UNAM
UNIVERSITY OF NAMIBIA

FACULTY	HEALTH SCIENCES AND VETERINARY MEDICINE		
SCHOOL	VETERINARY MEDICINE		
SUBJECT	VETERINARY DIAGNOSTIC IMAGING		
SUBJECT CODE	V3721CD		
DATE	JUNE 2025		
DURATION	2 HOURS	**MARKS**	100

FIRST OPPORTUNITY EXAMINATION

Examiners: Dr. A Herbert
Internal Moderator: Dr. L. De Villiers
External Moderator: Dr. A Celliers

Instructions

1. Please answer all the questions on the examination paper provided.
2. Write your student number clearly on each page.
3. Answer ALL the questions.
4. Any form of malpractice is unacceptable.
5. **This paper consists of 12 pages, including the cover sheet.**

QUESTION 1 (16 marks)

1.1. Name (acronym and full name) the main principle followed to maximise radiation safety in practice. (2 marks)

1.2. Name 3 (THREE) corner stones for the successful application of the principle in 1.1. (3 marks)

1.3. Provide 2 (TWO) examples of each of the aspects listed in 1.2., respectively. (6 marks)

1.4. List 3 (THREE) human health consequences which may result from ionization. (3 marks)

1.5. Name the component of the radiographic machine which produces x-rays. (1 mark)

1.6. Name the most important type of radiation interaction between an x-ray and matter to produce a radiograph. (½ x 2 = 1 mark)

QUESTION 2 (14 marks)

Examine the radiograph IMAGE 1 and answer the questions below:

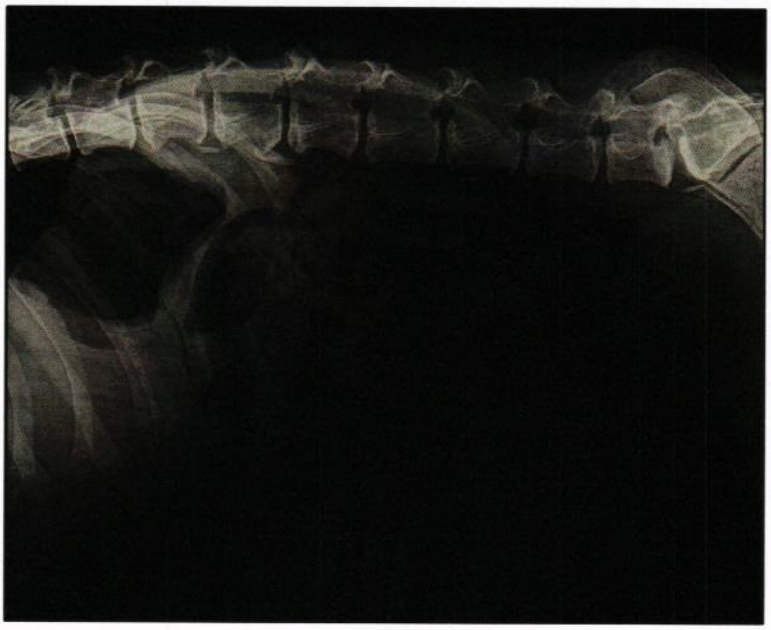


IMAGE 1

2.1. Describe the 7 (SEVEN) factors to consider for the evaluation of a radiograph quality. (7 marks)

2.2. Describe the radiographic exposure of the radiograph IMAGE 1. Justify the answer. (2 marks)

2.3. Explain the general process for evaluating the need to adjust the exposure factors when evaluating radiograph quality, in the case of the exposure in 2.2. (3 marks)

2.4. Describe how to adjust the exposure factors for a better-quality radiograph of IMAGE 1. (2 marks)

QUESTION 3 (17 marks)

Examine the radiograph IMAGE 2 and answer the questions below:

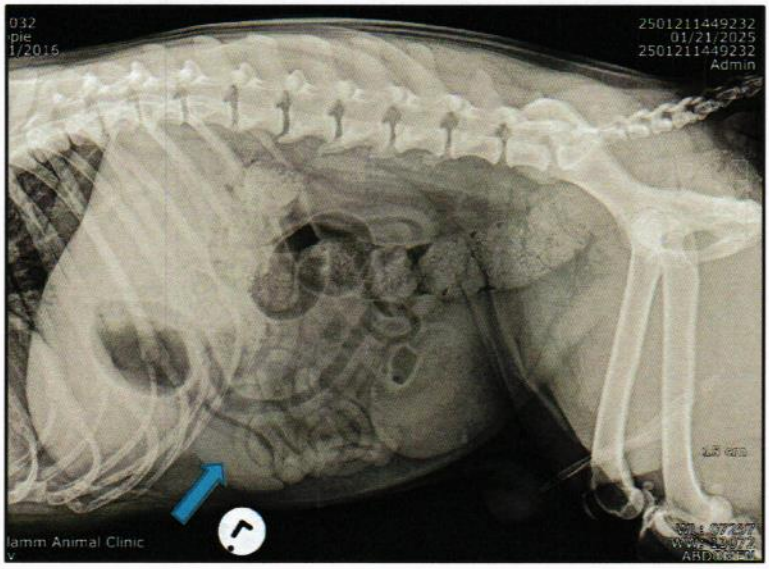


IMAGE 2

3.1. Name the body region depicted in IMAGE 2. (1 mark)

3.2. Name the view depicted in IMAGE 2. (2 marks)

3.3. Describe the radiographic technique used for this body part. (1 mark)

3.4. Describe the colour characteristics that this technique generates. (2 marks)

3.5. Justify the use of the technique in 3.3. for the body part depicted in IMAGE 2. (2 marks)

3.6. Describe the exposure factors recommended for the technique in 3.3. (2 marks)

3.7. Name the 4 (FOUR) collimation landmarks for the body region in 3.1. (4 marks)

3.8. Critically evaluate the collimation of IMAGE 2. Justify the answer. (2 marks)

3.9. Identify the organ indicated by a blue arrow in IMAGE 2. (1 mark)

QUESTION 4 (7 marks)

Examine the radiograph IMAGE 3 and answer the questions below:



IMAGE 3

4.1. Name 4 (FOUR) radiographic features to consider in evaluating bone lesions. (4 marks)

4.2. Evaluate whether the lesion depicted on IMAGE 3 is aggressive. Justify the answer using 2 (TWO) of the features listed in 4.1. (3 marks)

QUESTION 5 (21 marks)

Examine the ultrasound IMAGE 4 and answer the questions below:

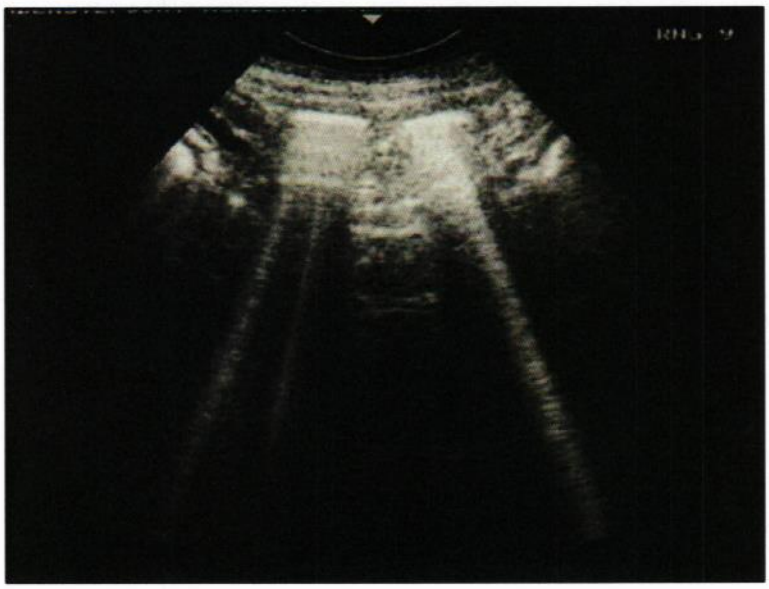


IMAGE 4

5.1. Name the ultrasound mode used in IMAGE 4. (1 mark)

5.2. Indicate on which part of IMAGE 4 is the transducer probe situated. (1 mark)

5.3. IMAGE 4 was taken in sagittal view. Describe the location of the probe marker on IMAGE 4. (1 mark)

5.4. Name the artefact depicted in IMAGE 4. (1 mark)

5.5. Explain how the artefact in 5.4 is typically formed. (3 marks)

5.6. Explain the most likely cause of the artefact in 5.4, when detected during a TFAST examination. (2 marks)

5.7. Explain the acronym FAST. (½ x 4 = 2 marks)

5.8. Name the 5 (FIVE) views of the TFAST examination. (5 marks)

5.9. Name the view that the TFAST and AFAST examinations share. (1 mark)

5.10. Explain what the view mentioned in 5.9. allows to evaluate. (4 marks).

QUESTION 6 (20 marks)

Examine the PHOTOS 1, 2, and 3, and ultrasound IMAGES 5, 6, and 7, and answer the questions below:



PHOTO 1



PHOTO 2



PHOTO 3

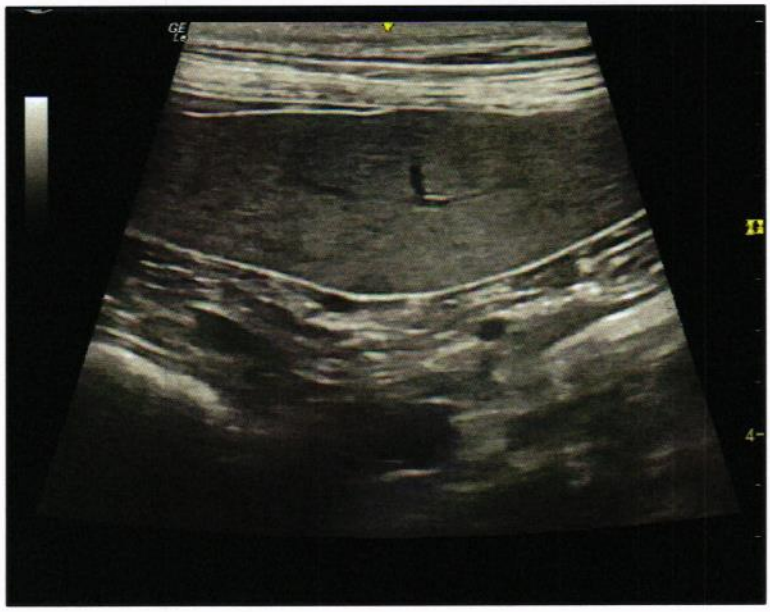


IMAGE 5



IMAGE 6

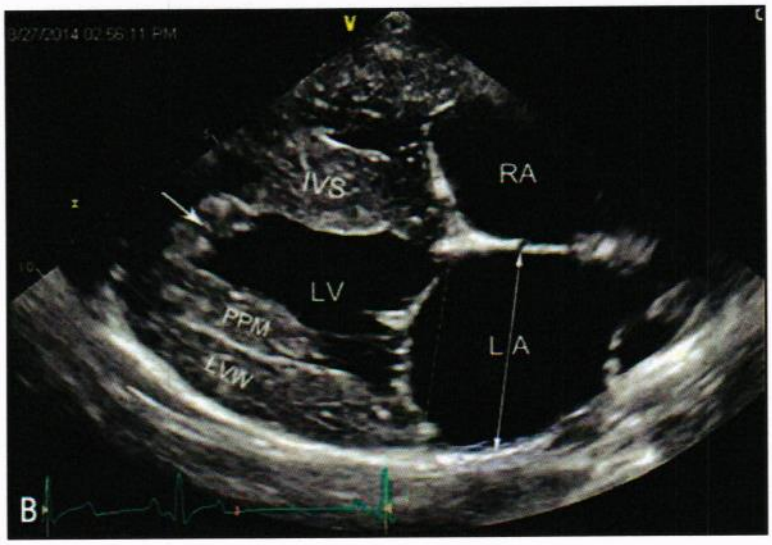


IMAGE 7

6.1. Name the transducer probe depicted in PHOTO 1. (1 mark)

6.2. Describe the resolution and penetration characteristics of the probe in PHOTO 1. (2 marks)

6.3. Give the formula used to calculate velocity in ultrasound scanning. (1 mark)

6.4. Describe the relationship between ultrasound frequency and wavelength when scanning soft tissue. Justify the answer. (3 marks)

6.5. Give the unit of ultrasound frequency. (1 mark)

6.6. Name the organ depicted in IMAGE 5. (1 mark)

6.7. Name the organ depicted in IMAGE 6. (1 mark)

6.8. Compare the echogenicity of the organs depicted in IMAGES 5 and 6. (1 mark)

6.9. Identify and name the best transducer probe (PHOTO 1, 2, or 3) for evaluation of the organ in IMAGE 6 in a large-breed dog. Justify the answer. (4 marks)

6.10. Identify and name the best transducer probe (PHOTO 1, 2, or 3) for evaluation of the organ in IMAGE 7. (2 marks)

6.11. Name the 3 (THREE) ultrasound modes used to evaluate the organ depicted in IMAGE 7. (3 marks)

QUESTION 7 (5 marks)

7.1. Describe the main advantage of scintigraphy compared to radiography. (1 mark)

7.2. Describe the 2 (TWO) main advantages and 1 (ONE) main limitation of CT/MRI imaging compared to radiography. (3 marks)

7.3. Name the most common radioisotope used in scintigraphy. (1 mark)

END OF PAPER