



MERU UNIVERSITY OF SCIENCE AND TECHNOLOGY

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University Examinations 2024/2025

FOURTH YEAR, FIRST SEMESTER EXAMINATION FOR DEGREE OF BACHELOR OF SCIENCE IN ANIMAL HEALTH AND PRODUCTION, BACHELOR OF SCIENCE IN AGRICULTURAL EDUCATION AND EXTENSION AND BACHELOR OF SCIENCE IN AGRICULTURE

AAP 3407: AQUACULTURE AND APICULTURE

DATE: JANUARY 2025

TIME: 2 HOURS

INSTRUCTIONS:

Answer question *ONE* and any other *TWO* questions

QUESTION ONE (30 MARKS)

- a) Bees are vital for pollinating a wide range of crops, playing a key role in food production and ecosystem stability. They contribute to the biodiversity of ecosystems and enhance agricultural productivity, impacting food security.
- i. Explain why bees are considered the most effective pollinators (3 Marks)
 - ii. Outline the ways in which the decline in bee populations impact food security and ecosystem stability globally (3 Marks)
- b) In Kenya, beekeeping offers Income generation for rural communities and supports food security. Beekeeping also promotes sustainable agriculture by providing pollination services, supporting smallholder farm
- i. Explain how beekeeping contribute to rural income generation in Kenya (3 Marks)
 - ii. Describe support of beekeeping in sustainable agriculture in Kenya (3 Marks)

- c) Fisheries are typically classified based on the water environment in which the fish are found.
- i. Outline the main classification criteria for fisheries, (3 Marks)
 - ii. Name the key fish species found in Kenya's freshwater (3 Marks)
- d) Kenya's apiculture industry has grown in recent years, with an increasing demand for honey, beeswax, and other by-products. Traditional beekeeping has evolved with modern techniques, making honey production more efficient. Trends include organic honey production and value addition to bee products for export markets.
- i. Outline the factors which have driven this growth (3 Marks)
 - ii. Explain significance of value addition to bee products (3 Marks)
- e) Aquaculture plays a vital role in providing a sustainable source of protein and is seen as a solution to overfishing in wild fisheries.
- i. Define aquaculture (1 Marks)
 - ii. Discuss columnariz disease under causative agent, symptoms, transmission and preventive measures (5 Marks)

QUESTION TWO (20 MARKS)

The apiculture industry in Kenya has grown due to increasing demand for honey and bee-related products.

- a) Discuss the contributing factors to the growth of the apiculture industry in Kenya. (10 Marks)
- b) Discuss the key market opportunities for Kenyan honey and bee-related products both locally and internationally (10 Marks)

QUESTION THREE (20 MARKS)

The honeybee goes through different developmental stages. Its anatomy includes specialized structures for collecting nectar, pollen, and producing wax.

- a) Describe the four stages in the life cycle of a honeybee and the major activities during each stage. (10 Marks)
- b) Explain the primary roles of the queen, worker, and drone bees within a hive (10 Marks)

QUESTION FOUR (20 MARKS)

Fish diseases in freshwater and seawater environments include bacterial infections, parasitic Infestations, and fungal diseases. Examples include bacterial gill disease and protozoan parasites.

Prevention and treatment involve biosecurity measures and the use of antibiotics or other treatments.

a) Discuss on importance of biosecurity measures (10 Marks)

b) Discuss the importance of monitoring fish health and diagnosing disease outbreaks early in aquaculture systems (10 Marks)