

THE UNIVERSITY OF ZAMBIA
UNIVERSITY EXAMINATIONS
MARCH 1998 AND SEPTEMBER 1998
FIRST AND SECOND SEMESTER
SCHOOL OF VETERINARY MEDICINE

FIRST SEMESTER MARCH 1998

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SECOND SEMESTER SEPTEMBER 1998

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THE UNIVERSITY OF ZAMBIA
UNIVERSITY FIRST SEMESTER EXAMINATIONS - MARCH 1998

VMB 321

VETERINARY HISTOLOGY

TIME: THREE[3] HOURS

INSTRUCTIONS: ANSWER ALL QUESTIONS

1.
 - i] List four[4] types of capillaries and give an example of where each type occurs. [4]
 - ii] Briefly explain how you would distinguish between an artery and a vein which are of similar diameter. [3]
 - iii] Describe two [2] histological features of the conducting system in the heart which enable it to be distinguished from other tissues. [2]
 - iv] Define accurately the term ossa cordis. [1]
2.
 - i] List the types of lingual papillae which are associated with taste sensation. [3]
 - ii] Briefly explain how you would attempt to distinguish histological sections of the reticulum and the omasum. [2]
 - iii] Draw a simple, labelled diagram through an equine incisor tooth indicating its tissue composition. [3]
 - iv] Describe briefly the location and distribution of glands in the canine oesophagus. What type of muscle is found in the oesophagus in this species? [2]
3.
 - i] Where is mucus produced in the following:
 - A. stomach
 - B. duodenum
 - C. colon?
 - What are the important functions of mucus in the gastrointestinal tract? [4]
 - ii] What important cytological features of a hepatocyte can be identified with the electron microscope? [2]
 - iii] Define accurately the term paranasal sinus. [1]
 - iv] List three[3] cell types recognised within the pancreatic islets and indicate what is believed to be produced by each cell type. [3]
4.
 - i] Describe accurately the epithelial lining of the nasal cavity. [1]
 - ii] Indicate the extent of each of the following in the bronchial tree:
 - A. smooth muscle
 - B. goblet cells
 - C. cartilage
 - D. cilia
 - iii] Elastic and reticular fibres both occur in the interalveolar septa. Explain the functions of each. [4]

iv] Give three[3] ways in which the respiratory tract defends itself against infection. [3]

5. i] List the constituent layers of the filtration barrier in the kidney? [2]
ii] Draw a simple labelled diagram indicating the important histological features of the following:

A. Proximal tubule

B. Thin tubule

C. Distal tubule

D. Collecting tubule

Describe concisely in one sentence how the structure of each enables it to perform its specific functions. [4]

6. i] Give three[3] significant differences between the processes of spermatogenesis and oogenesis. [3]

ii] Define the term "basal compartment" of the seminiferous epithelium. What cell types does it contain? [2]

iii] On a structural basis classify the prostate gland histologically. Give one feature which could assist you in distinguishing the prostate histologically from other glands of similar type. [2]

iv] Give type of epithelium which lines each of the following:

A. Rete testis

B. Ductus epididymidis

C. Prostatic part of the urethra

[3]

7. i] Draw simple, labelled diagrams to indicate the important features of primary, secondary and tertiary ovarian follicles. [3]

ii] List the structures shed from the ovary at ovulation. [2]

iii] Briefly describe how the histological structure of the uterine tube reflects its functions. [3]

iv] What is the main feature seen in vaginal cytology of a bitch in oestrus? [1]

v] Briefly describe the location of the bulb of the vestibule. Of what type of tissue is it composed? [1]

8. i] Trace the route of lymph flow through a lymph node. [2]

ii] Briefly describe the location and structure of the lamellar bodies (Hassall's corpuscles) in the thymus. From where are they formed? [2]

iii] Briefly explain the difference between the "open" and "closed" theories of circulation within the spleen. [1]

iv] Draw a simple, labelled diagram to show the important cytological features of a plasma cell. What is its main function? [2]

v] What are the features which distinguish a tonsil from other lymphoid tissues?

