



**JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY**  
**SCHOOL OF HEALTH SCIENCES**  
**UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN**  
**PUBLIC HEALTH/ COMMUNITY HEALTH**  
**4<sup>TH</sup> YEAR 2<sup>ND</sup> SEMESTER 2018/2019 ACADEMIC YEAR**  
**KISUMU CAMPUS**

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**COURSE CODE: HPD 3414**

**COURSE TITLE: BIOTECHNOLOGY AND HEALTH**

**DATE: 14/08/2019**

**EXAM SESSION: 2.00 – 4.00 PM**

**TIME: 2 HOURS**

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**Instructions:**

- 1. Answer all the questions in Section 'A' and ANY other two questions in Section 'B'.**
- 2. Candidates are advised not to write on the question paper.**
- 3. Candidates MUST hand in their answer booklets to the invigilator while in the examination room.**

**SECTION A: ANSWER ALL THE QUESTIONS IN THIS SESSION (30 MARKS)**

1. Define the following terms using examples (3 marks)
  - a. Biotechnology
  - b. Autosomes
  - c. Gene pool
2. Differentiate between the bases found in DNA and those of an RNA? (2 marks)
3. Name **FOUR** importance of studying biotechnology to Public Health students? (2 marks)
4. If your DNA sequence is 3' C A G T C A C G T 5', what would be the mRNA sequence? (2 marks)
5. Name examples of nucleases used in cleaving DNA? (3 marks)
6. An autoimmune disorder may result in? (3 marks)
7. If in case some form hair has been found on a crime scene, what process can be used to identify the owner (of the hair) in a criminal investigation? (3 marks)
8. Giving examples differentiate inductive and deductive reasoning showing which one is more superior to the other. (4 marks)
9. Note down some of the available genetic testing. (4 marks)
10. Briefly explain how DNA cloning is done. (4 marks)

**SECTION B: ANSWER ONLY TWO QUESTIONS IN THIS SESSION (40 MARKS)**

1. a) Name **FIVE** important features in a double helix model of a DNA. (10 marks)  
b) Discuss the process of protein synthesis. (10 marks)
2. a) Differentiate between structural and numerical abnormalities. (10 marks)  
b) Discuss different forms of structural abnormalities. (10 marks)
3. a) Discuss ways in which biotechnology can be used in the improvement of agronomic features? (10 marks)  
b) What are the steps of recombinant DNA technology? (10 marks)
4. a) Human Genome Project was a mile stone in biotechnology as it assisted in determining the genes associated with many projects. Discuss briefly these projects. (10 marks)  
b) Describe the methods used in environmental biotechnology? (10 marks)