

## **LATG FINAL EXAMINATION**

1. The skin and internal body cells, such as phagocytes are the first line of defense against pathogenic organisms. These natural body defenses are part of the \_\_\_\_\_.
  - a. Adaptive Immune System
  - b. Innate Immune System
  - c. Humoral Immune System
  - d. Autoimmune Immune System
  
2. What special device is commonly used for the manually counting of blood cells under a microscope?
  - a. Hemocytometer
  - b. Refractometer
  - c. Pulse oximeter
  - d. Capnograph
  
3. The adaptive immune system consists of two general types of reactions. These two reactions are the \_\_\_\_\_ and \_\_\_\_\_.
  - a. Innate; Autoimmune
  - b. Humoral; Adaptive
  - c. Autoimmune; Self-directed
  - d. Cell-mediated; Humoral

4. Most endoparasites can be found by which diagnostic test?
  - a. Blood smear
  - b. Fecal floatation
  - c. Urinalysis
  - d. CBC and clinical chemistry
  
5. What is the genus and species of the goat?
  - a. *Ovis aries*
  - b. *Capra hircus*
  - c. *Bos taurus*
  - d. *Sus scrofa*
  
6. In the context of clinical pathology, what does the abbreviation CBC stand for?
  - a. Complete basal center
  - b. Chemical biochemistry
  - c. Complement blood cells
  - d. Complete blood count
  
7. Which of the following species is an Old World monkey?
  - a. *Saimiri sciureus*
  - b. *Papio papio*
  - c. *Callithrix jacchus*
  - d. *Cebus apella*

8. As a general standard, what is the proper number of air changes per hour required for an animal room?
- 3-8
  - 10-15
  - 16-20
  - 20-25
9. Safety cabinets are available in three classes. Which class would you want for the best personnel protection against a zoonotic fatal viral infection?
- Class I
  - Class II, type A
  - Class III
  - Class II, type B
10. Which of the following is a direct cost?
- Physical plant operations
  - Food and bedding
  - Facility depreciation
  - Water consumption
11. B and T lymphocytes are part of the adaptive immune system. B-lymphocytes provide antibody-mediated immunity. These cells develop into \_\_\_\_\_ that produce and secrete antibody.
- Macrophages
  - Plasma cells
  - Neutrophils
  - Helper and regulator cells
12. Which immunoglobulin is associated with allergic reactions and parasitic infections?
- IgG
  - IgM
  - IgE
  - IgA
13. The Animal Welfare Act does not list which one of the following methods as an appropriate sanitation method:
- Washing with 180<sup>0</sup>F water, with soap and detergent
  - Using live steam under pressure
  - Scrubbing with bleach followed by a rinse
  - Washing with detergent solutions and disinfectants along with a cleaning to remove gross debris, followed by a clean water rinse
14. Which of the following diagnostic tools is used to measure the specific gravity of urine?

- a. Hemocytometer
- b. ELISA
- c. Refractometer
- d. Thermometer

15. Which of the following is the scientific name for the cynomolgus macaque?

- a. *Macaca fascicularis*
- b. *Macaca mulatta*
- c. *Macaca nemestrina*
- d. *Macaca arctoides*

16. Which of the following is an endoparasite?

- a. Mealworm
- b. Pinworm
- c. Silkworm
- d. Ringworm

17. Gram positive bacteria will stain which of the following colors?

- a. Pink
- b. Purple
- c. Green
- d. Yellow

18. Which animal is at the highest risk of acquiring a vertebral fracture from improper handling?

- a. Rabbit
- b. Guinea pig
- c. Chinchilla
- d. Gerbil

19. Light intensity is a concern especially with what type of animal?

- a. Obese
- b. Diabetic
- c. Albino
- d. Pigmented

20. Which of the following genera is not covered under the Animal Welfare Act?

- a. *Canis*
- b. *Mus*
- c. *Felis*
- d. *Meriones*

21. The anesthetic drug of choice for fish is:

- a. Ketamine
- b. Butorphanol
- c. Tricaine methanesulphonate
- d. Isoflurane

22. \_\_\_\_\_ is a common cause of death in guinea pigs.

- a. Gastric trichobezoars
- b. Mycoplasmosis
- c. EDIM
- d. Bacterial pneumonia

23. Which of the following is an example of a primary immunodeficiency disease?

- a. AIDS infection in humans
- b. FELV infection in cats
- c. Cancer in swine
- d. Athymic nude mouse with scaly skin disease

24. Which of the following is not part of an animal's macroenvironment?

- a. Temperature
- b. Ventilation
- c. Illumination
- d. Food

25. Rederived animals with one or more known associated nonpathogenic organisms are referred to as:

- a. Germfree
- b. VAF
- c. Gnotobiotic
- d. SPF

26. Which of the following is not part of the lymphatic system?

- a. Spleen
- b. Lymph nodes
- c. Lymph
- d. Pancreas

27. The prediction of the outcome of a disease is called the \_\_\_\_\_.

- a. Diagnosis
- b. Prognosis
- c. Prevalence
- d. Autopsy

28. Which of the following is the proper tissue to fixative ratio when preserving samples for histopathology?

- a. 1:2
- b. 1:4
- c. 1:6
- d. 1:10

29. A prolonged capillary refill time would indicate:

- a. decreased WBC volume
- b. decreased blood pressure
- c. increased blood pressure
- d. decreased depth of anesthesia

30. A marmoset weighs 400 grams. You are told to give the marmoset 10 mg/kg b.i.d. of Enrofloxacin. The concentration of enrofloxacin is 2.27%. How many total milliliters of enrofloxacin would you give the animal in a day?

