



(University of Choice)

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

MAIN CAMPUS

**UNIVERSITY EXAMINATIONS  
2021/2022 ACADEMIC YEAR**

**FIRST YEAR SECOND SEMESTER EXAMINATIONS**

**FOR THE DEGREE  
OF  
MASTRS OF SCIENCE IN MEDICAL MICRIOBIOLOGY**

**COURSE CODE: BML 823**

**COURSE TITLE: MOLECULAR PARASITOLOGY VACCINOLOGY  
AND THERAPY**

**DATE: 29/04/2022**

**TIME: 2.00 -5.00 PM**

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**Instructions**

Answer Question 1 and ANY OTHER 3 Questions

MMUST observes ZERO tolerance to examination cheating

This Paper Consists of 2 Printed Pages. Please Turn Over.

1. Transcription and processing of the transcript is key component in synthesis of viable mRNA. Discuss splicing pathways in RNA processing in parasitic organism(25 marks)
2. RNA editing is a great tool in genetical engineering that has ability to mechanically produce a number protein products without increase numbers of genes. Explain the mechanism of gRNA mediated RNA editing (25marks).
3. Virulence and colonization is a component of parasite abilities in its pathogenesis. Explain specific steps in the invasion process pathways of Helminthes. (25 marks)
4. Diagnosis tools is a key component in management and research of diseases. Describe the genomic markers for gene detection and analysis in parasitic infection (25 marks)
5. Discuss the structural organization of *Toxoplasma gondii* genome (25 marks)
6. Technological issues, economic challenges together with other issues, have been a stumbling block in development of parasitic vaccines, however there have been concerted efforts to pursue the vaccine manufacture through partnerships with innovate developing countries in biotechnology. Explain some of the veterinary transmission blocking vaccines under development (25 marks).



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UNIVERSITY EXAMINATIONS  
2021/2022 ACADEMIC YEAR**

**SECOND YEAR TRIMESTER EXAMINATIONS  
FOR THE BACHELOR  
OF  
MEDICAL LABORATORY & MEDICAL BIOTECHNOLOGY**

**COURSE CODE: BML 227**

**COURSE TITLE: LABORATORY MANAGEMENT AND QUALITY ASSURANCE  
MAIN EXAM**

**DATE: 29/04/2022**

**TIME: 8.00 -10.00 AM**

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**INSTRUCTIONS TO CANDIDATES**

This paper is divided into three sections, **A B** and **C**, carrying respectively: Multiple Choice Questions (**MCQs**), Short Answer Questions (**SAQs**) and Long Answer Questions (**LAQs**).

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## SECTION A (MCQ 20 MARKS)

- Q1. The following statements are true about Laboratory Management Except.
- It is the integration and coordination of laboratory resources to deliver quality lab services.
  - It is the organization of laboratory services so as to provide effective and efficient services.
  - It is the organization of resources including personnel, equipment except time and space.
  - It is the process comprising a series of actions that lead to accomplishment of objectives.
- Q2. The following is the definition of Quality Control.
- The negative controls included in a test procedure to control errors.
  - The measures included during each assay run to verify that the test is working properly.
  - It is the positive controls included in a test procedure to control errors.
  - It is the Quality assurance which primarily concerns with the verification of test results
- Q3. What is laboratory management structure?
- Hierarchy of personnel in a laboratory often portrayed in an organigram
  - Organization of lab protocols often portrayed in an organigram
  - Hierarchy of personnel and equipment in the lab often portrayed in an organigram
  - Academic qualification of personnel in the laboratory often portrayed in an organigram.
- Q4. Which of the following is not a consideration when designing a laboratory?
- Circulation paths should be designed in a way that contact between the public and biological materials can occur only in the rooms where patient samples are collected.
  - The reception desk should be at the entrance for incoming patient registrations.
  - Access to rooms where hazardous materials is done must be restricted to authorized persons.
  - For Proper workflow, lab design should have same pathways for patients and patient samples.
- Q5. Physical aspects of laboratory premises and rooms should consider the following
- Must be designed to ensure proper ventilation throughout, with an active ventilation system.
  - Rooms should have a low ceiling to ensure proper and ease of cleaning.
  - Must be designed to have very small windows to prevent dust and microbes from entering.
  - All lab procedures should be done in one room for timely delivery of results to the patient
- Q6. Best material for making laboratory benchtops is?
- Mixture of ceramics tiles and wood for ease of cleaning.
  - Steel because of durability.
  - Wood, because its readily available
  - Ceramic tiles, because, they are durable and ease to clean.
- Q7. External Quality Assessment defined as\_\_\_\_\_?
- A system for objectively checking the laboratory's performance using an external agency or facility.
  - A system for objectively checking the laboratory's performance using quality controls
  - A system for checking the laboratory's performance using lab manager's checklist.

