FACULTY	**Health Sciences and Veterinary Medicine**		
DEPARTMENT	**School of Veterinary Medicine**		
SUBJECT	**Clinical Rotation (Clinical paper)**		
SUBJECT CODE	**V3883FY**		
DATE	**December 2024**		
DURATION	**3 Hours**	**Marks**	**150**

Examiners: Drs A Samkange, F Bruwer, M Jago, A Marais, A Raath & F van der Linde

External Moderators: Prof D.E Holm & Dr Anri Celliers

This question paper consists of 13 pages, including this front page.

Instructions

Attempt ALL questions!!
The examination paper has two sections (A & B)
Use the answer book for section A and write your answers in this question paper for section B.

Student name: _____

Student No.: _____

SECTION A

1. You are a state veterinarian based in the Oshana region of Namibia. A local farmer reports losing five of his unvaccinated herd of 20 cattle over the past week, and one more ox has just died. You then decide to drive there immediately and upon arrival, you observe that the dead animal was oozing dark uncoagulated blood from all natural openings. Describe step-wise how you would handle this case and justify all your actions. Divide your answer into appropriate subheadings. [25]

2. During a herd health visit on a dairy farm you were presented with a cow, see picture below, that has calved 4 weeks ago, her placenta was retained for 7 days. A thick yellow vulvar discharge was present and a corpus luteum could be felt on the right ovary. Currently, her appetite and milk production are within normal range. [18]



   a) What is your likely diagnosis regarding her reproductive system [1]

   b) Which bacterium is most likely to be the cause of infection at this stage? [1]

   c) Which other anomalies are likely to be present when you examine this cow by transrectal palpation? [4]

   d) Give the general approach of handling and treating this condition, with the help of follow-up visits, to eventually curb it. [9]

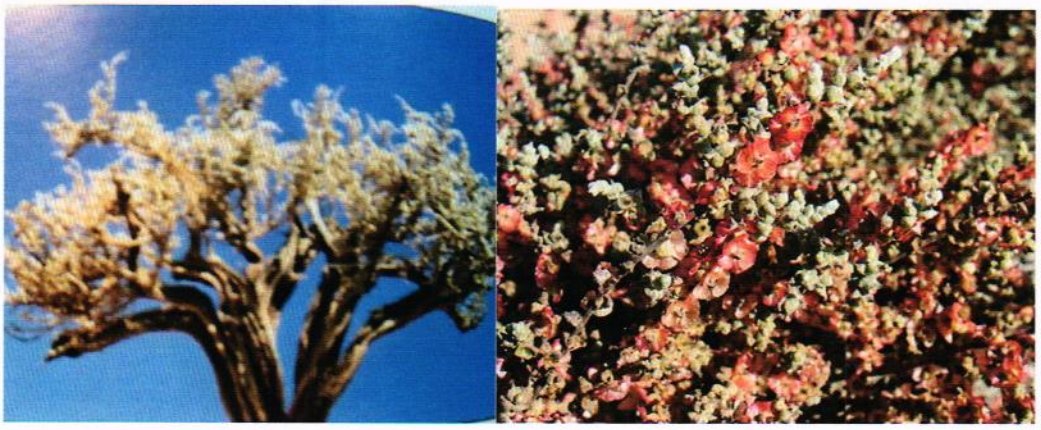
   e) Name three antibiotics that can be used systemically to treat this condition. [3]

3. You are called to a farm in central Namibia to investigate a farmer's complaint that three (3) of his Karakul ewes have developed "swollen stomachs" over the past 2 weeks or so. A brief telephonic consultation revealed that the ewes run with the ram throughout the year. The flock of 30 animals graze on the veld *ad lib* and are brought into a kraal every night.

   When driving onto the farm you notice an abundance of the following two plants on the overgrazed veld, and you start considering a toxicosis as a main differential diagnosis of the abdominal distention noticed by the farmer.



A



B

Plant A Is a yellow-green dense rounded shrub, growing in the veld as well as on a rocky outcrop. Plant B is a woody twiggy sturdy shrub with tiny pale pink flowers between the silvery-grey leaves.

a) Provide the botanical name for Plant A [2] and the syndrome caused when excessive amounts are eaten [1]
b) Provide the botanical name for Plant B [2] and the syndrome caused when excessive amounts of the plant are eaten [1]
c) What is the morphological diagnosis (MD) of the most striking pathology that you expect to find in a post mortem examination of an animal suffering from poisoning by Plant A? [1/2 x 4 = 2]
d) Explain the mechanism of action of Plant B in an affected Karakul ewe [5]

4. The black rhino is an "explosive" creature and if not properly controlled during transport in a crate can easily injure itself. In particular, there are three high-risk stages in the process: 1) loading the rhino from the ground into the crate, 2) transporting the rhino in the crate, 3) offloading the rhino from the crate back into the field.