- a. .35 mls
- b. 1.7 mgs
- c. .70 mls
- d. .17 mls

31. The usage of RODAC plates and rack water testing are good for determining:
- Degree of cross contamination in the dirty side of cage wash
  - The overall effectiveness of your sanitation program
  - The overall effectiveness of your daily cage changes
  - Degree of contamination during storage of cages in dirty side of cage wash
32. A disease state or anomaly that is present when an animal is born is said to be:
- Persistent
  - Hereditary
  - Expressive
  - Congenital
33. The development of which of the following marked the beginning of modern gnotobiology?
- Cesarean derivation
  - Microisolator top
  - Embryo transfer
  - Trexler flexible-film isolator
34. A synonym for gnotobiotite is:
- Germ-free
  - Axenic
  - Defined flora
  - Specific pathogen free
35. What does the specific gravity of urine reflect?
- The presence of spermatozoa
  - The degree to which an ultrafiltrate of blood is concentrated by the kidney tubules
  - The relative concentration of calcium carbonate and other dissolved minerals
  - The degree to which BUN and creatinine are concentrated in the serum
36. Which of the following pathogenic organisms is not known to pass the placental barrier?
- Kilham rat virus
  - Mice Leukemia Viruses
  - Toxocara canis*
  - Demodex mites

37. Drugs that have a high abuse potential and can produce severe physical dependence, but do have recognized medical uses, such as Demerol, are classified as \_\_\_\_\_ drug.
- a. Schedule I
  - b. Schedule II
  - c. Schedule III
  - d. Schedule IV

38. If an animal is placed on its back and the X-rays path is through the sternum, exiting the back, what view would the radiograph be labeled?
- Cranial-caudal
  - Ventral-dorsal (VD)
  - Dorsal-ventral (DV)
  - Anterior-Posterior (AP)
39. On covered species, the Animal Welfare Act requires that appropriate records must be kept for \_\_\_\_\_ after the end of the study.
- 1 year
  - 3 years
  - 5 years
  - 7 years
40. Parasitism by ectoparasites or endoparasites is called \_\_\_\_\_.
- Parasitology
  - Entomology
  - Symbiosis
  - Infestation
41. Which of the following is an example of spontaneous immunodeficiency in laboratory animals?
- Surgical removal of the thymus
  - Athymic nude mouse
  - Whole body irradiation
  - Treatment with cyclophosphamide
42. MPV is an acronym for what disease of laboratory animals?
- Mousepox Virus (Ectromelia)
  - Mycoplasma Virus
  - Minute Pneumonia Virus
  - Mouse Parvovirus
43. What is the purpose of using an air pressure gradient in an animal facility?
- To control ambient temperature
  - To evenly distribute air in animal rooms and hallways
  - To reduce background noise
  - To control the direction of airborne contaminants
44. Cestodes are also known as:
- flukes
  - tapeworms
  - roundworms
  - thorny-headed worms

45. \_\_\_\_\_ is a common pinworm of mice and rats.
- a. *Syphacia rattus*
  - b. *Syphacia mesocriceti*
  - c. *Syphacia obvelata*
  - d. *Dentostomella translucida*

46. Which of the following coccidial parasites is found in the bile duct and liver of the rabbit?

- a. *Encephalitozoon cuniculi*
- b. *Eimeria stiedae*
- c. *Eimeria magna*
- d. *Taenia pisiformis*

47. \_\_\_\_\_ is the heartworm of dogs, cats and ferrets. The adults live in the heart and \_\_\_\_\_. \_\_\_\_\_ is a nematode that causes no known disease problems but whose microfilaria must be differentiated from those of the heartworm.

- a. *Toxocara canis*; aorta; *Spirocerca lupi*
- b. *Dirofilaria immitis*; pulmonary artery; *Dipetalonema reconditum*
- c. *Trichuris vulpis*; hepatic artery; *Taenia pisiformis*
- d. *Ancylostomum caninum*; vena cava; *Dioctophyma renale*

48. The antibiotic penicillin fights bacterial agents by inhibiting their growth. What term is used to describe this mechanism of action by certain antibiotics?

