



(University of Choice)

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

(MAIN CAMPUS)

**SPECIAL/SUPPLEMENTARY EXAMINATIONS
2019/2020 ACADEMIC YEAR**

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

**FOR
THE BACHELOR OF SCIENCE IN
MEDICAL LAB. SCIENCES/ MEDICAL BIOTECHNOLOGY**

COURSE CODE: BML 423

COURSE TITLE: EXPERIMENTAL ANIMAL SCIENCE

DATE: 16th October 2020

TIME: 11:00 -1:00 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. Which one of the following was instrumental in development of Polio vaccine
 - (a) *Cavia porcellus*
 - (b) Macaques
 - (c) Chimps
 - (d) C57 BL/6

2. The C 57 BL/C mouse strain
 - (a) Is an inbred albino
 - (b) Is cancer susceptible
 - (c) Is preferred in transgenics
 - (d) Acclimatises easily in new environments

3. The mouse strain referred to as BALB/c
 - (a) Is an outbred albino
 - (b) Has genetic variability
 - (c) Is immunodeficient
 - (d) Has variations in cellular volume of the red blood cell population

4. The armadillo
 - (a) Is mainly found in South America
 - (b) Is resistant to *Mycobacterium*
 - (c) Was crucial in the *Influenzae* vaccine development
 - (d) Is easily domesticated

5. In the world of animal science
 - (a) One million vertebrate are used every year in experimentation
 - (b) There is tighter regulation in the US compared to the UK
 - (c) Behavioural research and toxicology are the main areas of research
 - (d) The British Royal society have been opposing animal experimentation

6. Animal house corridors
 - (a) Need to be wider than animal chambers
 - (b) Need to have well designed steps for passage
 - (c) Should be long if the traffic is big.
 - (d) Should permit movement of animals

7. Which one of the following is most important to consider when selecting cages for animals
 - (a) Animal size
 - (b) Economy
 - (c) Caging time
 - (d) Disease transmission

8. The shoe box cage
 - (a) Is least commonly used
 - (b) Is not suitable for guinea pigs
 - (c) Should have a slip tray insert above it

- (d) Is rectangular and is made of metal grid walls
9. Which one of the following statements is UNTRUE
- (a) Animal water bottles can be of any size as long as they are leakage-proof
 - (b) Drinking tubes are best made from stainless steel
 - (c) Air bubbles should move up the bottle as the water is drawn
 - (d) Automatic devices for water delivery can be very problematic
10. In the feeding of laboratory animals
- (a) Food is generally provided in the form of pellets
 - (b) Quality is more important than quantity
 - (c) Animal fouling on food should be controlled by animal handlers
 - (d) Wet foods should be provided in plastic bowls
11. An example of an aquarium accessory is
- (a) Painting equipment
 - (b) Tube exchanger
 - (c) Rubber filter
 - (d) Heating unit
12. In the filtration of aquaria contents
- (a) The use of pumps is not recommended as it can disturb fish
 - (b) Aquaporin 1 Should be added as a growth ingredient
 - (c) An undergravel filter should only be used if there is no aerator pump
 - (d) Complex filters should be hooked over the tank rim
13. Plastic aquaria
- (a) Are not suited for busy labs
 - (b) Are best for small culture work
 - (c) Should preferable have chromium framework
 - (d) Cannot deteriorate in optic qualities
14. *Elodea canadensis*
- (a) Can overgrow
 - (b) Likes strong illumination
 - (c) Propagates well by cuttings
 - (d) Requires strong germinal centers
15. A bog terrarium
- (a) Is more suitable for slugs
 - (b) Should have an acid layer foundation
 - (c) Should have a moistened mixture of sand and gravel
 - (d) Needs sand humus and gravel in equivalent ratios
16. The Sprague Dawley rat
- (a) Is albinic
 - (b) Was generated in philadelphia
 - (c) Originated from *Mus musculus*
 - (d) Yielded the CFN sub-strains of Carworth
17. *Oryctolagus cuniculus*

- (a) Is classified together with *Sylvilagus*
 - (b) Has Can be placed in the same category as the otter and weasel
 - (c) Can be reared together with *Felis catus*
 - (d) Is unsuitable for immunology experiments
18. An example of a 'dirty' area in an animal houses is
- (a) The engineer's room
 - (b) The corridor
 - (c) Animal rooms
 - (d) Equipment store room
19. For easy identification of animals one can use
- (a) Amputation of toes
 - (b) Fur powdering
 - (c) Leg notches
 - (d) Castration
20. Identify the UNTRUE statement among the following
- (a) Conventional animal house duties are done where no research programmes are being undertaken
 - (b) Are rarely carried out in animal house rooms of college animals
 - (c) Are not critical of SPF units
 - (d) Are more important for caged rather than penned animals

SECTION B: SHORT ANSWER QUESTIONS

[40 MARKS]

1. Features of hamsters use in in vivo experiments **(8 marks)**
2. Outline attributes of guinea pigs used in research **(8 marks)**
3. Outline how specific pathogen free (SPF) animals can be obtained for use in experiments **(8 marks)**
4. Outline the features of hamsters used in biomedical research **(8 marks)**
5. Outline the arguments put forward by the following organizations with regard to animal research
 - a. The British Royal Society and The Institute of Lab. Animal Research **(4 marks)**
 - b. BUAV and PETA **(4 marks)**

SECTION C: LONG ANSWER QUESTIONS

[40 MARKS]

1. Discuss the popular BALB/c experimental science Mouse strain **(20 marks)**
2. Discuss the use of mice in animal science and the major strains of mice used in animal model-based investigations **(20 marks)**