   You have immobilised a free-ranging adult male black rhino with the following total doses: 5 mg of etorphine hydrochloride, 80 mg of azaperone and 2000iu of hyalase. You are required to transport the rhino for an 8-hour journey. Describe how you would carry out the pharmacological management of the three high-risk stages described above, and justify your choices of the various

veterinary medicines you have elected to use at each of the three stages. You are not required to give exact dose rates or total doses. [5 + 6 + 4 = 15 marks]

SECTION B

[75 marks]

1. A 6-year-old spayed Yorkshire Terrier female, weighing 3.7 kg, is presented for severe vomiting that started this early morning. She did not eat her breakfast and has been very depressed since the vomiting started. The owner also noted profuse diarrhoea just before bringing her in. She brought you pictures of the vomitus (figure 1) and diarrhoea (figure 2). On further questioning the owner reports no diet change and comments that the dog is a very fussy eater and will not eat anything but her wet dog food pouches or her dry dog food pellets. Her last vaccination and deworming was done in September 2024. [40]



Figure 1



Figure 2

On clinical examination you find the following:

Habitus: depressed and lethargic

Mucous membranes: pale, tacky

CRT: 3 seconds

Heart rate: 180 bpm

Respiratory rate: 20 bpm

Temperature: 37.0°C

Thoracic auscultation: No Abnormalities Detected

Abdominal palpation: sensitive and tensing on palpation

Lymph nodes: No Abnormalities Detected

You decide to run a complete blood count and a serum biochemistry profile and find the following:

TEST	PATIENT RESULTS		NORMAL RANGE
Haematocrit	0.76	**H**	0.37 – 0.55 L/L
Red cell count	10.72	**H**	5.5 – 8.5 x10^{12}/L
Haemoglobin	245	**H**	120 – 180 g/L
MCV	70.9		60 – 77 fL
MCH	22.8		No reference range
MCHC	32.2		32 – 36 g/dL
White cell count	2.81	**L**	6 – 15 x10^{9}/L
Segmented Neutrophil	1.12	**L**	3 – 11.5 x10^{9}/L
Band neutrophil	0.96	**H**	0 – 0.5 x10^{9}/L
Lymphocyte	0.45	**L**	1 – 4.8 x10^{9}/L
Monocyte	0.28		0.15 – 1.35 x10^{9}/L
Eosinophil	0.00	**L**	0.1 – 1.25 x10^{9}/L
Basophil	0.00		0 – 0.1 x10^{9}/L
Platelet count	202		200 – 500 x10^{9}/L

Morphology: Toxic neutrophils

Parasite ID: No parasites seen on smear

TEST	PATIENT RESULTS		NORMAL RANGE
Total serum protein	58.4		56 – 73 g/L
Albumin	32		28 – 41 g/L
Globulin	26.4		20 – 41 g/L
A/G ratio	1.2		0.6 – 1.7
Alanine aminotransferase	139	**H**	9 – 73 U/L
Alkaline phosphatase	180	**H**	20 – 165 U/L
Urea nitrogen	13.6	**H**	2.3 – 8.9 mmol/L
Creatinine	137	**H**	59 – 109 umol/L
Sodium	135	**L**	142 – 151 mmol/L
Potassium	3.2	**L**	3.6 – 5.1 mmol/L
Chloride	101	**L**	107 – 117 mmol/L
Glucose	3.0	**L**	3.3 – 6.2 mmol/L

Faecal flotation: negative

On urinalysis you find:

Colour: yellow

Turbidity: clear

Dipstick: No Abnormalities Detected

SG 1.035

Sediment: none

(a) Provide a master problem list [10 x 1 = 10]

(b) Based on the test results obtained, discuss the patient's hydration status. [3]

(c) Classify the white cell count result. [1]

(d) Considering all the data from this case, provide the three most likely differential diagnoses, with justification for each. [6]

(e) What is the most likely aetiological diagnosis. [1]

(f) Describe the immediate, emergency treatment you would start for this patient. Provide examples and justification for the treatment(s) chosen. [10]

On clinical examination you determined your patient is 10% dehydrated and after your immediate treatment steps have been implemented, you decide to correct the fluid deficits.

