



# TECHNICAL UNIVERSITY OF MOMBASA

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FACULTY OF APPLIED AND HEALTH SCIENCES

DEPARTMENT OF MEDICAL SCIENCES

**UNIVERSITY EXAMINATION FOR:**

BACHELOR OF SCIENCE IN MEDICAL LABORATORY SCIENCES

AML4401 : EXPERIMENTAL ANIMAL SCIENCE

END OF SEMESTER EXAMINATION

**SERIES: DECEMBER 2016**

**TIME: 2 HOURS**

**DATE: 5 Dec 2016**

## **Instructions to Candidates**

You should have the following for this examination

*-Answer Booklet, examination pass and student ID*

This paper consists of Choose No choose Sect/Quest. Attempt Choose instruction.

**Circle the correct answer in section A.**

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## Section A

1. Research institutions provide the Public Health Service with a signed agreement that outlines how the institution complies with all aspects of humane animal care as described in the PHS Policy, This agreement is called
  - a) Institutional compliance
  - b) Animal Welfare
  - c) Humane Care
  - d) Research Resources
  - e) PHS Policy
2. Some types of variation are due to changes in the genetic material. What is this type of change called?
  - a) Fertilization
  - b) Mutation,
  - c) Radiation,
  - d) Sterilization
  - e) Fusions

3. which of the following is the word used to describe what happens when the nucleus of a sperm joins with the nucleus of an egg cell?
- a) Sex,
  - b) Fertilization,
  - c) Intercourse,
  - d) Reproduction
  - e) Fusion
4. Regular return to oestrus (repeat breeder) in dairy cows is unlikely to be due to
- a) Cystic ovarian disease
  - b) Infertile bull
  - c) Incorrect timing of A.I.
  - d) Salpingitis
  - e) Fertile bull
5. Which of the following statements is true?
- a) Rupture of the prepubic tendon in the mare is associated with twin pregnancy
  - b) Rupture of the prepubic tendon results in obvious abdominal distension
  - c) Rupture of the prepubic tendon carries a good prognosis for dam and foetus
  - d) Rupture of the prepubic tendon generally occurs during a difficult birth
  - e) Rupture of the prepubic tendon
6. Which clinical sign is NOT characteristic of hypothyroidism in the dog?
- a) Hair loss, alopecia
  - b) Dry skin
  - c) Cold tolerance
  - d) Hyperactivity
  - e) Urination
7. Which is the chromosome number (2n) of mice?
- a). 40
  - b). 42
  - c). 38
  - d). 44
  - e). 30
8. What is the average normal gestation period in Mongolian gerbils?
- a. 18-20 days

- b. 15-17 days
  - c. 24-26 days
  - d. 21-23 days
  - e. 12-18
9. According to the EFPIA/ECVAM Guidelines on administration of substances, what would be a good practice volume to administer intraperitoneally to a rat?
- a. 30ml/kg
  - b. 50ml/kg
  - c. 25ml/kg
  - d. 10ml/kg
  - e. 100ml/kg
10. A crude estimate sometimes used to determine animal facility size within a building is to design the animal facility space equal to what % of the total research space in the building?
- a. 5%
  - b. 15%
  - c. 25%
  - d. 2%
  - e. 1%
11. According to the recently revised Appendix A of the Council of Europe ETS 123, what is the recommended floor area for stock mice weighing between 25 and 30g?"
- a. Minimum of 330cm<sup>2</sup>, with at least 80 cm<sup>2</sup> per animal
  - b. Minimum of 350 cm<sup>2</sup>, with at least 70 cm<sup>2</sup> per animal
  - c. Minimum of 340 cm<sup>2</sup>, with at least 80 cm<sup>2</sup> per animal
  - d. Minimum of 330 cm<sup>2</sup>, with at least 100 cm<sup>2</sup> per animal
  - e. Minimum of 320 cm<sup>2</sup>, with at least 100 cm<sup>2</sup> per animal
12. How many pairs of nipples does the laboratory mouse have?
- a. 4
  - b. 6
  - c. 5
  - d. 7
  - e. 4
13. Which of the following statements best describes mammary gland tumors in rats?
- a. Mammary tumors are a relatively rare occurrence in older female rats
  - b. Most mammary tumors are malignant
  - c. Mammary tumors may arise at any point from the neck to the inguinal area.
  - d. Mammary tumors are poorly differentiated and have a tubular component.
  - e. Most mammary tumors are not malignant

