



MAASAI MARA UNIVERSITY

**REGULAR UNIVERSITY EXAMINATIONS
2021/2022 ACADEMIC YEAR
THIRD YEAR SECOND SEMESTER**

**SCHOOL OF EDUCATION
BACHELOR OF EDUCATION (SCIENCE)**

COURSE CODE: ECI 3119

**COURSE TITLE: SUBJECT METHODS IN
BIOLOGY**

DATE: 31ST MARCH, 2022

TIME:0830-

1030

INSTRUCTIONS TO CANDIDATES

Question ONE is compulsory

Answer any other TWO questions

QUESTION ONE (Compulsory)

- a) Discuss science as being systematic and objective in nature.
(10 Marks)
- b) Differentiate between formal science and empirical science and give an example for each.
(6 Marks)
- c) In the engagement stage of 5E learning Cycle. Discuss 5 learning activities for both the teacher and the learner.
(10 Marks)
- d) Briefly explain how cognitive and constructivist theories of learning have influenced teaching of secondary schools Biology.
(4 Marks)

QUESTION TWO

Form three student in Maseno High school planned an experiment to test effects of water on seed germination.

- a) Formulate a workable procedure that students can use to perform the experiment
(6 Marks)
- b) Applying the scientific Method explain the procedure the student will use to arrive at a reliable conclusion.
(14 Marks)

QUESTION THREE

- a) In a practical biology lesson learner investigated presence of different food substrates in a solution. Explain how the following science process skills were applied in the experiment:
- i. Observation
 - ii. Inference
 - iii. Measurement
 - iv. Communication
 - v. Classification
- (10 Marks)**
- b) In an experiment to investigate factors affecting seed germination students planted bean seeds and placed them near a window. After several weeks they noticed no seed had sprout. They realized that they did water the plant for the entire period and decided to investigate if the non-watering of the seed had caused the seeds not sprout.
- i. Formulate a hypothesis that would be used to test the cause of the seed not sprouting **(2 Marks)**

- ii. Explain how the students would test hypothesis **(8 Marks)**

QUESTION FOUR

- a) Explain any five reasons why the use of project method in teaching of biology is advocated. **(10 Mark)**
- b) Discuss five points on how a teacher can effectively teach a biology topic through demonstration method. **(10 Marks)**

QUESTION FIVE

- a) Explain any five reasons why a teacher should effectively plan for a biology lesson. **(10 Marks)**
- b) Your first topic during teaching practice is external structures of a leaf. Design an appropriate single lesson plan using the School of Education, Maasai Mara University format to be used in teaching the topic. **(10 Marks)**

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