



W1-2-60-1-6

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

**END OF SEMESTER EXAMINATIONS FOR THE DEGREE OF
MASTER OF SCIENCE IN MOLECULAR MEDICINE**

TIM 3103: IMMUNOLOGICAL TECHNIQUES I

DATE: FEBRUARY 2023

TIME: 3 HOURS

INSTRUCTIONS: ANSWER ANY FOUR QUESTIONS

QUESTION ONE (25 MARKS)

- Derive a plan for production of murine monoclonal antibodies (12 marks)
- Prepare a work flow for isolation and In Vitro Culture of Human Alveolar Macrophages (13 marks)

QUESTION TWO (25 MARKS)

- Demonstrate how to specifically sort B lymphoid cells from the splenic leukocyte cell mixture using FACS. (25 marks)

QUESTION THREE (25 MARKS)

- Describe immunoprecipitation techniques in agar (13 marks)
- Explain the detection of Mycobacterial antigen and antibodies in the Cerebrospinal fluid of patients with *Tuberculous meningitis* [12 marks]

QUESTION FOUR (25 MARKS)

- Differentiate between representation of direct and indirect immunochemical methodologies [12 marks]
- Describe the detection of Hepatitis B virus surface antigen [13 marks]

QUESTION FIVE (25 MARKS)

- Explain how labelling can be done using enzymes (12 marks)
- Explain why a PCR test allows virus detection soon and after infection (13 marks)

QUESTION SIX (25 MARKS)

- Describe how antigens distribution is determined *in situ* (13 marks)
- Design a workflow to test the ability of lymphocytes to proliferate in response to various stimuli [12 marks]