



## KENYATTA UNIVERSITY

UNIVERSITY EXAMINATIONS 2018/2019

### THIRD SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE (ENVIRONMENTAL HEALTH)

#### HEH 409: BIOTECHNOLOGY AND HEALTH

DATE: Thursday, 1<sup>st</sup> August 2019

TIME: 2.00 p.m. - 4.00 p.m.

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#### INSTRUCTIONS:

#### SECTION A: ANSWER ALL QUESTIONS

1. a) Using an illustration, describe the structural features of chromosomes. (4 Marks)
- b) Briefly describe the organization of DNA in organisms. (4 Marks)
- c) Describe the different types of RNA molecules found in living cells. (4 Marks)
- d) Define the term genetic code and explain how it works. (4 Marks)
- e) Explain the central dogma of molecular biology. (4 Marks)

#### SECTION B: ANSWER ALL QUESTIONS IN PART 1 AND ANY TWO IN PART II

##### PART 1

2. Genetic engineering process involves manipulation of organisms' DNA so as to incorporate desired characteristics to that organism. Though this has proved to be advantageous in many fields, there are some drawbacks to this process. Discuss. (20 Marks)

##### PART II

3. Discuss how biotechnology could be useful in the elimination/reduction of tsetse flies from a particular region. (15 Marks)
4. Classical biotechnology period existed from 1800 to almost the middle of the twentieth century. Describe the various biotechnological achievements made in this phase. (15 Marks)

5. A pedigree is a diagram of a family history that shows relationships between family members and their status with respect to a particular hereditary condition. Using illustrations, explain the following inheritance patterns of traits.

- a) Autosomal dominant trait (5 Marks)
- b) Autosomal recessive trait. (5 Marks)
- c) Mitochondrial trait. (5 Marks)