



(University of Choice)

**MASINDE MULIRO UNIVERSITY OF
SCIENCE AND TECHNOLOGY
(MMUST)**

(MAIN CAMPUS)

**UNIVERSITY EXAMINATIONS
2018/2019 ACADEMIC YEAR**

**FOURTH YEAR SECOND SEMESTER
END OF EMESTER EXAMINATIONS**

**FOR
THE BACHELOR OF SCIENCE IN
MEDICAL BIOTECHNOLOGY/LABORATORY SCIENCES**

COURSE CODE: BML 423

COURSE TITLE: EXPERIMENTAL ANIMAL SCIENCE

DATE: 22ND MAY 2019

TIME: 3.00 -5.00 PM

INSTRUCTIONS:

ANSWER ALL QUESTIONS IN SECTION A, B AND C

TIME: 2 Hours

MMUST observes ZERO tolerance to examination
cheating

This Paper Consists of 4 Printed Pages. Please Turn Over

SECTION A: MULTIPLE CHOICE QUESTIONS (20 MARKS)

1. Food sterilization in animal houses should entail
 - (a) Anisotropy
 - (b) Gamma ray projection
 - (c) Xylazine
 - (d) Enteric considerations

2. The American National Academy of Sciences
 - (a) Animal study costs outweigh benefits
 - (b) Zoonosis is a risk in NHP studies
 - (c) Pain is poorly dealt with
 - (d) Computational modelling of diseases is inefficient

3. The mouse strain referred to as CD 1
 - (a) Is an inbred albino
 - (b) Has genetic shift
 - (c) Is genetically stable
 - (d) Has variations in macrophages

4. *Mesocricetus auratus*
 - (a) Is golden
 - (b) Is resistant to *Respiratory infections*
 - (c) Is outbred albino
 - (d) Originated in Wisconsin

5. The Chinchilla
 - (a) Is mostly found in South America
 - (b) Is critical in acoustics research
 - (c) Live in colonies
 - (d) Gave rise to the *Pronolagus* species

6. Animal house designs require
 - (a) High power switches
 - (b) Light-insulated covers
 - (c) Traffic control.
 - (d) Suspended ceilings

7. Which one of the following is most important to consider in the selection of building materials for an animal house
 - (a) Economy
 - (b) Climate
 - (c) Caging time
 - (d) Disease transmission

8. The front-opening cages
 - (a) Are least commonly used
 - (b) Are not suitable for mice and rats
 - (c) Should have a slip tray inserted above them
 - (d) Is rectangular and food is delivered from the top

9. Which one of the following statements is UNTRUE
 - (a) Automatic water dispensers are less problematic than manual dispensers
 - (b) Licking animals can push grit into valves
 - (c) Individual bottles rarely exceed half a liter
 - (d) The choice of water bottle materials is a personal one

10. In the feeding of laboratory animals
 - (a) Rats and mice require narrower feeding openings
 - (b) Animals should be given strict commercial diet
 - (c) Animal fouling on food should be controlled by animal handlers
 - (d) Wet foods should be provided in plastic bowls

11. Whole glass tank aquaria
 - (a) Can be easily scratched
 - (b) Can be reinforced with chromium edges
 - (c) Require rubber filters
 - (d) Are best for small culture work

12. Sea water aquaria practicalities involve various challenges including
 - (a) Sea water fish sensitivity issues
 - (b) Aquaporin 1 source as a growth ingredient
 - (c) Nutritional supply difficulties
 - (d) pH regulation

13. Which animal type is not correctly matched with an appropriate identification method
 - (a) Baboon – ear tags
 - (b) Guinea pig – ear stain
 - (c) Cercopithecusaethiops – chain around wrists
 - (d) Rat – stain on back fur

14. *Caviaporcellus*
 - (a) Exists in three subtypes that are popular in laboratory research
 - (b) Likes strong illumination
 - (c) Sleep much during the day
 - (d) Live a solitary lifestyle

15. A woodland terrarium
 - (a) Is more suitable for lizards
 - (b) Can have mosses and ferns in it
 - (c) Should have a moistened coarse sand
 - (d) Can be enriched with plants such as the sundew and pitcher plant

16. The Wistarrat
 - (a) Is white coloured
 - (b) Was generated in philadelphia
 - (c) Originated from *Rattusrattus*
 - (d) Yielded the CFN sub-strains of Carworth

17. *Mesocricetusauratus*
 - (a) Is solitary and has territorial behaviour
 - (b) Is a type of guinea pig
 - (c) Is related to the *Unguiculatus* species
 - (d) Is unsuitable for immunology experiments

18. An example of a ‘clean’ area in an animal houses is
 - (a) The engineer’s room
 - (b) The locker room
 - (c) Animal room
 - (d) Cleansing room

19. In animal house traffic
 - (a) Steps are required as part of design
 - (b) Should flow from clean to dirty
 - (c) Corners should be added if possible for easy navigation
 - (d) All rooms have the same communication requirements

20. Hamsters
 - (a) Have straight fur
 - (b) Are plant-feeding and colony-living
 - (c) Are burrowing and solitary
 - (d) Are non-nocturnal

SECTION B: SHORT ANSWER QUESTIONS [40 MARKS]

1. Outline the procedure for obtaining SPF animals for use in experimentation **(8 marks)**

2. Outline the ideal conditions of an animal house and monitoring of environmental changes science **(8 marks)**

3. Discuss intranasal inoculation **(8 marks)**

4. Distinguish between the BALB/c mouse strain **(8 marks)**

5. Outline the features of animal bio-containment facilities used in biomedical research centers **(8 marks)**

SECTION C: LONG ANSWER QUESTIONS [40 MARKS]

1. Discuss mutant and transgenic mice strains and the C57BL/6 mouse strain **(20 marks)**

2. Describe animal house Animal Environment, Housing, and Management traffic flow. **(20 marks)**