



W1-2-60-1-6

JOMO KENYATTA UNIVERSITY OF AGRICULTURE AND TECHNOLOGY
UNIVERSITY EXAMINATIONS 2024/2025
EXAMINATION FOR THE DEGREE OF MASTER OF SCIENCE IN MEDICAL
VIROLOGY

TMM 3122: VACCINOLOGY AND IMMUNIZATIONS

DATE: DECEMBER, 2024

TIME: 3 HOURS

INSTRUCTIONS: Answer Any FOUR Questions (25 Marks each)

Question 1

Mpox, formerly known as monkeypox, is a zoonotic viral disease that signals at global spread and could potentially lead to another pandemic. Discuss its transmission dynamics and the mitigation strategies that the global community should employ to prevent and control the spread of the disease (25 marks).

Question 2

Discuss the components of innate immunity and their mechanisms of action against viral infections (25 marks).

Question 3

Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) emerged late in 2019 and caused the coronavirus disease 2019 (COVID-19) pandemic that has so far claimed more than 20 million lives. Vaccines were developed quickly, became available at the end of 2020, and had a tremendous impact on protection from SARS-CoV-2 mortality. With relevant examples, describe five (5) different types of COVID-19 vaccines that have been developed (25 marks).

Question 4

Describe the different phases of clinical trials (Phase I, II, and III) in vaccine development, emphasizing the primary goals of each phase, and how they contribute to the overall assessment of a vaccine safety and efficacy (25 marks).

Question 5

Recently, the Government of Kenya switched from the use of Rotarix[®] (G1P[8]; GlaxoSmithKline Biologicals, Belgium) rotavirus vaccine to Rotavac[®] (G9P[11]; Bharat Biologicals, India).

- Explain the role of regulatory agencies in the introduction of this new vaccine into Kenya's National Immunization Programme (10 marks).
- Discuss the importance of post-introduction surveillance for this new vaccine (15 marks).

Question 6

During the early phases of most vaccine roll out, vaccine hesitancy is usually observed in various communities. Discuss the factors contributing to this hesitancy. How can public health officials effectively address these concerns to ensure higher vaccine uptake? (25 marks).