

UNIVERSITY EXAMINATIONS

1ST SEMESTER 2022/2023 ACADEMIC YEAR

**FIRST YEAR EXAMINATION FOR THE DEGREE OF
BACHELOR OF BIOMEDICAL SCIENCE**

BMED 112: INTRODUCTION TO BIOMEDICAL SCIENCES

STREAM: R

TIME: 2 HRS

DAY: THURSDAY [11.30AM – 1.30PM] DATE: 08/12/2022

THIS QUESTION PAPER CONSISTS OF THREE (3) PAGES

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INSTRUCTION: -

- i. Answer ALL questions in Section A and ANY TWO question in Section B
- ii. Illustrate your answers with diagrams where applicable

SECTION A: 40 MARKS**QUESTION ONE**

Define the following (4 marks)

- a) Ethical issue
- b) In vivo
- c) Calibration
- d) Mixtures of matter

QUESTION TWO

- a) Outline the principle behind centrifugation (2 marks)
- b) What does calibration involve and why is it important (4 marks)

QUESTION THREE

Outline the requirements for PCR procedure (6 marks)

QUESTION FOUR

- a) Describe the principle of ethics in biomedical ethics. (6 marks)
- b) Explain why it is necessary professionals to have codes of conduct. (2 marks)

QUESTION FIVE

Briefly describe the types of tissues present in human body. (6 marks)

QUESTION SIX

List the safety measures when using autoclave (4 marks)

QUESTION SEVEN

- a) Differentiate between cardiac and smooth muscle (2 marks)
- b) Outline the general functions of muscle tissue (4 marks)

SECTION B: 30 MARKS**QUESTION EIGHT**

- a) Discuss briefly the basic properties of cells (5 marks)
- b) Describe 5 organelles found in a eukaryotic cell (10 marks)

QUESTION NINE

Accurate measurement is important in medical diagnosis and sensitivity and specificity of test is paramount. The results of malaria from a sample of 1000 people which represent approximately 5% of a population showed that the true positives were 33, False positives were 27, False negatives were 21 and true negative were 919

- a) Define the specificity and sensitivity of a test (4 marks)
- b) Calculate the following from the above results and clearly show your workings
 - i. Specificity (2 marks)
 - ii. Sensitivity of the test (2 marks)
 - iii. Negative predictive value (2 marks)
 - iv. Positive predictive value (2 marks)
- c) The size of mitochondria from a ciliated cell as seen with electron microscope is 102mm in length when observed at x20000. What is the actual size of the organism? Give you answer in μm

QUESTION TEN

Discuss Staining as a technique in studying and diagnosing of microorganisms and explain how a specimen is prepared for staining (15 marks)