- a. Bacteriostatic
- b. Bacteriocidal
- c. Bacterial inhibition
- d. Competitive Bacterial Degradation

49. Which of the following is true about lice?
- a. Lice are species specific
  - b. There are two types: sucking and licking
  - c. All lice have wings
  - d. Only a small part of their life cycle is spent on the host
50. The scientific term for a fungal infection is \_\_\_\_\_.
- a. Acariasis
  - b. Myiasis
  - c. Pediculosis
  - d. Mycosis
51. Which document requires that health certificates must accompany all shipments of nonhuman primates, dogs, and cats?
- a. The Guide for the Care and Use of Laboratory Animals
  - b. Occupational Health and Safety in the Care and Use of Research Animals
  - c. Animal Welfare Act
  - d. Public Health Service Policy

52. Radiation safety is a significant component to the overall animal facility program. Which of the following particles is a significant biological hazard whether they contact the body externally or internally because they are vastly more penetrating than other particles?
- Alpha
  - Beta
  - Gamma
  - Delta
53. Biological safety cabinets and flow cabinets are two types of safety devices used in a research facility. Identify which cabinets only protect the work surface (i.e., animals or cell culture) and not the user?
- Class II, type A
  - Class III
  - Chemical fume hood
  - Horizontal laminar flow cabinet
54. What regulatory agency is responsible for establishing and enforcing standards for the shipment of animals?
- AAALAC, International
  - The Animal Welfare Act
  - The US Fish and Wildlife Service
  - Public Health Service Policy

55. Torticollis in most laboratory animals is usually indicative of which of the following?
- a. Boredom
  - b. Retinal detachment
  - c. Inner or middle ear infection
  - d. Pituitary gland tumor
56. *Bordetella bronchiseptica* can cause death in \_\_\_\_\_, but \_\_\_\_\_ are an asymptomatic carrier.
- a. Guinea pigs; rabbits
  - b. Rats; mice
  - c. Dogs; cats
  - d. Sheep; goats
57. An effective pest control program relies heavily on which of the following?
- a. Glueboards
  - b. Chemical pesticides
  - c. Live traps
  - d. Sanitation

58. Rodent Health Surveillance is an important part of maintaining the biosecurity of a barrier rodent facility. Interpretation of serologic samples taken from sentinel rodents used in a dirty bedding transfer surveillance program is equally important. How long does it usually take for a sentinel animal to develop antibodies to a viral agent?
- a. 3-5 days
  - b. 10-14 days
  - c. 21-24 days
  - d. 30-35 days
59. What does the M represent in the equation used to determine the sample size for a rodent health surveillance program?
- a. Mortality
  - b. Morbidity
  - c. Mouse
  - d. Murine
60. According to the Guide, continuous exposure to acoustical levels above \_\_\_\_\_ dB can have both auditory and nonauditory effects in rodents.
- a. 55
  - b. 65
  - c. 75
  - d. 85

61. All hard surface disinfectants are regulated by which agency?
- USDA
  - EPA
  - CDC
  - FDA
62. Which of the following laboratory animals has been used as an animal model for the overt form of leprosy?
- Marmota monax*
  - Chinchilla laniger*
  - Dasyus novemcinctus*
  - Didelphis virginiana*
63. An occupational health program and safety program must be part of the overall animal care and use program. Which of the following documents requires that all personnel who have substantial animal contact must be enrolled in an occupational health program?
- The Animal Welfare Act
  - Good Laboratory Practices
  - Centers for Disease Control and Prevention
  - The Guide for the Care and Use of Laboratory Animals

64. What is the genus and species of the gray short tailed opossum?
- Mustela putorius furo*
  - Mondelphis domestica*
  - Cynomys ludovicianus*
  - Cercocebus torquatus atys*
65. Which of the following diagnostic methods would not be useful in a rodent sentinel program that is specifically looking for pinworm infestation?
- ELISA
  - Fecal floatation
  - Cellophane anal tape test
  - Direct examination of the cecum and colon
66. Tuberculosis is a disease caused by what infectious agent?
- Pasteurella*
  - Mycoplasma*
  - Mycobacterium*
  - Shigella*
67. If the pop-off valve on a gas anesthesia machine is closed for a significant time when a dog is under anesthesia which of the following life threatening conditions could develop?
- Heart failure
  - Tension pneumothorax
  - Liver failure
  - Hypothyroidism
68. Atropine is an example of a:
- General anesthetic
  - Local anesthetic
  - Preanesthetic
  - Inhalant
69. What is the genus and species of the marmoset?
- Cebus apella*
  - Saimiri sciureus*
  - Macaca nemestrina*
  - Callithrix jacchus*
70. MRM and CRD are both acronyms for which disease organism?
- Mycoplasma pulmonis*
  - Pasteurella multocida*
  - Bordetella bronchiseptica*
  - Cornavirus*

71. What is the average length for the estrous cycle in baboons, chimpanzees, and rhesus monkeys?
- a. 14-17 days
  - b. 7-13 days
  - c. 20-25 days
  - d. 27-35 days

72. Dosing a pig via the p.o. route with an analgesic is an example of which kind of administration?
- a. Topical
  - b. Enteral
  - c. Parenteral
  - d. Inhalational
73. What is the method of choice for collecting a sterile urine sample?
- a. Free pan catch
  - b. Manual bladder expression
  - c. Urethral catheterization
  - d. Cystocentesis
74. In the context of clinical pathology, what does PCV stand for?
- a. Partial corpuscular volume
  - b. Partial carotid vessel
  - c. Packed cell volume
  - d. Packed corpuscular value
75. Which of the following is not a viral disease of mice?
- a. Mycoplasmosis
  - b. MHV
  - c. Sendai
  - d. Mousepox

