(PCR) highlighting the procedure involved (4 marks)

b. State factors involved in transcriptional regulation (2 marks)

c. State and explain the vector independent gene transfers (4 marks)

3. a. Using a diagram explain how genes are structured to ensure their expression (4 marks)

b. Cells have evolved two basic architectural plants; Prokaryotes and Eukaryotes. Using diagrams where necessary clearly explain the difference between the two (4 marks)

c. State key enzymes in molecular biology and their functions (2 marks)

SECTION B [40 MARKS]

Answer any TWO QUESTIONS in this Section.

Q3. (a) Agro bacterium-mediated gene transfer is a very important phenomenon in molecular biology. Discuss it and its application in plant sciences (20 marks).

Q4. Discuss the role of tissue culture in plant science highlighting the major advantages and disadvantages offered by in vitro techniques (20 marks).

Q5. Transcription and translation are two main processes in gene expression. Discuss in details these two processes. (20 marks)