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University Examinations 2023/2024

THIRD YEAR SECOND SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR
OF SCIENCE IN MEDICAL LABORATORY AND BACHELOR OF SCIENCE IN
MEDICAL MICROBIOLOGY

HMM 3323/HML 3325: EXPERIMENTAL ANIMAL SCIENCE

DATE: APRIL 2024

TIME: 2 HOURS

INSTRUCTIONS:

- (i) The paper consists of **Three** Sections
 - (ii) Section A: Multiple Choice Questions
 - (iii) Section B: Short Answer Questions
 - (iv) Section C: Long Answer Questions
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SECTION A - MCQ

1. The desire to maintain safety in experimental animal houses begins with:-
 - a. Microbiology
 - b. Prevention
 - c. Accidents
 - d. Parasites
 - e. Ubiquity
2. The following is not a sign of pain and distress in rabbits:-
 - a. Increased respiratory rate
 - b. Grinding teeth
 - c. Hunched posture

- d. Anorexia
 - e. Binking
3. The following animals are included under the animal welfare act:-
- a. Dog
 - b. Hamster
 - c. Monkeys
 - d. Rabbits
 - e. All of the above
4. Commonly used experimental animals in biomedical research includes:-
- a. Primates
 - b. Cats
 - c. Rats and mice
 - d. Dogs
 - e. Cows
5. Animal welfare takes care of the three Rs which are:-
- a. Refinement, recycle and re-energize
 - b. Reuse, respect, and return
 - c. Return, reduction, and refinement
 - d. Replacement, reduction, and refinement
 - e. Reduction, refinement, and reuse
6. Rodents are good to use in research due to the following reasons EXCEPT:-
- a. Can be genetically altered
 - b. Are biologically similar to humans
 - c. Difficult to breed
 - d. Short life spans
 - e. None of the above
7. An adult rabbit presents with chronic mucopurulent nasal discharge and sneezing. This is associated with:-
- a. Parasitivorax
 - b. Eimeria multilovorax
 - c. Eimeria stediae

- d. *Pasteurella multocida*
 - e. *Psoroptes* species
8. Significant research results will be obtained from:-
- a. Healthy animals
 - b. Stressed animals
 - c. Injured animals
 - d. Sick animals
 - e. Hungry animals
9. The following rodent requires dietary vitamin C because of lack of L-gluconalactone oxidase:-
- a. Chinchillas
 - b. Guinea pigs
 - c. Rats
 - d. Ferrets
 - e. Rabbits
10. Animals in research centres are taken care of by:-
- a. Veterinary officers
 - b. Technicians
 - c. Care takers
 - d. Animal facility staffs
 - e. All of the above
11. Handling animals in the right way involves:-
- a. Keeping animals of different species together
 - b. Keeping animals in cages which were occupied by sick animals without sterilization
 - c. Not keeping animals of different species together
 - d. Mixing new procured animals together with the others
 - e. All of the above
12. The aim of animal research guidelines:-
- a. Is to develop a vaccine
 - b. Is to protect animal care technicians

- c. Is to protect the environment
 - d. Is to minimize pain and distress of animals
 - e. Is to find a cure for diseases
13. When planning to construct an experimental facility, consider the following:-
- a. Cost
 - b. Site
 - c. Capacity
 - d. Species
 - e. All of the above
14. The law that requires animals are handled with care and in an human way is:-
- a. Animal testing law
 - b. Animal welfare act
 - c. Animal rights act
 - d. Animal research law
 - e. All of the above
15. Enrichment environment will lead to:-
- a. Physiological effects
 - b. No physiological effects
 - c. No anatomical effects
 - d. Physiological effects without behavioral effects
 - e. None of the above
16. Experimental animals are used in research because:-
- a. Experiments do not need to be controlled
 - b. They are the best surrogates due to their similarities to humans
 - c. Animals have longer life spans
 - d. Animals have no rights
 - e. It is ethical to test unknown substances on humans
17. Sterilization by filtration cannot be achieved by the following EXCEPT:-
- a. Porcelain and cellulose
 - b. Cellulose and formalin
 - c. Formalin and autoclaving

- d. Asbestos and autoclaving
 - e. All of the above
18. The following is not suitable for use in rabbits:-
- a. Cephalexin
 - b. Tetracycline
 - c. Clindamycin
 - d. Enrofloxacin
 - e. All of the above
19. Good laboratory work practices includes:-
- a. Not washing hands before and visiting after experimental animal house
 - b. Smelling and testing chemicals
 - c. Using damaged equipment and glassware
 - d. Confining long hair and loose clothing
 - e. All of the above
20. This is a zoonotic viral disease posing risk when working with Rhesus macaque monkeys
- a. Herpes virus B
 - b. Leptospirosis
 - c. Trichophyton mentagrophytes
 - d. Herpes virus A
 - e. Herpes virus C

SECTION B (40 MARKS) - ATTEMPT ALL QUESTIONS

1. List five (5) factors affecting the uptake, distribution and elimination of the anaesthetic drugs (5 marks)
2. Name five (5) discoveries made by use of the Guinea pigs (5 marks)
3. List ten (10) prerequisites of a laboratory animal in research centre (5 marks)
4. Answer the following: -
 - a. Explain three (3) advantages of using formaldehyde to disinfect animal houses (3 marks)
 - b. Name four (4) properties of chloroform (2 marks)
5. Name five (5) points to be remembered when handling experimental animals (5 marks)

6. Outline five (5) precautions you may wish to take when handling infected experimental animal materials (5 marks)
7. Outline step by step how you will handle laboratory hamster in the experimental laboratory (5 marks)
8. Name ten (10) factors you will consider during the planning stage of building an efficient experimental laboratory animal house (5 marks)

SECTION C (40 MARKS) — ATTEMPT ANY TWO QUESTIONS

1. Discuss what should be considered when designing a state-of-the-art experimental animal facility (20 marks)
2. Describe research factors to be considered when choosing appropriate experimental laboratory animal: - (20 marks)
3. Elaborate on ten (10) aspects of experimental animal quarantine (20 marks)