(g) Calculate the fluid replacement for this patient over a 12-hour period, if the maintenance rate is 60 ml/kg/day and ongoing losses are 1 ml/kg/h. [4]

(h) Based on the Potassium levels you decide to spike a 1L fluid bag with 2 vials of Potassium Chloride 15% containing 20 mEq of potassium each. Calculate whether this quantity will be safe for this patient if the maximum potassium rate is 0.5 mEq/kg/h? [2]

(i) **Describe and justify** additional treatment protocols for this patient. [3 x 1 = 3]

2. A ten-year-old castrated male cat is presented with a history of chronic weightbearing lameness in the right hind limb. The condition had worsened gradually over a period of about 6 months from when it was first noticed. In addition, the owner had also noticed a swelling of the right hind limb. Clinical examination revealed severe weightbearing lameness in the right hind limb as well as a firm painful mass of the right distal femur. Radiographs were taken of the leg. The findings are illustrated in Figure 1 below. [20]

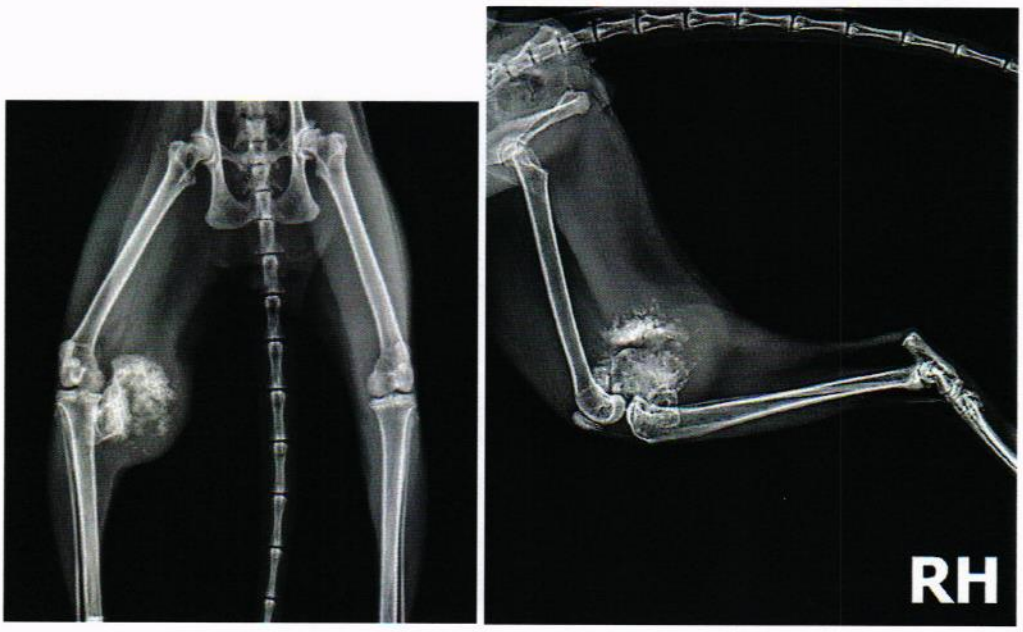


Figure 1

Multiple fine-needle aspirate samples were collected from this mass for cytological evaluation, and the findings are illustrated in figures 2, 3, 4 and 5 below. Carefully study these illustrations and answer the relevant questions.