- d. A system for objectively checking the laboratory's performance using written protocols
- Q8. The following is essential information to be included in the test request form except.
- Patient identification
  - Tests requested
  - Time and date of sample collection
  - Quality controls to be used.
- Q9. Regulations for transporting samples come from several sources except.
- National traffic police headquarter
  - National transport regulations
  - International Civil Aviation Organization
  - Rail and road traffic agencies.
- Q10. The following statement is true about External audits.
- Are assessments conducted by groups or agencies from outside the laboratory.
  - Are assessments conducted by agencies from different section of the laboratory.
  - Are assessments conducted by laboratory manager to other staff of the laboratory.
  - Are assessments conducted by the institutions' management to the lab personnel
- Q11. Which of the following is correct lab safety precaution for proper disposal of sharps?
- Recap needles carefully
  - Dispose biohazardous materials that have not been autoclaved in tightly enclosed boxes.
  - Use properly enclosed boxes for sharps and needles
  - Avoid needle recapping.
- Q12. Standard Operating Procedures entails the following except.
- Written procedures for a laboratories program.
  - They define how to carry out protocol specified activities.
  - They are objectively used by new employees to perform test procedures accurately.
  - They are written to explain how the procedures are supposed to work.
- Q13. The following is true about International Organization for Standardization.
- It is the world's largest developer and publisher of international standards applicable to many kinds of organizations, including clinical and research laboratories.
  - It is the national largest developer and publisher of standards applicable to many kinds of organizations, including clinical and research laboratories.
  - It is the world's national and of international standards for formulating policies to govern organizations.
  - It is the world's largest developer and publisher of international standards for governing international clinical and research engagements.
- Q14. The main objective of Certification is?
- It is an assurance that a product meets the standard guidelines.
  - It is an assurance that a product, process or service conforms to quality controls
  - It is an assurance that a product, process or service conforms to specific requirements
  - It is an assurance that a product or service meets the requirements approval.
- Q15. Which of the following is not a pre-examination error?
- Collecting the wrong sample.
  - Mislabeled or failing to label the sample
  - Storing test kits improperly
  - Spilling biological material on the working bench top.
- Q16. The following is a consequence of laboratory error

- a. Inadequate or inappropriate patient care
- b. Giving lab results beyond ISO required time
- c. Use of wrong test kit to perform a test.
- d. Having incompetent personnel in the laboratory.

Q17. The purpose of document control is?

- a. Ensure that documents are kept for posterity
- b. Ensure availability and ease of use when a document is needed;
- c. Documents are not accessed by patients.
- d. Ensure, lab tests are performed on time.

Q18. Record keeping contributes in efficiency running of laboratory except?

- a. Continuous monitoring of laboratory activities and taking corrective measures when occurrence.
- b. Tracking of sample; well-kept records allow for tracking of samples throughout the process.
- c. Evaluating problem; well-kept equipment records will allow for thorough evaluation of situations.
- d. Enable management to identify and employ competent personnel.

Q19. The following is the purpose of Accreditation except.

- a. Gives formal recognition that a lab or person is competent to carry out specific tasks.
- b. Permits competent lab personnel to work hence maintaining quality results.
- c. Regulates labs that meets the standards in order to give reliable results.
- d. Helps to protect the jobs of lab personnel

Q20. The following is not the objective of good laboratory practice.

- a. Good Lab Practice makes sure qualified people perform the lab tests.
- b. Good lab Practice also makes sure that lab reports are traceable.
- c. Promotes international acceptance of tests.
- d. Good lab practices ensure that personnel are remunerated well.

**SECTION B (SHORT EASY 40 Marks)**

- Q1. State the appropriate procedure to be followed to clean biological spillage in the lab (10mks)
- Q2. Highlight the type of samples that should be rejected by a lab personnel. (10mks)
- Q3. Explain the packing requirements to be considered when transporting medical or clinical samples that contain infectious substances. (10mks)
- Q4 State the Standard laboratory safety practices that need to be adhered by lab personnel (10mks)

**SECTION C: ANSWER ALL QUESTIONS (40 Marks)**

- Q1. Laboratory design is essential for quality of work and the safety of laboratory staff, discuss (20mks)
- Q2. Purchasing and inventory management is critical component of the quality management, discuss (20mks)
- Q3. Quality Assurance is an important tool that ensures laboratory results are correct, reliable and reproducible, explain (20mks)