

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 327: RADIOBIOLOGY AND RADIOTRACERS TECHNIQUES**

***STREAM: R***

***TIME: 2 HRS***

***DAY: THURSDAY[8.30A.M – 10.30A.M]***

***DATE: 11/04/2024***

**THIS QUESTION PAPER CONSISTS OF TWO (2) PAGES**

**PLEASE DO NOT OPEN UNTIL THE INVIGILATOR SAYS SO.**



**INSTRUCTIONS: ANSWER ALL QUESTIONS IN SECTION A AND ANY OTHER TWO IN SECTION B**

**SECTION A: ALL QUESTIONS ARE COMPULSORY**

**QUESTION ONE**

Describe the differentiated functional cells of various tissues that are mostly radiosensitive  
(5 Marks)

**QUESTION TWO**

Show the basic components of liquid scintillation counter  
(5 Marks)

**QUESTION THREE**

Elucidate the working principle of a thermoluminescent dosimeter  
(5 Marks)

**QUESTION FOUR**

Illustrate the way different ionising radiations interact with material  
(5 Marks)

**QUESTION FIVE**

Describe the mechanism of indirect action of ionising radiations on DNA  
(5 Marks)

**QUESTION SIX**

Describe the induced fission process of Uranium-235 nucleus  
(5 Marks)

**QUESTION SEVEN**

Explain the effects of radiation on different stages of cells  
(5 Marks)

**QUESTION EIGHT**

Explain the working components of a Geiger Muller counter  
(5 Marks)

**SECTION B: ANSWER ANY TWO QUESTIONS OF YOUR CHOICE**

**QUESTION NINE**

Discuss the mechanism of interaction of the following radiations with matter  
(15 Marks)

- Photon
- Neutron

**QUESTION TEN**

The efficiency of liquid scintillation counter can be improved by quenching. Discuss the quenching effects in liquid scintillation counter  
(15 Marks)

**QUESTION ELEVEN**

Write notes on the determination of the length of DNA molecules by Autoradiography technique as used in molecular biology  
(15 Marks)