76. Which of the following anesthetic agents does not produce significant analgesia?
- Ketamine
  - Metofane
  - Isoflurane
  - Pentothal
77. Which of the following is not an inhalant anesthetic?
- Ether
  - Ketamine
  - Halothane
  - Methoxyflurane
78. The injection of embryonic stem cells into a host embryo results in which type of genetically engineered mouse?
- Transgenic
  - Coherent
  - Haploid
  - Knockout
79. A baermann apparatus is used for:
- Detecting serum antibodies
  - Stereotaxic surgery
  - Determining the hydration status of an animal
  - Recovery of parasitic larvae from feces

80. Which is the correct order in the murine digestive tract from mouth to anus?

- a. stomach, duodenum, ileum, jejunum, cecum, colon
- b. stomach, duodenum, jejunum, ileum, cecum, colon
- c. stomach, ileum, jejunum, duodenum, colon, cecum
- d. stomach, jejunum, duodenum, ileum, colon, cecum

81. A radiograph machine capable of taking moving images is a(n)

\_\_\_\_\_.

- a. ultrasound machine
- b. fluoroscope
- c. MRI unit
- d. CT scanner

82. Which of the following is a synonym for antibodies?

- a. Immunoglobulins
- b. Antigens
- c. Complement
- d. Cytokines

83. According to the Guide, the IACUC should consist of which of the following members:
- DVM with training or experience in lab animal medicine, a scientist with experience in lab animal research, and a public member not affiliated with the institution
  - DVM, a nonscientist, and a public member not affiliated with the institution
  - DVM with training or experience in lab animal medicine, a scientist with experience in lab animal research, a nonscientist, and a public member not affiliated with the institution
  - DVM with training or experience in lab animal medicine, a chairman, and member from the public
84. Which of the following topics does not need to be considered in the preparation and review of animal care and use protocols?
- Adequacy of training and experience of personnel or procedures used
  - Methods of euthanasia or disposition of animals
  - Rationale and purpose of the proposed use of animals
  - Cost of the animals used in the research project
85. The \_\_\_\_\_ name of a drug is the “brand” name or the name under which the drug is sold.
- trade
  - generic
  - chemical
  - therapeutic
86. Mice and rats are related and belong to which suborder?
- Hystricomorpha
  - Myomorpha
  - Lagomorpha
  - Caviomorpha
87. A nine-month old chocolate lab received a complete series of vaccinations (DHLPP) to protect against the more common infectious disease of dogs. What type of immunity will save this animal from becoming infected with Parvovirus?
- Passive immunity
  - Active acquired immunity
  - Maternal colostrum antibodies
  - Nothing the animal will be infected with Parvovirus
88. Identify the correct order for the routes of administration from slowest to fastest?

- a. Parenteral<Topical<Inhalational<Enteral
- b. Topical<Enteral<Parenteral<Inhalational
- c. Enteral<Parenteral<Topical<Inhalational
- d. Inhalation<Enteral<Parenteral<Topical

89. A group of mice are showing signs of facial swelling, whole body rash, and necrosis of the distal limbs. These are classic signs of which viral disease of mice?

- a. Mouse Hepatitis Virus
- b. Mousepox
- c. Sendai virus
- d. Sialodacryoadentitis virus

90. What is the causative agent of snuffles in rabbits?

- a. *Pasteurella multocida*
- b. *Physaloptera rara*
- c. *Treponema cuniculi*
- d. *Clostridium piliforme*

91. \_\_\_\_\_ is the most commonly used phenothiazine tranquilizer.

- a. Xylazine
- b. Acetylpromazine
- c. Atropine
- d. Ketamine

92. New World and Old World monkeys belong to the suborder known as \_\_\_\_\_.

- a. Prosimii
- b. Tarsioidea
- c. Cercopithecoidea
- d. Anthroidea

93. According to the Guide, prolonged restraint including chairing of nonhuman primates should be avoided unless it is essential for achieving research objectives and is approved by which group?
- a. IACUC
  - b. FDA
  - c. USDA
  - d. OSHA
94. The AWA requires that dogs, cats, and nonhuman primates shipped from one site to another must have a health certificate. How far in advance from the shipment date may a veterinarian issue a health certificate?
- a. 10 days
  - b. 15 days
  - c. 20 days
  - d. 30 days
95. Which of the following is not a justification for multiple major survival surgery:
- a. If the surgeries will conserve scarce animal resources
  - b. If the surgeries will reduce the cost of a research project
  - c. If the surgeries are needed for veterinary clinical health reasons
  - d. If the surgeries are related components of a research project

