JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE & TECHNOLOGY

SCHOOL OF BIOLOGICAL AND PHYSICAL SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR OF EDUCATION SCIENCE WITH IT.

2nd YEAR 1ST SEMESTER 2016/2017 ACADEMIC YEAR

MAIN CAMPUS - REGULAR

COURSE CODE: **SZL 204**

COURSE TITLE: **INTRODUCTORY BIOCHEMISTRY AND GENETICS**

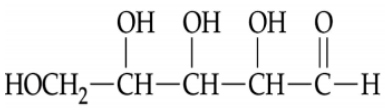
TIME: 2 HOURS

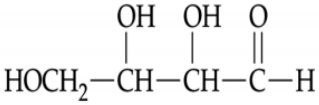
Instructions:

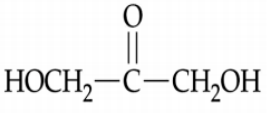
1. **Answer ALL questions in Section A and Any two questions in Section B**
2. **Candidates are advised not to write on question paper**
3. **Candidates must hand in their answer booklets to the invigilator while in the examination room**

SECTION A: SHORT ANSWER QUESTIONS (30 MARKS)

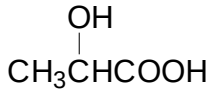
1. With the aid of an appropriate diagram, describe the structure of a nucleotide. (3 Marks)
2. Describe three types of RNA that occur in cells. (3 Marks)
3. Describe three types of chromosomes based on the position of their centromere.(3 marks)
4. Determine the genotypes and phenotypes of the offspring's in a dihybrid cross between a pea plant with round yellow seeds and pea plant with wrinkled green seeds using a punnett grid. (3 Marks)
5. Provide a distinction between a true solution, colloidal solution and Suspension. (3Marks)
6. Name each of the following monosaccharides as an aldose or ketose & according to its number of C atoms. (3 Marks)







7. Draw the Fischer Projections for lactic acid given the following structure:



(2 Marks)

8. Differentiate between coenzyme, apoenzyme and holoenzyme. (3 Marks)
9. Identify three categories of lipids based on their structure giving one example in each case. (3 Marks)
10.
    A) Discuss sex determination in mammals and Drosophila. (2 Marks)
    B) Describe two methods of protein classification. (2 marks)

SECTION B:ESSAY QUESTIONS (40 MARKS).

11. Describe the process of DNA replication, transcription and translation. (20 Marks)
12. Discuss the process of meiosis and mitosis in living organisms. (20 Marks)
13. Using appropriate diagrams, describe the various ways in which amino acids are classified. (20 Marks)
14. Explain the factors that affect enzyme activity. (20 Marks)