[2]

vi] Give one (1) function of the spleen, which normally is performed only during prenatal life. [1]

9. i] Draw a simple labelled diagram indicating the various named parts of the hypophysis cerebri (pituitary gland). [2]
ii] Give two (2) important mechanisms by which the hypothalamus and the hypophysis cerebri are closely inter-related. [2]
iii] Briefly describe the location of the parafollicular cells of the thyroid gland. What do they produce? [2]
iv] What cell types may be recognised in the parathyroid glands with the light microscope? [2]
v] Briefly explain what is meant by the term "chromaffin system". What parts of the system are recognised in the adult? [2]
10. i] List in sequence the neurones which occur within the retina. [2]
ii] Name the sites of neuroepithelium within the membranous labyrinth of the internal ear. Give the specific function associated with each site. [3]
iii] Draw a simple labelled diagram indicating the layers of the epidermis. [2]
iv] Give the precise site to which the sebaceous glands of the skin secrete. [1]
v] Explain the mechanisms of secretion found in the mammary glands? [2]

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA
UNIVERSITY FIRST SEMESTER EXAMINATIONS - MARCH 1998
VMB 331
VETERINARY BIOCHEMISTRY I

TIME: THREE HOURS
ANSWER: ALL QUESTIONS IN SECTION A
THREE QUESTIONS IN SECTION B

SECTION A

1. (a.) Define catabolism and anabolism.
(b.) How does adenosine triphosphate (ATP) link these? (6 marks)
2. Name five ways by which enzyme activity is regulated. (7 marks)
3. (a.) Give the reaction in the tricarboxylic acid cycle where flavin adenine dinucleotide is the coenzyme.
(b.) Where is FADH_2 reoxidised and how many ATP are formed? (6 marks)
4. (a.) Draw the reaction for the synthesis of mevalonate.
(b.) Draw the structure of two molecules made from it. (6 marks)
5. What are the roles of the following in photosynthesis:
a.) chlorophyll
b.) ferredoxin. (7 marks)
6. Describe how lipid synthesis in a mammal would be affected under the following conditions:
a.) starvation
b.) on a diet high in carbohydrate content
c.) on a diet lacking essential fatty acids. (7 marks)

SECTION B

7. Describe the levels of structure found in a protein from primary to quaternary. Does haemoglobin have these levels of structure? (20 marks)
8. Describe which tissues in the body require glucose as their energy source. Describe how glucose is synthesised from pyruvate in a ruminant. Where does this occur? (20 marks)
9. Define enzyme specificity. How is this specificity explained? (20 marks)
10. Describe the biosynthesis of glycogen from glucose. Give the structure of cyclic 3'5'adenosine monophosphate and describe how it controls this process? (20 marks)
11. (a.) Give the structures of the following peptides at pH 7.0 and calculate the isoionic pH of each:
- i) Tyrosyl-glycyl-aspartate
 - ii) Glutamyl-arginyl-alanine (6 marks)
- (b.) A mixture of the two peptides was separated using paper electrophoresis at pH 6.0. Describe the apparatus which could be used and show with a diagram how the two peptides would separate. (7 marks)
- (c.) A mixture of the two peptides was separated on an anionic exchange column at pH 4.0. Explain in detail what would occur and indicate in which order the peptides would be eluted. (7 marks)

	pka ₁	pka ₂	pka ₃
Aspartate	2.1	9.8	3.8
Glycine	2.3	9.6	—
Alanine	2.3	9.9	—
Glutamate	2.2	9.7	4.3
Tyrosine	2.1	9.1	10.9

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA
UNIVERSITY FIRST SEMESTER EXAMINATIONS – MARCH 1998

VMB 341
VETERINARY PHYSIOLOGY

TIME: **THREE (3) HOURS**

INSTRUCTIONS: **ANSWER FIVE OUT OF SEVEN QUESTIONS**
 ALL QUESTIONS HAVE EQUAL MARKS

- Q1.** Discuss in detail the ascending spinal pathways. Indicate the anatomical and functional organisation of each pathway.
- Q. 2** With the help of a diagram describe the structure of muscle spindle receptor, the mechanisms of operation and the reflex associated with the receptor.
- Q. 3** You are presented with a dog with a severe haemorrhage (i.e. has a reduced blood volume) and marked fall of arterial blood pressure following a road traffic accident. Discuss the neural mechanisms that come into play to help restore arterial blood pressure.
- Q. 4** (a) Briefly discuss the accommodation reflex and its importance in vision. Mention the accommodation disorders and their corrective lenses
- (b) Briefly discuss the pupillary light reflex. What is the diagnostic importance of the consensual reflex?
- Q. 5** (i) Indicate true or false with reference to the control of breathing.
- (a) the increase in ventilation in exercise is proportional to a rise in arterial partial pressure of carbon dioxide (PCO_2).
- (b) the peripheral (arterial) chemoreceptors are stimulated by any form of diminished oxygen content in the arterial blood.
- (c) in adult man, afferents carried in the vagus nerves play no part in the control of breathing.

