California law requires the employing/supervising veterinarian to provide radiation safety rules to each veterinary radiographer including any restrictions of the operating technique required for the safe operation of the particular x-ray equipment. The purpose of this examination is to ascertain that every unregistered assistant (any individual who is not a board certified Registered Veterinary Technician or a licensed veterinarian) has familiarity with the radiation safety rules. Please read the Radiation Safety Booklet provided by your employer/supervisor and then answer the questions below. You may refer to the booklet while taking the examination. You are required to achieve a passing score of 80% in order to operate radiographic equipment. You may not operate radiographic equipment until you have successfully passed this examination or can provide other proof of Radiation Safety Training.

Name: __________________________________________________________

Employer/Supervisor: _____________________________________________

Circle only one answer.

1. Repeated exposure of an individual to small but chronic amounts of radiation can have which of the following health effects?
   A. No effect
   B. Hair loss
   C. Improvement of overall health
   D. Cataract development in the eyes

2. Pregnant women should avoid exposure to radiation because of which of the following increased risks to their fetus?
   A. Childhood leukemia and other cancers
   B. Low birth weight
   C. Premature birth
   D. Glaucoma

3. Why are individuals under the age of 18 excluded from performing or assisting in radiography?
   A. They cannot be held legally liable for their actions
   B. They are at greater risk of injury because of their inexperience
   C. They cannot be exposed to radiation without their parent’s permission
   D. They are at greater risk of radiation injury because their cells are reproducing more rapidly
4. An unregistered assistant may operate radiographic equipment under which of the following circumstances?
   A. Under the direct supervision of an RVT or a licensed veterinarian
   B. Under the direct supervision of a trained unregistered assistant
   C. Under the indirect supervision of a licensed veterinarian
   D. Under the indirect supervision of an RVT

5. Where should a radiation monitoring device be worn for routine radiography?
   A. Under the apron at waist level
   B. Under the apron at collar level
   C. Outside the apron at waist level
   D. Outside the apron at thyroid level

6. Which of the following statements describes the purpose of collimation?
   A. It reduces the amount of scatter
   B. It increases the amount of scatter
   C. It increases the size of the primary beam.
   D. It reduces the amount of kVp needed for exposure

7. Which of the following actions must a person who is in the x-ray room take at the time of exposure?
   A. Stand in front of a protective barrier
   B. Place their hands directly in the primary beam
   C. Hold their breath while the exposure in being made.
   D. Wear a protective apron of preferably 0.5mm lead-equivalent

8. Lead gloves are required to be worn to protect the operator from which of the following dangers when performing veterinary radiography?
   A. Being bitten by the animal patient
   B. Exposure to the primary beam
   C. Contact with radiographic contrast media
   D. Exposure to scatter radiation

9. Which of the following techniques should a veterinary radiographer use to increase radiation safety?
   A. General anesthesia when total mobility and complete relaxation is required for accurate positioning
   B. Chemical and mechanical restraints whenever possible to eliminate need for holding patient
   C. Intensifying screens and/or fast film to reduce exposure time
   D. All of the above

10. Why should leaded goggles be worn when restraining an animal patient for radiography?
    A. To prevent contrast media from getting into the eyes
B. To protect the lens from exposure to x-rays  
C. To protect the cornea from scratches  
D. To improve the operator’s vision

11. What is the effect on the operator’s exposure to radiation by increasing the distance between the operator and the source of radiation?  
   A. Reduced by approximately the square of the distance.  
   B. Increased by approximately the square of the distance  
   C. Reduced by approximately a factor of double the distance  
   D. Increased by approximately a factor of double the distance

12. What is the purpose of cassette holders in large animal radiography?  
   A. To keep the cassette from moving during exposure.  
   B. To prevent the patient from soiling the cassette  
   C. To reduce the assistant’s exposure to radiation  
   D. To allow rapid change of film in the field.

13. Which of the following statements accurately describes appropriate radiation safety protocol?  
   A. Anesthesia and restraint devices such as sandbags should be used only if manual restraint won’t work  
   B. No individual should be employed or regularly used to hold animal patients during radiation exposures  
   C. During manual restraint, assistants should position themselves as close to the animal patient as possible.  
   D. Veterinary radiographers should restrain patients manually even if other restraint methods are available

14. Which of the following duties is a responsibility of the employing/supervising veterinarian?  
   A. Ascertain that each veterinary radiographer demonstrates familiarity with radiation safety rules.  
   B. Assure that no individual stands in the path of the primary beam  
   C. Provide radiographers with personnel monitoring devices  
   D. All of the above

15. Which of the following statements describes a female radiographer’s special risks?  
   A. Female assistants should not inform their supervisors if they are pregnant to avoid being relieved of duty  
   B. The actual dose of radiation exposure to an embryo/fetus is greater than that received by the mother.  
   C. Her ability to bear children is very likely to be effected by occupational exposure within legal limits.  
   D. The embryo/fetus is most sensitive to radiation during the first three (3) months of pregnancy.
16. Which of the following statements is true regarding digital radiography?
   A. It is no more safe for the patient and the operator to be exposed to x-rays produced by digital radiography than by conventional radiography
   B. Digital radiographs take longer to develop than standard radiographs
   C. Digital radiography uses nano-technology to produce computerized images
   D. The information required to be imprinted on standard, non-dental, radiographs cannot be imprinted on digital, non-dental, radiographs

17. Which of the following techniques is recommended when using digital radiography?
   A. Get as close to the patient as possible when positioning them for a radiograph
   B. Use the adjustments in the computer to make corrections in exposure
   C. Leave the film in the developer longer if the temperature is colder than normal
   D. Open the collimator as wide as possible to get the largest view of the patient

ANSWERS:
1-D
2-A
3-D
4-A
5-D
6-A
7-D
8-D
9-D
10-B
11-A
12-C
13-B
14-D
15-D
16-A
17-B