



TECHNICAL UNIVERSITY OF MOMBASA

Supplementary Paper

Faculty of Applied and Health Sciences

Department of PURE AND APPLIED Sciences

UNIVERSITY EXAMINATION FOR:

BACHELOR OF SCIENCE IN BIOCHEMISTRY (BSB)

ABT 4409:LABORATORY ANIMAL SCIENCE

END OF SEMESTER EXAMINATION

SERIES: DECEMBER

TIME: 2 HOURS

DATE: N/A Dec 2024

Supplementary Paper

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of **FIVE** questions. Attempt question ONE (Compulsory) and any other TWO questions.

Do not write on the question paper.

Question ONE

1a) Define the following terminologies in the context of Animal Science

- i) Animal husbandry
- ii) Anesthesia
- iii) Coprophagy
- iv) Zoonosis
- v) Ethology

(5 mks)

b) Discuss microchipping and genetic profiling as laboratory animal identification procedures

(5 mks)

c) Describe the general characteristics considered in the selection of commonly used common laboratory animals

(5 mks)

d.) Discuss the advantages and limitations of at least three experimental identification methods

(5 mks)

- e) Explain the significance of physical, biological and environmental barriers in enhancing experimental research outcome validity (5 mks)
- f.) Discuss the use of dogs as model experimental laboratory animals (5 mks)

Question TWO

- 2a.) Explain the characteristics considered in selecting monkeys as nonhuman model laboratory animals (10 mks)
- 2b) A group of scientists intend to investigate genetic mutation on a developing embryonic stage of a model laboratory animal. Assuming the team have engaged you as a professional, select the most suitable species and highlight other suitable attributes of the model animal (10 mks)

Question THREE

- 3a) Discuss the role played by Artificial Intelligence (AI) in biological process simulation and prediction in Biomedicine (10 mks)
- 3b) Discuss the factors to consider during Specific Pathogen Free (SPF) environment selection (10 mks)

Question FOUR

- 4a.) Primary enclosures are critical immediate environment providers. Discuss the factors considered during design, material selection and construction (10 mks)
- 4b) A foreign research collaborative team has won a research grant in which Guinea pig, *Cavia porcellus* is to be the model experimental animal. Conceptualize at least five study thematic milestones to competitively earn your slot in the research consortium. (10 mks)

Question FIVE

- 5a.) While the use of experimental animals in toxicological research provides valuable insights into the harmful effects of chemicals on living organisms, it also raises ethical concerns about animal care welfare. Discuss (10 mks)
- 5b.) Gerbil (*Meriones unguiculatus*) is a versatile and valuable animal model that continues to play a crucial role in advancing scientific knowledge and understanding. Discuss (10 mks)