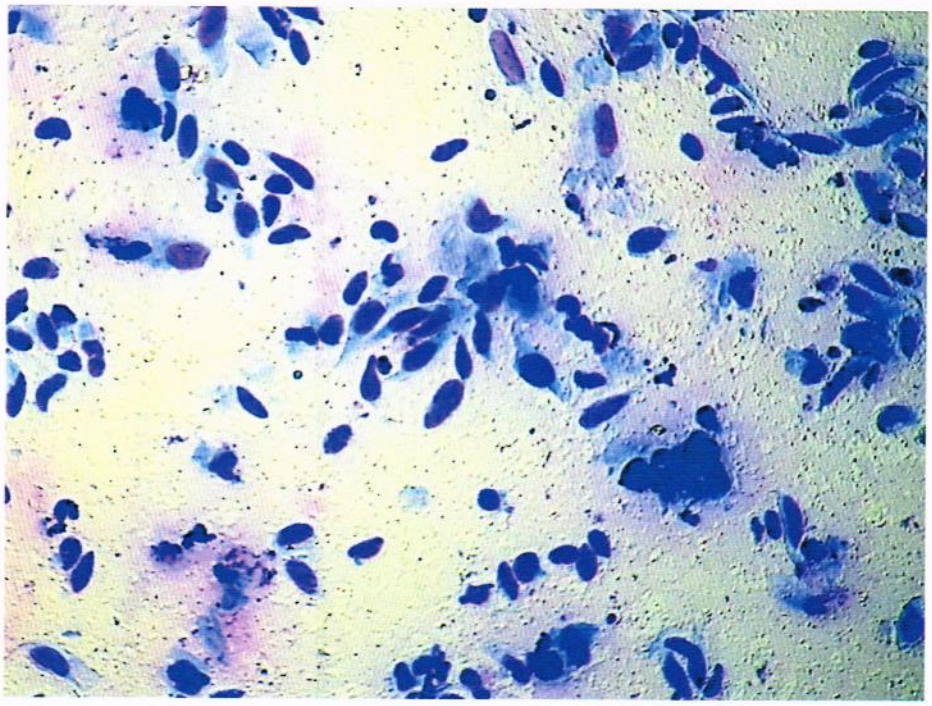


Figure 2

(a) Identify the **general cell type** of the tissue cells on these smears. [1]

_____

(b) What **general abnormalities** are evident in this cell population? [2]