96. Multiple major survival surgeries on a single animal are discouraged but may be permitted if:
- They are scientifically justified and approved by the IACUC
  - They are scientifically justified and approved by the OSHA
  - They are scientifically justified and approved by AAALAC, International
  - They are scientifically justified and approved by the FDA
97. Major surgery is defined as:
- Surgery that penetrates and exposes a body cavity or produces substantial impairment of physical or physiologic function
  - Surgery that does not penetrate or expose a body cavity
  - Surgery that penetrates and exposes the skin of an animal
  - Surgery that penetrates and exposes a major blood vessel
98. Species, such as guinea pigs that benefit more from wall space are referred to as:
- Thigmotactic
  - Thigmophilic
  - Thigmotropic
  - Thigmophobic
99. Which of the following is considered part of the macroenvironment in an animal room?
- cage
  - bedding
  - laminar flow hood
  - water bottle
100. Which bacterial agent is known to cross the placental-uterine bloodstream and infect cesarean derived rodent pups?
- Pasteurella pneumotropica*
  - Bartonella henselae*
  - Mycoplasma pulmonis*
  - Streptococcus zooepidemicus*
101. What physiologic condition are albino rats more susceptible to regarding room illumination levels?
- Pododermatitis
  - Phototoxic retinopathy
  - Diabetes
  - Increased hepatic microsomal enzymes
102. Viruses transmitted by flies and mosquitoes are sometimes referred to as:
- Paramyxoviruses
  - Rhabdoviruses

- c. Acariasis
- d. Arboviruses

103. Cedar shavings are not recommended because they induce which of the following conditions?
- Rickets
  - Scurvy
  - Blindness
  - Increased hepatic microsomal enzymes
104. Trematodes are commonly referred to as \_\_\_\_\_.
- Flukes
  - Tapeworms
  - Roundworms
  - Thorny-headed worms
105. What is the intermediate host for the tapeworm, *Dipylidium caninum*?
- dung beetles
  - flea
  - black ant
  - rabbit
106. What common parasite of dogs is known to cause visceral larval migrans in humans?
- Dirofilaria immitis*
  - Ancylostoma caninum*
  - Trichuris vulpis*
  - Toxocara canis*

107. Oxyurids commonly infect horses and rodents and are more commonly referred to as:
- Flatworms
  - Pinworms
  - Hookworms
  - Roundworms
108. According to the Guide, solid bottom cages for rodents should be sanitized at least \_\_\_\_\_.
- daily
  - once a week
  - twice a week
  - every other day
109. The scientific term for mite infestation is \_\_\_\_\_.
- Mycosis
  - Pediculosis
  - Myiasis
  - Acariasis
110. According to the Guide, primary enclosures and cage accessories (e.g., cage tops) should be sanitized at least \_\_\_\_\_.
- once a week
  - once every two weeks
  - once a month
  - once every two months
111. According to the Guide, effective disinfection can be achieved with wash and rinse water between \_\_\_\_\_.
- 82-120<sup>0</sup>F
  - 143-180<sup>0</sup>F
  - 195-236<sup>0</sup>F
  - 220-310<sup>0</sup>F
112. According to the Guide, the \_\_\_\_\_ must provide guidance or oversight to surgery programs and post-surgical care.
- Area Supervisor, LATG
  - Certified Veterinary Technician, LATG
  - Attending Veterinarian
  - Primary Investigator
113. The Guide states that the importation of non-human primates is regulated by which regulatory agency?
- USDA
  - PHS

- c. FDA
- d. US Fish and Wildlife Service

114. Which two zoonotic diseases of non-human primates have warranted specific guidelines related to quarantine procedures for newly received non-human primates?
- a. Rabies and measles
  - b. Shigellosis and Campylobacteriosis
  - c. Herpes B virus and Herpesvirus tamarinus
  - d. Filoviruses and Mycobacterial infections

115. Which of the following would be considered an example of a major survival surgery procedure?
- Superficial laceration wound repair
  - Joint replacement
  - Subcutaneous osmotic minipump implantation
  - Jugular vein cannulation
116. Which of the following would be considered an example of a minor survival surgery procedure?
- Laparotomy
  - Laparoscopy
  - Limb amputation
  - Peripheral-vessel cannulation
117. The Animal Welfare Act is enforced by a division of the USDA known as:
- NIH
  - APHIS
  - PHS
  - OPRR

118. Congress can amend the Animal Welfare Act (AWA). There were several major amendments made to the AWA in 1985. Which of the following was not a major amendment made in 1985 to the AWA?
- a. Development of canine exercise and nonhuman primate environmental enrichment programs
  - b. Veterinary care program must regulate the value of scientific data obtained from sick animals
  - c. Institutions must train scientists, associates, and other staff members on the proper care and use of lab animals
  - d. Scientists may only perform one major survival surgery procedure unless scientifically justified and approved by the IACUC
119. According to the Guide, the \_\_\_\_\_ share responsibility for ensuring that post-operative surgical care is appropriate for laboratory animals.
- a. Veterinary Technician and Veterinarian
  - b. Veterinarian and PI
  - c. PI and PI Technician
  - d. PI Technician and Veterinarian

120. According to GLP regulations all protocol changes and the reasons for the changes must be documented and signed by the \_\_\_\_\_.
- a. Staff Veterinarian
  - b. Study Director
  - c. Toxicologist
  - d. IACUC
121. Which antibody is able to cross the placenta and provide protection against infectious agents in developing animals?
- a. IgA
  - b. IgE
  - c. IgG
  - d. IgM
122. Lupus is a serious life threatening disease in which the immune system starts attacking the major organs of the body, such as the kidneys. What type of disease is Lupus?
- a. Autoimmune
  - b. Immunodeficiency
  - c. Chronic Immune Complex
  - d. Active Immune

