

---

**THE NELSON MANDELA  
AFRICAN INSTITUTION OF SCIENCE AND TECHNOLOGY  
(NM-AIST)**

---

21<sup>st</sup> April 2021

**VIVA VOCE ANNOUNCEMENT**

**FROM:** Dean LiSBE

**TO:** The Public

**Ref: VIVA VOCE EXAMINATION OF A PhD CANDIDATE, MS. FRIDA NYAMETE  
(REG. NO. P281/T17)**

Please, refer to the heading above,

The School of **Life Sciences and Bioengineering (LiSBE)** at the NM-AIST, wishes to announce the VIVA-VOCE Examination of **Ms. Frida Nyamete**, a PhD candidate in **Life Sciences**, specialized in **Food and Nutritional Sciences (FNS)**.

The VIVA VOCE examination is scheduled on **Friday, 7<sup>th</sup> May 2021 in Room B202 from 09:00 am to 12:00 noon.**

**Research Title: Developing a Context Specific Climate Smart Aquaculture Framework for  
Improving Food Security in Tanzania**

**ABSTRACT**

Aquaculture has great potential to improve global food and nutrition security. However, due to the effect of climate changes and poor fish farming practices in some countries, it favors the accumulation of chemicals and disease-causing pathogens including bacteria, viruses, and parasites. This study, therefore, aimed to assess the adequacy of existing aquaculture practices and evaluated the levels of heavy metals and the prevalence of parasites and bacteria pathogens. The information was used to design a context-specific climate-smart fish pond and fish feed for improving fish production in Tanzania. The study was conducted in Arusha and Morogoro regions, five sites from each region were selected for the study. A total of 130 fish farmers each with one fish pond were selected for interview and sample collection. The questionnaire was used to gather information on the existing aquaculture management practices. Pond water, sediments, fish feed, and fish samples were collected for the analysis of heavy metals, parasites, and bacteria pathogens. polarized energy-dispersive x-ray fluorescence spectrometer was used for heavy metal analysis, a microscope was used to observe parasites present in fish samples, and

analytical profile index test kits were used to identify bacteria pathogens. The results showed that farmers lacked proper knowledge of formulating high-quality fish feed and/or safe pond water management; these have a huge impact on overall fish health and consumer safety. The most prevalent parasites in Arusha and Morogoro were *Acanthocephalus* sp. (49.2 & 50.7%) and *Diplostomum* sp. (36.9 & 38.4%). *Aeromonas sobria* was the most prevalent fish bacteria found in Arusha (35.3%) and Morogoro (49.2%). Chromium was the most accumulated heavy metal in the fish muscles sampled in Arusha (4.61 – 9.50 mg/kg) and Morogoro (2.53 – 5.57 mg/kg). In this study, we designed and constructed a climate-smart pond. The pond has the potential to support food security while reducing vulnerability to long-term climate change impacts. Google Sheets Program was used to formulate a higher quality insect-based fish feed. The quality and efficiency of the formulated feed were quantified by measuring growth performance and feed utilization. Fish were observed to have growth improvement and feed conversion efficiency throughout the experimental period. The use of the climate-smart fish pond and formulated feed is recommended in improving fish production and ensuring consumer safety.

***You are all welcome!!***



Dr. Ernest Mbega  
Ag. Dean - LiSBE