



W1-2-60-1-6

**JOMO KENYATTA UNIVERSITY OF AGRICULTURE AND TECHNOLOGY
UNIVERSITY EXAMINATIONS 2022/2023**

**EXAMINATION FOR THE DEGREE OF MASTER OF SCIENCE IN
MEDICAL VIROLOGY**

TMM 3121: DIAGNOSTIC VIROLOGY AND SURVEILLANCE

DATE: FEBRUARY 2022

TIME: 3 HOURS

INSTRUCTIONS: ANSWER ANY FOUR QUESTIONS

1. The successful control of dangerous infectious pathogens from the environment largely depends on levels of risk.
 - a) Describe the main levels of laboratory containment? (15 marks)
 - b) What examples of pathogens are handled at every containment (10 marks)
2. Discuss the FIVE MAIN approaches applied in demonstrating specific viral infections in diagnostic virology [25 Marks]
3. Describe viral diagnostic specimen's management with regard to:
 - a) Composition and role of VTM in viral isolation [8 Marks]
 - b) Role/Utility of VTM – [9 Marks]
 - c) Viral etiologies detectable from: 1. Vaginal Swab 2. Stool 3. Nasopharyngeal swab 4. Urine [8 Marks]
4. Polymerase chain reaction is an important diagnostic tool in virology
 - a) Describe the key components of PCR [20 Marks]
 - b) Describe the THREE MAIN STEPS in PCR Procedure [5 Marks]
5. Following periodic outbreak of fever of unknown origin and diarrhea in a school, your team has been called upon to conduct surveillance within the area.
 - a) Discuss the objectives of your surveillance [10 Marks]
 - b) Describe at least 5 steps your team will undertake in planning for this surveillance [15 marks]
6. Tissue culture
 - a) What is tissue culture? (4 marks)
 - b) With examples, list the different types of cell cultures and how they are maintained (8 marks)
 - a) With relevant viral examples, describe any two transfection methods that are commonly used in virus research (13 marks)