123. What scientific term is used to describe drug administration that is given by going around the intestinal tract?
- Enteral
  - Parenteral
  - Parectal
  - Intraperitoneal
124. A 350g rat must be anesthetized for mini-pump implantation with Nembutal. The dosage for rats is 30 mg/kg and the concentration of Nembutal is 50 mg/ml. How many mls of Nembutal should this rat receive?
- 210
  - 21
  - 2.1
  - .21
125. A non-rebreathing anesthetic system should be used for animals that weigh less than \_\_\_\_\_.
- 25 lbs
  - 15 kg
  - 7 kg
  - 6 lbs

126. You notice white particles that remind you of grains of rice slowly moving in a dog's fecal sample. Being the astute LATG that you are, what do you tell the random source vendor about these animals?
- Their dogs have tapeworms and one dose of antibiotics should cure and prevent further infestation
  - Their dogs have cestodes and they should check for ectoparasites to prevent further infestation of the dog colony
  - Their dogs have trematodes and other endoparasites which are harmless
  - Their dogs have nematodes and ringworm and that treatment with an anthelmintic and antifungal should prevent further problems.
127. There are 3 classes of biological safety cabinets. Identify which type of cabinet should be used for BSL-4 agents, such as Ebola virus.
- Class II, Type A
  - Class III
  - Class II, Type B
  - Class I

128. Why should conventionally raised rabbits not be housed in the same area as conventionally raised guinea pigs?
- Rabbits are a natural predator for Guinea pig
  - Interspecies conflict
  - Rabbits are asymptomatic carriers of *B. bronchiseptica*
  - Guinea pigs are asymptomatic carriers of *S. pneumoniae*
129. Preanesthetic drugs have several advantages, such as smoother anesthetic induction, reduced amount of general anesthesia, and smoother anesthetic recovery. What is one major disadvantage of these drugs?
- These drugs make general anesthesia harder to monitor
  - These drugs are controlled and require more documentation
  - These drugs mask the stages and planes of anesthesia
  - These drugs are very expensive and must be purchased from Europe

130. According to "The Guide", doors within the animal facility should be wide enough to allow easy passage of racks and equipment. What are the recommended dimensions?
- 42" wide x 84" high
  - 44" wide x 88" high
  - 40" wide x 80 " high
  - 24" wide x 48" high
131. \_\_\_\_\_ are not anesthetic agents, because animals dosed with these drugs are paralyzed, but fully conscious and can feel pain.
- Opioids
  - Antiemetics
  - Neuromuscular blockers
  - Neurostimulants
132. Mice, rats, and hamsters have two sets of specialized glands associated with the eyes. In rats, secretions from this gland cause the conditions known as chromodacryorrhea and chromorhinorrhea.
- Lacrimal glands
  - Porphyrin glands
  - Meibomian glands
  - Harderian glands

133. During radiography of a cat, the veterinarian requests a DV view of the animal's abdomen. What position must you place the animal to get a DV view?
- the animal should be placed on its abdomen with the x-ray beam focused on the back
  - the animal should be placed on its back with the x-ray beam focused on its abdomen
  - the animal should be placed on its left side with the x-ray beam focused on its right side
  - the animal should be placed on its right side with the x-ray beam focused on its left side
134. A group of rats is reported to you for swelling around the head and neck, ocular abnormalities and bloody discharge from both eyes. What is the most likely diagnosis based on this brief clinical presentation?
- Sendai virus
  - Lymphocytic Choriomeningitis Virus
  - Pinworms
  - Sialodacryoadenitis Virus

135. According to "The Guide", if drainpipes are used they should be at least \_\_\_ in diameter.
- 4 inches
  - 2 inches
  - 6 inches
  - 5 inches
136. What is the genus and species of the Syrian Hamster?
- Cricetulus griseus*
  - Mesocricetus auratus*
  - Phodopus sungorus*
  - Cricetulus migratorius*
137. Which of the following eye patterns should cause concern and would be considered an anesthetic emergency in an animal under general anesthesia?
- Nystagmus
  - Extreme pupillary dilatation
  - Pupillary constriction in ventral medial location
  - Rotary oscillation
138. Identify the tranquilizer that is a potent analgesic and commonly used in combination with ketamine for general anesthesia in mice and rats?
- Acepromazine
  - Pentobarbital
  - Fentanyl
  - Xylazine
139. A blood smear from a female guinea pig reveals mononuclear white blood cells with several pink intracytoplasmic inclusions. What is the common name for these unique leukocytes?
- Purkinje cells
  - Kupper cells
  - Precocious cells
  - Foa-Kurloff cells
140. What is the genus and species of the laboratory rabbit?
- Oryctolagus cuniculus*
  - Sigmodon hispidus*
  - Marmota monax*
  - Monodelphis domestica*
141. Q fever is a deadly zoonotic disease spread by ruminants. *Coxiella burnetti* is the causative agent and deaths are related to bacterial endocarditis. Which of the following animals requires extra handling precautions to prevent transmission of this disease to humans?

