



**JARAMOGI ODINGA OGINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY**  
**SCHOOL OF EDUCATION**  
**UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR OF EDUCATION**  
**ARTS WITH IT**  
**3<sup>RD</sup> YEAR, 1<sup>ST</sup> SEMESTER, 2017/2018 ACADEMIC YEAR**  
**MAIN CAMPUS, REGULAR**

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**COURSE CODE: ECT 332**

**COURSE TITLE: SPECIAL METHODS FOR TEACHING BIOLOGY**

**DATE .....**

**STREAM: BED (Arts)**

**TIME: 2HOURS**

**EXAM SESSION: December, 2017**

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**Instructions:**

**1 Answer question ONE (COMPULSORY) and ANY other TWO questions.**

**2 Candidates are advised not to write on the question paper.**

**3 Candidate must hand in their answer booklets to the invigilator while in the examination room.**

### Question One

- a. Explain the concept of formative and summative evaluation and use Biology lesson to illustrate each of them. (2 marks)
- b. Explain why biologists do not believe in the philosophy of vitalism? (2 marks)
- c. As an individual who has studied Biology for some time, give five ways in which you have benefitted from the knowledge, skills and values of Biology? (5 marks)
- d. Given the topic of Classification in Form Three, give five ways in which a Biology teacher can source for instructional materials for the topic (5 marks)
- e. Comment on the following statements in the context of Biology education:
- i. A teacher needs to vary his/her classroom instructional techniques from time to time. (2 marks)
- ii. A teacher needs to try out a demonstration at least once before presenting it to the class. (2 marks)
- iii. A teacher needs to use a variety of teaching/learning resources. (2 marks)
- iv. A beginning teacher should have teaching/lesson notes in the course of his teaching. (2 marks)
- f. Identify three ways in which field study can enhance learning of biology. (3 marks)
- g. State two advantages models have over wall charts as teaching aids in a Biology class. (2 marks)
- h. One of the goals of teaching Biology in Kenyan secondary schools is to “Develop an understanding of interrelationships between plants and animals and between humans and their environment”. Which behavior/characteristics would you observe in a biology student to show that this objective has been achieved? (3 marks)

### Question Two

- a. Identify ten reasons why it is important for a Biology teacher to prepare schemes of work. (10 marks)
- b. Discuss the factors one would consider when preparing a Biology scheme of work. (10 marks)

### Question Three

- a. Instructional objectives, teaching and evaluation are important and interdependent facets of the teaching/learning of biology. Explain how the three are related. (6 marks)

b. Identify three different types of tests used in measuring learning in Biology and give the instructional purpose of each. (6 marks)

c. i. A teacher wants to set a test for his Form 2 class, covering the topics: Transport and Gaseous exchange. The test is to be marked out of 40 marks, with each of the topics contributing test items totaling 20 marks.

The topic Transport has 13 objectives of which 4 relate to the cognitive level of knowledge, 3 relate to comprehension, 3 relate to application, 2 relate to analysis and 1 relates to synthesis.

The topic, Gaseous exchange has 9 objectives, 5 of which relate to knowledge, 2 relate to comprehension and 2 relate to application.

Using the information provided, construct a simple test grid or table of specification which the teacher can make use of in setting questions for his test. (8 marks)

#### **Question Four**

Imagine you are a teacher of biology in one of the secondary schools in Kenya. According to your scheme of work you are supposed to teach the subtopic Osmosis in a double lesson (80 minutes) to a Form one class.

The subtopic has the following objectives:

By the end of the lesson the learner should be able to:

- i. Define osmosis.
- ii. Carry out an experiment to demonstrate osmosis using a visking tubing and potato cubes.
- iii. Identify the conditions necessary for osmosis to take place.

Prior to this double lesson, you had taught about diffusion.

- a. Describe how you could go about teaching the subtopic so that the stated objectives are achieved.
- b. Indicate the learning resources you would use and approximate times for the different stages of your presentation. (20 marks)

#### **Question Five**

- a. Identify any five hazards that could occur as a result of careless use of the biology laboratory (10 marks)

b. As a biology teacher in charge of the biology laboratory, outline the precautions you would put in place to safeguard biology laboratory users against accidents and injuries. (10 marks)