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(Knowledge for Development)

KIBABII UNIVERSITY

UNIVERSITY EXAMINATIONS

2019/2020 ACADEMIC YEAR

THIRD YEAR

SPECIAL/SUPPLEMENTARY EXAMINATION

**FOR THE DEGREE OF BACHELOR OF EDUCATION
(SCIENCE)**

COURSE CODE: ESM 321

COURSE TITLE: BIOLOGY EDUCATION

DATE: 9TH FEBRUARY, 2021

TIME: 11AM-1 PM

INSTRUCTIONS TO CANDIDATES

Answer Question One and Any other TWO Questions

TIME: 2 Hours

This Paper Consists of 3 Printed Pages. Please Turn Over.

QUESTION ONE

- a) Science is one of the most established disciplines
- i) Give any four reasons why biology is considered as a science (4 Marks)
 - ii) Distinguish between biology and biology education (4 Marks)
 - iii) State and explain the steps in the scientific method (4 Marks)
 - iv) Distinguish between scientific theories and scientific laws (2 Marks)
 - v) Give two examples of scientific theories in biology and state their attributes. (2 Marks)

(b) A biology teacher has developed the following essay test items to assess the Form 4 student's learning of the gene concept

- What do you understand by the term gene?
 - Explain how genes functions to bring about inheritance of characteristics in organisms
- i) Make a marking scheme for this test (8 Marks)
- ii) Outline three advantages and three disadvantages of using essay type test items in assessing students' learning of biology (6 Marks)

QUESTION TWO

Effective planning is crucial for the successful teaching of biology

- (a) Discuss any **FIVE** advantages of lesson planning for the purpose of teaching biology (10 Marks)
- (b) You plan to conduct a two period biology lesson in Form 4 on the topic: 'Construction and use of simple dichotomous keys in classification of plants:' The case of Malvaceae family
- i. State **TWO** knowledge and **TWO** skills objectives you would contact to guide the lesson (4 Marks)
 - ii. Indicate the lesson development component you would use to teach the class (6 Marks)

QUESTION THREE

Several changes have taken place in the secondary school curriculum in Kenya since independence.

- a) Discuss the nature of the objectives and content of the current secondary school biology syllabus (10 Marks)
- b) Outline any **FIVE** problems that militate against the successful realization of the objectives of teaching biology in the secondary schools of Kenya. (10 Marks)

QUESTION FOUR

- (a) State any FIVE advantages of using teaching aids in the teaching of biology (10 marks)
- (b) Discuss the setting up, maintenance and use of the following teaching aids in biology
- (i) Aquarium
 - (ii) Herbarium
 - (iii) Egg incubator
 - (iv) School garden
- (10 marks)

QUESTION FIVE

- (a) State any FIVE objectives of the biology curriculum for secondary schools in Kenya (5 marks)
- (b) Discuss any FIVE ways in which the secondary biology curriculum differed with the current secondary school biology curriculum in Kenya (5 marks)
- (c) Discuss any FIVE factors that limit the provision of quality biology education in Kenya (5 marks)