- a. Goats with foot rot
- b. Cattle with bloat
- c. Horse with Caseous Lymphadenitis
- d. Pregnant Sheep

142. Old World and New World Monkeys both require Vitamin C supplementation to prevent ascorbic acid deficiency. However, New World Monkeys also require vitamin \_\_\_\_ to prevent fibrous osteodystrophy.
- D<sub>2</sub>
  - C<sub>2</sub>
  - D<sub>3</sub>
  - C<sub>3</sub>
143. Which of the following is the most devastating disease to a colony of nonhuman primates, because of the ease with which it is spread among monkeys and its zoonotic potential?
- Mycobacterium tuberculosis*
  - Measles
  - Diarrhea
  - Herpes B Virus
144. According to the Animal Welfare Act, primary enclosures used to transport nonhuman primates must be clearly marked in english with the words \_\_\_\_\_ or \_\_\_\_\_ in letters at least 1 inch high.
- Nonhuman primates; Do not touch
  - Live Animals; Wild animals
  - Monkeys; Nonhuman primates
  - Do not touch; Exotic animals
145. The \_\_\_\_\_ requires that nonhuman primates be given the opportunity to exhibit species typical behavior (environmental enrichment).
- Animal Welfare Act
  - IACUC
  - PHS policy
  - Good Laboratory Practices
146. An official USDA tag must have all of the following except:
- Identification number
  - “USDA” letters
  - Numbers and letters identifying the state and dealer
  - Animal’s date of birth
147. What anesthetic agent is the only one suitable for use in a wick type in-circuit vaporizer?
- Isoflurane
  - Halothane
  - Methoxyflurane
  - Enflurane

148. Clavamox (Augmentin) is a common antibiotic, which is used in cats to treat various diseases. Clavamox is a combination of the clavulanic acid and amoxicillin, which are both antibiotics. The combination of these two drugs has a more intense and prolonged activity against a broad spectrum of bacteria. This type of therapeutic use of drugs is referred to as?
- Tolerance
  - Sensitization
  - Synergism
  - Potentiation
149. Which of the following is currently considered the inhalant anesthetic agent of choice?
- Ether
  - Isoflurane
  - Halothane
  - Methoxyflurane
150. An official USDA identification tag may not be used to identify more than one animal or reused within a \_\_\_\_\_ year period.
- 1
  - 3
  - 5
  - 7

151. In designing a research experiment, you notice that the Principal Investigator has not included the use of analgesics for a bone fracture study in rats. You strongly recommend to the PI to use buprenorphine postoperatively in the rats. Your recommendation uses which one of the 3R's developed by Russell and Burch in 1959?
- Replacement
  - Refinement
  - Reduction
  - Responsibility
152. Which of the following is a physical method of euthanasia?
- Microwave irradiation
  - Intravenous injection of euthanasia solution
  - Anesthetic overdose
  - Carbon dioxide
153. Research facilities that obtain dogs or cats from sources other than dealers, exhibitors, and persons who are exempt from licensing regulations must hold the animals for \_\_\_\_ full days, not including the day of acquisition or time in transit.
- 3
  - 5
  - 7
  - 10
154. Which is of the following is the correct formula to calculate the minimum floor space requirement for dogs according to the Animal Welfare Act?
- (The sum of the length of the dog in inches from the tip of the nose to the base of the tail + 4)<sup>2</sup> divided by 124
  - (The sum of the length of the dog in inches from the tip of the nose to the base of the tail + 6)<sup>2</sup> divided by 144
  - (The sum of the length of the dog in inches from the tip of the nose to the base of the tail + 3)<sup>2</sup> divided by 72
  - (The sum of the length of the dog in inches from the tip of the nose to the base of the tail + 12)<sup>2</sup> divided by 288
155. The results of a recent serology profile on rats that had classic clinical signs of SDAV indicate that the rats were serologically negative for SDAV. In addition, tissue samples that were submitted to the pathology group from these rats have definitive histologic evidence of SDAV infection. Based on this history what can you say about the serology results?
- Serology results were false positive and the rats are infected with SDAV
  - Serology results were false negative and the rats are not infected with SDAV

- c. Serology results were false positive and the rats are not infected with SDAV
  - d. Serology results were false negative and the rats are infected with SDAV
156. How many square feet would a 30-inch dog require based on the correct formula for the minimum floor space for dogs?
- a. 7 square feet
  - b. 8 square feet
  - c. 9 square feet
  - d. 10 square feet
157. If dogs are exempt from the exercise program due to their health, condition, or well being, and the basis for the exemption is not permanent, how often must the attending veterinarian review the need for the exemption?
- a. Every 15 days
  - b. Every 20 days
  - c. Every 30 days
  - d. Every 60 days
158. The interior height of the primary enclosure for guinea pigs must be at least \_\_\_\_\_ inches.
- a. 3.5 inches
  - b. 5 inches
  - c. 7 inches
  - d. 10 inches

