JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE & TECHNOLOGY

SCHOOL OF BIOLOGICAL AND PHYSICAL SCIENCES

UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR OF PUBLIC HEALTH

4TH YEAR 1ST SEMESTER 2023/2024 ACADEMIC YEAR

MAIN CAMPUS - REGULAR

COURSE CODE:	**HCB 1407**
COURSE TITLE:	**BIOTECHNOLOGY AND HEALTH**
EXAM VENUE:	**STREAM: (BSC PUBLIC HEALTH**
DATE:	**:**

TIME: 2 HOURS

Instructions:

1. **Answer ALL questions in Section A and Any TWO questions in Section B**
2. **Candidates are advised not to write on question paper**
3. **Candidates must hand in their answer booklets to the invigilator while in the examination room**

SECTION A (30 Marks) Answer all questions

1. List the differences between RNA and DNA (3 marks).
2. ~~List~~ Give ~~the 6~~SIX subfields of biotechnology with the corresponding colour codes where available (3 marks).
3. Describe a DNA library and name ~~2~~ TWO kinds of libraries commonly used (3 marks)
4. Explain the following markers and their uses

    i) RFLP markers (1 mark)

    ii) Microsatellite markers (1 mark)

    iii) SNP markers (1 marks).

5. Outline ~~three~~ THREE attributes of plasmids that potential vectors for carrying cloned DNA (3 marks)
6. Describe ~~the~~ steps involved during a Polymerase chain reaction cycle (3 marks).
7. Describe methods used to introduce DNA into prokaryotic cells (3 marks).
8. Using examples distinguish between phenotype and genotype, then define a genome (3 marks)
9. Define a nucleotide, nucleoside and a karyotype (3 marks)
10. Define genetic engineering and list at least 2 of its applications (3 marks)

SECTION B (40 Marks) Answer any 2 questions

11. Describe the genetic engineering of microorganisms of interest to Agriculture and biotechnology in animal health (20 marks).
12. Discuss the ethical, legal and social issues surrounding Biotechnology (20 marks).
13. Discuss the sequencing strategy that was used in the Human Genome Project (20 marks).
14. Discuss the applications of environmental biotechnology in waste treatment, bioremediation, biosensors and bioaugmentation (20 marks).