



(University of Choice)

**MASINDE MULIRO UNIVERSITY OF
SCIENCE AND TECHNOLOGY
(MMUST)**

MAIN CAMPUS

UNIVERSITY EXAMINATIONS (MAIN PAPER)

**2023/2024 ACADEMIC YEAR
FORTH YEAR FIRST TRIMESTER EXAMINATIONS
FOR THE DEGREE**

OF

BACHELOR OF SCIENCE IN MEDICAL LABORATORY SCIENCES

COURSE CODE: BML 411

COURSE TITLE: MOLECULAR DIAGNOSIS

DATE: 7TH DECEMBER 2023

TIME: 8.00-10.00 AM

INSTRUCTIONS TO CANDIDATES

This paper is divided into three sections, A B and C, respectively: Multiple Choice Questions (MCQs), Short Answer Questions (SAQs) and Long Answer Questions (LAQs). Answer all questions. **DO NOT WRITE ON THE QUESTION PAPER**

TIME: 2 Hours

MMUST observes ZERO tolerance to examination cheating

This Paper Consists of 4 Printed Pages. Please Turn Over. ▶

Section A: Multiple Choice Questions (20 marks)

- Which of the following does not affect the formation of hybrid DNA?
 - Ionic strength
 - Pressure
 - Temperature
 - Homologous DNA
- What action should be taken if after PCR, the amplification control has failed to yield a product?
 - Check the original DNA or RNA preparation, if it is adequate, repeat the amplification.
 - Check the original DNA or RNA preparation. If not, adequate discard the process
 - Conclude there is a problem with primers.
 - Check the expiry date of the kit
- Northern blotting is performed for _____
 - Determining the size of DNA
 - Determining the size of RNA
 - Quantification of RNA
 - Sequencing of RNA
- The process by which a probe is used to screen a library is known as _____
 - Hybridization
 - Southern blotting
 - Colony hybridization
 - Western blotting
- Which technique was used to determine the double-helical structure of DNA?
 - Electrophoresis
 - Chromatography
 - Centrifugation
 - X-ray crystallography
- DNA extraction requires _____ to lyse the epithelial cells and to degrade compounds inhibitory to amplification.
 - Freezing
 - Heat treatment
 - Enzyme
 - Mechanical shearing
- After centrifugation of the sample, the supernatant being pipetted out contains _____
 - Water
 - DNA
 - Cellular debris
 - All of them
- What are the possibilities which can occur until the temperature has reached for primer annealing?
 - Extension doesn't start until the appropriate temperature is reached
 - Extension may start even when the temperature is low
 - At low temperature, there is specific annealing of primer taking place
 - There are more specific products which are generated
- Hot-start PCR is a modification of PCR. Which of the following is not corresponding to it?
 - The basis is that extension is not started until the first cycle reaches its maximum temperature
 - The polymerase is added after the first cycle has reached its maximum temperature or melting temperature
 - It is satisfactory for small number of samples
 - It leads to generation of non specific products
- An alternative to adding polymerase at later stage is _____
 - Make the polymerase inactive by binding it to an antibody
 - Introduce the polymerase or Magnesium in clay beads
 - Make the polymerase inactive by attaching groups which cause steric hindrance