_____

_____

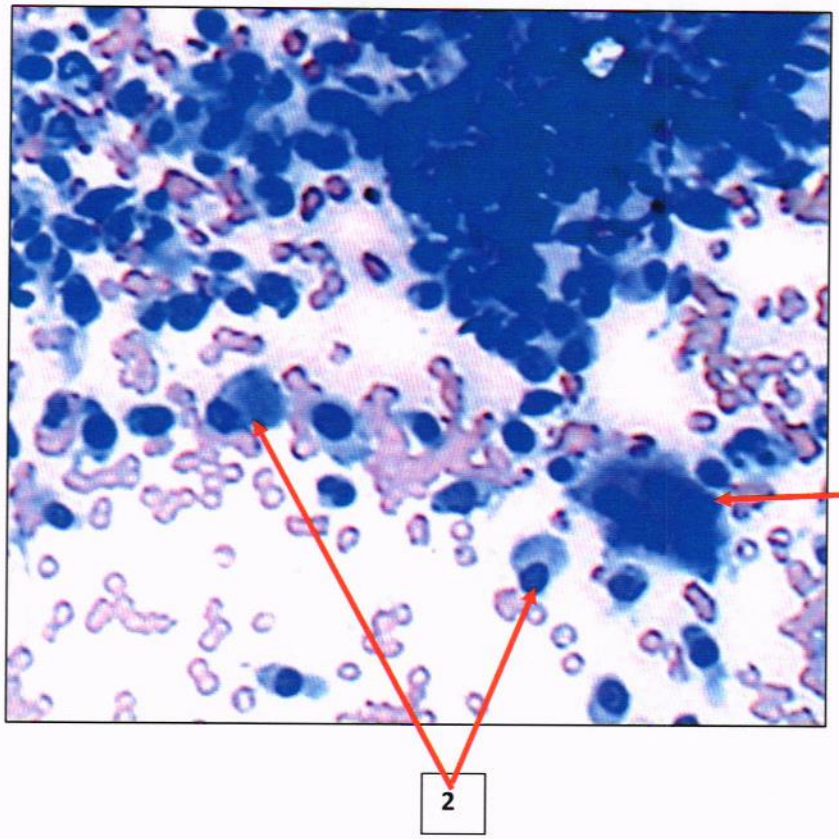


Figure 3

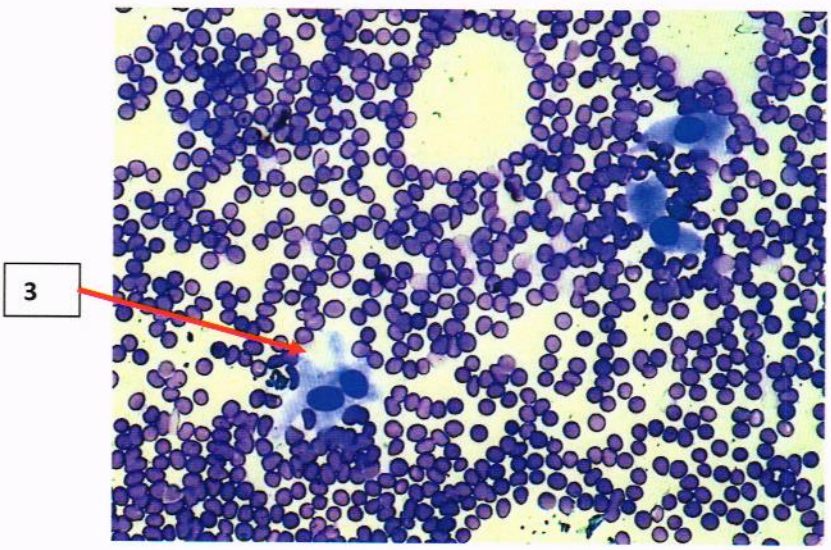


Figure 4

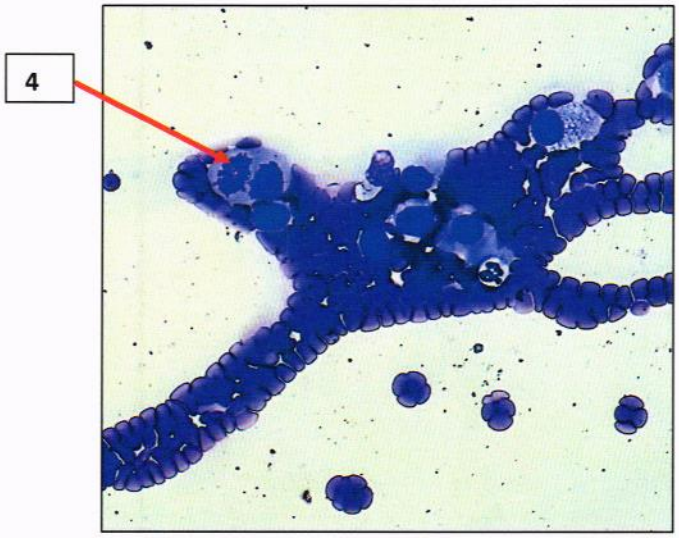


Figure 5

(c) Correctly identify the structures indicated by the numbered arrows. [4]

(i) Arrow 1: [1] _____

(ii) Arrow 2: [1] _____

(iii) Arrow 3: [1] _____

(iv) Arrow 4: [1] _____

e) Taking all the findings – history, clinical examination, radiology macroscopic and microscopic - into consideration, what is the most likely diagnosis of this mass? [1]

_____

_____

(f) Briefly discuss the necessity for an additional diagnostic procedure before formulating a prognosis and treatment plan. [1]

_____

_____

(g) Based on all your findings briefly discuss four management / treatment options for this case. [11]

_____

_____

_____

_____

_____

_____

_____

3. A racehorse owner from Rehoboth has asked you to examine his 4-year-old filly after she was placed at the races last night. This morning she is showing signs of muscle stiffness, shifting hindlimb lameness, elevated respiratory rate, sweating, firm painful hindquarter muscles (mainly gluteals), and reluctance to move. The filly appears extremely anxious. The owner acted on advice from a friend who recommended feeding a highly soluble carbohydrate diet while resting the horse for 5 days leading up to the race. [15]

Blood chemistry results are shown below.

Serum analyte	Unit	Case result[a]	Reference range[a]
Albumen	g/L	30	25–39
Alkaline phosphatase	U/L	211	10–326
Aspartate aminotransferase	U/L	3500	100–600
Urea	mmol/L	5.22	3.57–8.93
Calcium	mmol/L	3.12	2.60–3.22
Creatine kinase	U/L	> 2036	10–350
γ-glutamyl transpeptidase	U/L	73	0–87
Glucose	mmol/L	5.32	4.17–7.50
Lactate dehydrogenase	U/L	> 2800	250–2070
Magnesium (Mg^{2+})	mmol/L	0.87	0.71–1.01
Phosphorus (P^{3+})	mmol/L	1.13	0.58–1.81
Total protein	g/L	65	56–79
Globulin	g/L	35	24–47
Sodium (Na^{+})	mmol/L	144.3	133.0–150.0
Potassium (K^{+})	mmol/L	4.16	3.00–5.30
Chloride (Cl^{-})	mmol/L	105.4	97.0–109.0

a) What is the most likely diagnosis? [1]

b) Give reasons for your answer in a). [3]

c) Would you expect this horse to be Acidotic or Alkalotic; Metabolic or Respiratory in origin? [½ x 2 =1]

d) Briefly describe the principles of treating this case [4] and examples of medications [4] used for each principle.

e) What advice would you give for the aftercare of this patient? [2]