- (d) breathing can continue when the brainstem is the only functioning part of the brain.
 - (e) breathing can be influenced voluntarily via direct pathways from the cerebral cortex to spinal motoneurons.
 - (ii) What are the factors that affect the Haemoglobin - Oxygen (HbO_2) equilibrium curve? Indicate how each factor affects the curve.
 - (iii) Discuss the mechanisms of Carbon dioxide (CO_2) transport by blood.
- Q.6** Discuss in detail the anatomical and functional organisation of the autonomic nervous system including transmission mechanisms and its general functions.
- Q.7** Discuss the importance of the pancreas in digestion with emphasis on enzymes secreted and control of pancreatic secretion.
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END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY FIRST SEMESTER EXAMINATIONS - MARCH 1998

VMD 511

VETERINARY CLINICAL PATHOLOGY

TIME: THREE HOURS

MAXIMUM MARKS: 40

INSTRUCTION: ANSWER ALL QUESTIONS

Q1. What type of specimens/tissues and which preservative would you use when collecting specimens from suspected cases of the following diseases for laboratory confirmation?
(6)

- A. (i) Babesiosis
(ii) Trypanosomiasis
(iii) Heartwater
(iv) Cryptosporidiosis
- B. (i) Haemorrhagic Septicaemia
(ii) Streptothricosis
(iii) Brucellosis
(iv) Paratuberculosis
- C. (i) Foot and Mouth Disease
(ii) Rabies
(iii) Marek's Disease
(iv) New Castle Disease

Q2. What is exfoliative cytology? Write the advantages and disadvantages of this diagnostic method. Give examples of two conditions/diseases which can be confirmed by this method. Give the names of four stains used for cytology.
(2+2+2+2)

Q3. What do you understand by the word anaemia? Classify anaemia according to morphology and etiology. Give the complete normal haemogram of an adult dog and horse.
(2+4+2+2)

Q4. A Bovine Holstein female aged 4 years old was presented before a vet with following presenting signs and complaints. Off feed for 2 days, milk production greatly reduced. On physical examination, pain elicited on palpation over xyphoid cartilage, grunts when walking and sometimes forelimb lameness. There was dehydration, poor rumen motility and the temperature was 103°F. The blood was collected in EDTA and following blood values were provided by the technician.

RBC x 10 ⁶ /ul	4.6
Hemoglobin (g/dl)	9.8
PCV (%)	28%
WBC x 10 ³ /ul	13
Band neutrophils (ul)	216
Seg. neutrophils (ul)	9200
Lymphocytes (ul)	2160
Monocytes (ul)	108
Eosinophils (ul)	108
Toxic neutrophils	Many
Fibrinogen	1 gm/dl

(a) Based on the above values find out the blood indices.
(2)

(b) Interpret the haemogram.
(2)

(c) Give the diagnosis based on blood values keeping in mind the leucocytes and justify your diagnosis.
(4)

Q5. Write short notes on the following:

- (i) Fibrinogen
- (ii) Reticulocytes
- (iii) Polycythaemia
- (iv) M:E ratio

(8)

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY FIRST SEMESTER EXAMINATIONS - MARCH 1998

VMD 531

VETERINARY EPIDEMIOLOGY

TIME: THREE HOURS

ANSWER: ALL FIVE QUESTIONS

1. (a) An experiment was carried out to find the impact of depriving piglets colostrum on weaning weights of two groups of piglets. Group A was manually fed colostrum while Group B was not. At weaning 3 weeks after littering, the weights were as follows:

Group A

6.4, 5.7, 4.7, 6.1, 5.4, 5.9, 6.5, 6.1, 5.1,
5.4, 6.8, 5.9, 5.2, 6.3, 5.4, 6.9, 4.2, 5.6,
4.6, 6.0, 5.4, 6.4, 5.7, 4.9, 6.0, 6.2.

Group B

5.2, 4.5, 6.3, 4.8, 2.6, 3.8, 6.3, 5.0, 4.0,
4.2, 3.4, 4.3, 3.4, 4.4, 5.6, 4.7, 5.1, 4.5,
4.1, 4.2, 6.3, 5.3, 5.2, 4.5, 5.1, 5.6.

Summary statistics for group B are, the mean = 4.71,
standard error = 0.1793.

(i) Calculate

- The mode
- The median
- The arithmetic mean
- The confidence interval for group A, showing your calculations.
- Using the above statistics compare and contrast between the two groups.

(ii) Calculate

- apparent prevalence
- true prevalence
- sensitivity and specificity of the screening test
- the diagnostibility of the screening test

- (b) An area with a total cattle population of 10,000 is thought to have EBL with a probable prevalence of 30%

Determine the sample size needed to estimate the prevalence with a bound on error of estimation equals 5% and confidence level 95%.

