



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

**SPECIAL EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE
AGRICULTURE EXTENSION AND EDUCATION**

2019/2020 ACADEMIC YEAR

RESIT EXAMINATION

COURSE CODE: AAB 3217

COURSE TITLE: MOLECULAR CELL BIOLOGY

EXAM VENUE:

STREAMS: BSc. AGED,

DATE:

EXAM SESSION:

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)