JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE & TECHNOLOGY

SCHOOL OF HEALTH SCIENCES

UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR OF PUBLIC HEALTH

1ST YEAR 2ND SEMESTER 2023/20224 ACADEMIC YEAR

MAIN CAMPUS / KISUMU

COURSE CODE: **HBB 9102**

COURSE TITLE: **BASIC BIOCHEMISTRY**

EXAM VENUE: **STREAM: (BSC PUBLIC HEALTH**

DATE: **:**

TIME: 2 HOURS

Instructions:

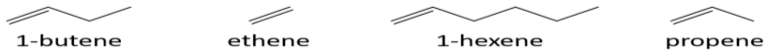
1. **Answer ALL questions in Section A and Any two questions in Section B**
2. **Candidates are advised not to write on question paper**
3. **Candidates must hand in their answer booklets to the invigilator while in the examination room**

SECTION A (30 Marks) Answer all questions

1. State TWO key biological differences between starch and cellulose (2 marks).
2. Distinguish the following;

    a) Stereoisomers (1 mark)
    b) Diastereomers (1 mark)
    c) Enantiomers (1 mark)
    d) Epimers (1 mark).

3. Describe cis-trans (geometric) isomers? What TWO types of compounds can exhibit cis-trans isomerism? (3 marks)
4. What is the principal difference in properties between alkenes and alkanes? How are they alike? (3 marks).
5. Arrange the following alkenes in order of increasing boiling points (4 marks)



6. Describe the benedict test and its biological application (3 marks)
7. Giving an example in each case, list the differences between saturated and unsaturated fatty acids (3 marks?)
8. Describe the structure of benzene and explain its stability (3 marks).
9. Describe THREE environmental concerns associated with the use of hydrocarbons? (3 marks).
10. List any FOUR functions of carbohydrates in the body (2 marks)

SECTION B (40 Marks) Answer any 2 questions

11. Examine the relationship between the structure and properties of different classes of hydrocarbons (alkanes, alkenes, alkynes, aromatics) (20 marks).
12. Describe the classification of amino acids based on their side chain properties, distinguishing between nonpolar, polar, acidic, and basic amino acids. Provide examples and discuss the implications of these classifications in protein structure and function (20 marks).
13. Compare and contrast the structures of DNA and RNA, highlighting their similarities and differences. in terms of nucleotide composition, helical structure, and functions (20 marks).

Comment [a1]: Delete this highlighted section for it is leading the candidate.

Comment [a2]: Delete this leading statement and give the candidates room to freely answer the question

14. Discuss the structural features, diversity and properties of lipids, including fatty acids, glycerophospholipids, sphingolipids, sterols, and triglycerides and their physiological significance in human health and disease (20 marks).

Comment [a3]: Delete the leading section as highlighted here