159. The interior height of the primary enclosure for hamsters must be at least \_\_\_\_\_ inches.
- a. 4 inches
  - b. 6 inches
  - c. 8 inches
  - d. 10 inches
160. The minimum interior height of a rabbit enclosure must be at least \_\_\_\_\_.
- a. 12 inches
  - b. 14 inches
  - c. 15 inches
  - d. 18 inches
161. What class of dealer is involved with the purchase and/or resale of animals?
- a. Class A
  - b. Class B
  - c. Class C
  - d. Class D
162. What class of dealer is described as an “exhibitor” and whose business involves the showing or displaying of animals to the public?
- a. Class A
  - b. Class B
  - c. Class C
  - d. Class D

163. According to the Animal Welfare Act, the IACUC should not consist of less than how many members?
- 3 members
  - 5 members
  - 7 members
  - 9 members
164. How many milliliters of metronidazole should be given to a 70lb yellow Labrador if the dosage is 20 mg/kg to effectively treat idiopathic colitis. The concentration of metronidazole is 20%?
- 3.5 mls
  - 7 mls
  - 14 mls
  - 35 mls
165. What substance has been traditional combined with a vaccine to enhance the body's immune response to the vaccine?
- Vehicle
  - Adjuvant
  - Helper T cells
  - Antigen
166. What class of dealer is involved with the production of purpose-bred animals in a closed colony?
- Class A
  - Class B
  - Class C
  - Class D
167. During microbial sensitivity testing, you notice that there is no zone of inhibition around any of the specific Kirby Bauer antibiotic discs. What can you conclude about the colony of bacteria being tested for sensitivity?
- The bacteria are sensitive to all of the antibiotics tested
  - The bacteria are resistant to all of the antibiotics tested
  - The bacteria have a mixed response to the antibiotics tested
  - No conclusions can be deducted from this information
168. Which of the following is not a factor that can affect the image produced on a x-ray film?
- Kilovoltage (kVP)
  - Wattage (W)
  - Milliamperage (mA)
  - Focal-film distance (FFD)

169. Special radiographic techniques such as, myelography, angiography, and pyelography require \_\_\_\_\_ to help delineate organs and structures for diagnosis.
- Acepromazine
  - Contrast media
  - Fluoroscopy
  - Ultrasound
170. Drug clearance is the rate of excretion of a drug. What organ is the primary route of excretion for most drugs?
- Liver
  - Large intestine
  - Kidney
  - Bladder
171. An investigator managing a mouse-breeding colony reports that during the last several months their group has noticed a decrease in litter size. Upon entering the animal room, you hear chattering respiratory sounds from around the large breeding room. What is the most likely causative viral agent for these clinical signs?
- SDAV
  - Mycoplasma pulmonis*
  - LCMV
  - Sendai virus
172. Which viral disease of nonhuman primates is usually contracted following exposure to infected humans?
- Measles
  - Herpes B
  - Simian Hemorrhagic Fever
  - Tuberculosis

173. *Aeromonas hydrophilia* is a gram-negative bacteria commonly associated with which bacterial disease of aquatic frogs?
- Pseudocapillaroides xenopi*
  - Redleg
  - Pneumonia
  - Tuberculosis
174. What is the normal capillary refill time for most laboratory animals?
- < 1 sec
  - > 4 sec
  - < 2 sec
  - > 3 sec
175. Opioids are commonly used to relieve pain, these drugs can have severe side effects such as respiratory depression. One advantage to using these drugs is that they have specific antagonists that can reverse the side effects. Which of the following is a narcotic antagonist?
- Meperidine (Demerol)
  - Naloxone (Narcan)
  - Buprenorphine (Buprenex)
  - Butorphanol (Torbutrol)

176. What is the scientific term used to describe reddish discoloration of the mucous membranes?
- Cyanosis
  - Hyperemia
  - Edema
  - Toxemia
177. What is the scientific term used to describe the collection of a sterile urine sample from the bladder?
- Thoracocentesis
  - Cystocentesis
  - Cholecystocentesis
  - Abdominocentesis
178. During the necropsy of a rabbit, you notice a prominent pale yellow liver (hepatic lipidosis), which perfectly matches with the history of the animal noting eating or passing feces for the last seven days. What do you expect to find when you open the stomach?
- Gastric trichobezoar
  - Stomach worms
  - Passalurus ambiguus* (pinworms)
  - Gastric ulceration

179. A mongrel dog that measure 27 inches (from the tip of the nose to the base of the tail) and weighs 17 kgs requires how much floor space according to the Animal Welfare Act and the Guide?
- a. AWA: 6.5 sq. ft.; Guide: 24 sq. ft.
  - b. AWA: 7.5 sq. ft.; Guide: 12 sq. ft.
  - c. AWA: 5.1 sq. ft; Guide: 8 sq. ft.
  - d. AWA: 8 sq. ft.; Guide: 6 sq. ft.
180. Which organization at the NIH is charged with ensuring compliance with the PHS policy?
- a. Office for Laboratory Animal Welfare (formerly OPRR)
  - b. United States Department of Agriculture (USDA)
  - c. Animal and Plant Health Inspections Service (APHIS)
  - d. Food and Drug Administration (FDA)