LAIKIPIA UNIVERSITY

UNIVERSITY EXAMINATIONS

SECOND SEMESTER 2023/2024 ACADEMIC YEAR

THIRD YEAR EXAMINATION FOR THE DEGREE OF BACHELOR OF BIOMEDICAL SCIENCE AND TECHNOLOGY (BMED)

BMED 322: INTRODUCTORY BIOPHYSICS

STREAM: R ***TIME: 2 HRS***

DAY: MONDAY [2.30P.M – 4.30P.M] ***DATE: 08/04/2024***

THIS QUESTION PAPER CONSISTS OF TWO (2) PAGES

PLEASE DO NOT OPEN UNTIL THE INVIGILATOR SAYS SO.

Instructions: Answer **ALL** questions in section **A a**nd any **TWO** questions in section **B**

SECTION A (40 marks)

QUESTION ONE

Define the following terms as used in biophysics. (5 Marks).

i. Systemic circulation.
ii. Electric current.
iii. Pace maker.
iv. Electron binding energy.
v. Gamma camera.

QUESTION TWO

Briefly explain **two (2**) systems that regulate heart activity. **(5 Marks)**

a) Explain cardiac output. **(3 Marks)**

b) State the Ohms law. **(2 Marks)**

QUESTION THREE

Explain the mechanics of muscular contraction. **(5 Marks)**

QUESTION FIVE

Briefly explain how membrane potentials develop and how they can be measured.

QUESTION SIX

Briefly describe the use of therapeutic radiation. **(5 Marks)**

QUESTION SEVEN

Outline the importance of bioimpedance measurements during the process of electro permeabilization. (**5 Marks)**

QUESTION EIGHT

Outline some of the radionucleotide properties. **(5 Marks)**

SECTION B (30 marks)

QUESTION NINE

Discuss the main biopotentials of the nervous system. (**15 Marks)**

QUESTION TEN

Write an essay on medical application of biophysics in the 21st century. (**15 Marks)**

QUESTION ELEVEN

Discuss types of muscle tissues in vertebrates**.** **(15 Marks)**