14. Manual cervical dislocation IS NOT considered a humane technique for which of the following animals?
- A bird weighing 250g
  - A mouse weighing 35g
  - A rat weighing 200g
  - A rabbit weighing 980g
  - A rat weighing 100g
15. What is the recommended cage height for breeding guinea pigs?
- 18 cm
  - 20 cm
  - 16 cm
  - 23 cm
  - 28 cm
16. How long is the oestrus cycle in the rat?
- 4-6 days
  - 48 hours
  - 2-3 days
  - 7 days
  - 28 days
17. Which of the following statements is FALSE with respect to mouse endogenous retroviruses?
- They include MuLVs and MMTVs
  - They cannot encode their own reverse transcriptase
  - They are known as Proviruses when they integrate as DNA in the host's genome
  - Most of them are not replication competent
  - Most of them are replication competent
18. Which of the following clinical signs would you not normally associate with Rat Coronavirus infection?
- Blepharospasm
  - Intermandibular swelling
  - Chromodacryorrhoea (red tears)
  - Neonatal mortality

- e). Death
19. Which of the following parasites has the widest organ distribution when it infects immunodeficient mice?
- Cryptosporidium muris*
  - Giardia muris*
  - Spironucleus muris*
  - Rodentolepis nana*
  - Rabies virus
20. Which of the following mice would be most at risk in a facility with a murine norovirus infection outbreak?
- 129
  - C57BL/6
  - iNOS deficient mice
  - RAG 1 and RAG2
  - Balb C mice
21. Which of the following anesthetic agents has been associated with repeated reports of a dynamic ileus, intestinal obstruction, and death in rats?
- Alpha chloralose
  - Halothane
  - Urethane
  - Chloral hydrate
  - Chloroform
22. Which of the following antibiotics has been associated with acute enterocolitis in hamsters?
- Enrofloxacin
  - Ampicillin
  - Chloramphenicol
  - Trimethoprim-sulfa
  - Gentamycin
23. Which of the following mouse strains CANNOT be perpetuated using a continued brother-sister mating system?
- C57BL/6J
  - BXD-1/Ty
  - CcS1(N4)
  - B6C3F1
  - CB57

24. What light intensity at cage level can result in phototoxic retinopathy in albino rats?
- a). Above 20 lux
  - b). Above 50 lux
  - c). Above 10 lux
  - d). Only when above 325 lux
  - e). Above 10 lux
25. Which of the following agents would you exclude from a list of differentials for multifocal pinpoint haemorrhages in the liver of a mouse?
- a). MHV
  - b). Ectromelia
  - c). *Clostridium piliforme*
  - d). Reovirus
  - e). Rota virus
26. Which of the following is recognized to be the most common clostridial pathogen associated with the enteritis complex in juvenile rabbits?
- a). *Clostridium perfringens*
  - b). *Clostridium difficile*
  - c). *Clostridium spiroforme*
  - d). *Clostridium piliforme*
  - e). *Clostridium welchi*
27. Which of the following is the predominant circulating blood leukocyte in the laboratory mouse?
- a). Neutrophil
  - b). Lymphocyte
  - c). Eosinophil
  - d). Monocyte
  - e). Basophil
28. Which of the following terms describes the occurrence of a mutation of interest within an inbred strain?
- a. Congenic
  - b. Coisogenic
  - c. Consomic
  - d. Recombinant inbred

e. Strain

29. According to the FELASA Guidelines C on the education and training of persons working with laboratory animals are?

- a). Scientific personnel
- b). Veterinarians
- c). Senior Animal Technicians
- d). Junior Animal Technicians
- e). Animal attendant

30. Which of the following allergens is the major allergen produced by mice?

- a. *Mus m 2*, a salivary protein
- b. *Mus m 1*, a salivary protein
- c. *Mus m 2*, a urinary protein
- d. *M mus 1*, a salivary protein
- e. *M mus 1*, a salivary vitamine

## Section B

31. a). Discuss the methods of euthanasia in an animal facility (10 marks)  
b). Outline the reasons why animals are kept in captivity (5marks)
32. a). Describe the layout of animal house facility (20 marks)  
b). Explain how diseases gets access to animal rooms in an animal facility (5 marks).