



**MASENO UNIVERSITY**  
**UNIVERSITY EXAMINATIONS 2015/2016**

FIRST YEAR FIRST SEMESTER EXAMINATIONS FOR THE  
DEGREE OF POSTGRADUATE DIPLOMA IN EDUCATION

CITY CAMPUS-SCHOOL BASED

ECT 525 SPECIAL METHODS IN BIOLOGY

Date: 18<sup>th</sup> December, 2015

Time: 2.00 - 5.00 pm

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**INSTRUCTIONS:**

- Answer question ONE and any other TWO questions.

### QUESTION ONE

(a). Explain the following terms as they are used in science education: (10marks)

- i. Philosophy of science
- ii. Hypothesis
- iii. Theory
- iv. Scientific method
- v. Process skills

(b). Differentiate between a measurement and assessment in a Biology class, giving examples. (4 marks)

(c). Identify any two challenges facing a Biology teacher in Kenya today and suggest appropriate measures a teacher can take to overcome the challenges. (4 marks)

(d). Describe any three hazards that a student may face in a Biology laboratory and explain safety measures that could be taken to avoid such hazards (6 marks)

(e). Explain the importance of the following documents to a Biology teacher. (6 marks)

- i. Schemes of work
- ii. Lesson plan
- iii. Records of work covered

### QUESTION TWO

(a). Identify any four goals of science education and explain the extent to which each goal has been achieved in the secondary school Biology curriculum. (12 marks)

(b). Demonstrate using four examples how biological knowledge may contribute positively in a school community. (8marks)

### QUESTION THREE

(a). Distinguish between the School Science Project (SSP) and the Nuffield Science Project by giving at least three contributions and three limitations of each project to the development of the secondary school Biology curriculum in Kenya. (12 marks)

(b). Describe any three features of the inquiry approach of teaching Biology. (3 marks)

(c). Identify one teaching method that can be classified under the inquiry approach giving merit and demerits of using the method in a Biology class. (5 marks)

### QUESTION FOUR

Explain how a secondary school Biology teacher could use each of the following resources in class. Select any two topics in the syllabus to illustrate your answer:

- i. Simulations
- ii. Cross-sectional model
- iii. Improvised material
- iv. Essential Biology apparatus
- v. Common chemicals

### QUESTION FIVE

(a). Describe four characteristics of a good teacher made test (8 marks)

(b). Identify three categories of test items commonly used in a Biology class and construct a question that can be used to represent each category .

Prepare a marking scheme for each test item constructed. (12 marks)