(10 points)

2. (a) Define and classify carrier state. What do you understand by antigenic variation?
- (b) Name and briefly describe the methods of disease transmission.
- (c) Briefly explain how man acts as an environmental determinant of disease.
- (d) Briefly describe the basic epidemic theory. State the factors that influence the shape of epidemic curves.
- (e) A sample of 1000 cattle was tested for the presence of a disease causing agent using a diagnostic test with 90% sensitivity, 90% specificity and 1% true prevalence.

Calculate

- (i) Apparent prevalence
- (ii) Diagnosibility
- (iii) Positive predictive value

(15 points)

3. (a) What do you understand by association? Name and briefly describe types of association.

- (b) Define the following terms:

- (i) Sufficient cause
- (ii) Necessary cause
- (iii) Predisposing factor
- (iv) Precipitating factor
- (v) Confounding factor

- (c) Consider the following data derived from a cross-sectional study of the relationship between dry cat food (DCF) and feline urologic syndrome (FUS) and summarised as followed:

	FUS+	FUS-	TOTAL	RATES OF FUS
DCF+	13	2163	2176	?
DCF-	5	3349	3354	?
Totals	18	5512	5530	?
Proportion DCF+	?	?	?	

The test statistic at 5% (or 0.05) significance levels 3.84

- (i) Fill in the missing pieces of information into the above 2 x 2 table.
- (ii) Calculate the chi-square statistic and interpret your result in relation to the test statistic given above.
- (iii) Calculate the following parameters and interpret each result
 - the relative risk (RR)
 - the odds ratio (OR)
 - the attributable rate (AR) and
 - the attributable fraction (AF)
- (d) What is the primary objective of monitoring and/or surveillance. How is CBPP monitored in Zambia?
- (e) A disease breaks out in a certain area with a high density of cattle and you are called in to investigate this outbreak. Name any three major questions on which your investigation is likely to be based.

How would you go about finding answers to these questions (be brief)?

(15 points)

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY FIRST SEMESTER EXAMINATIONS - MARCH 1998

VMD 641

PREVENTIVE VETERINARY MEDICINE

TIME: 3 HOURS

ANSWER: ALL QUESTIONS

1. (a) Define Preventive Veterinary Medicine and state its relationship with Epidemiology. Give reason(s) for this relationship. What is involved in the population unit?

(b) Define and classify livestock movement control and state how it is enforced in Zambia.

(4 points)
2. (a) State the requirements of an ideal vaccine and briefly discuss factors that could influence the animal's response to vaccination.

(b) Define disinfection and briefly describe disinfection methods.

(c) Name and briefly describe types of vaccines.

(6 points)
3. (a) Define environmental control and describe how it is performed.

(b) What is depopulation and under what circumstances is it put into use?

(c) Name and briefly describe the main vector control strategies. Which one is the most applicable for Zambia and why?

(6 points)
4. (a) Briefly state the criteria for selecting farmers to participate in a herd health programme.

(b) What are the main causes of reproductive inefficiency in the dairy herd and how would you correct them?

(c) State the targets of performance in the swine herd.

- (d) As a herd health veterinarian, what advice would you be expected to give during your scheduled visits to your participating beef herds.

(8 points)

5. (a) Briefly discuss how you would control ticks on a game ranch.
- (b) Name two diseases of ranched crocodiles and briefly discuss their control.
- (c) Briefly discuss the role of wildlife in the epidemiology of the following diseases:
- (i) Anthrax
 - (ii) Malignant catarrhal fever
 - (iii) Foot and mouth disease (FMD)
- (d) Outline the advantages of game ranching over livestock.
- (9 points)
6. (a) Briefly describe the methods of the prevention and control of Salmonella gallinarum infection on a breeding chicken farm.
- (b) Briefly describe 3 most important non-drug therapeutic methods of fish. How would you commonly administer drug therapy to fish in a pond or small lake?
- (c) Briefly describe the causative agents, natural habitants and ecological aspects of Motile Aeromonas Septicemia.
- (7 points)

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY EXAMINATIONS-FIRST SEMESTER-MARCH, 1998

VMD 651

VETERINARY PUBLIC HEALTH

TIME: THREE HOURS

ANSWER: ALL QUESTIONS TO BE ATTEMPTED

All questions to be attempted.

- 1.) Name the most common potentially mastitogenic micro-organisms of dairy cows and the disease they may cause in humans as a result of consumption of such a raw milk contaminated with the pathogens. From the Public Health point of view, how would you prevent such pathogens in a commercial dairy processing plant in a developing country? (4+4)
- 2.)
 - a.) Describe the epidemiology, prevention and control of Bubonic plague and Ebola disease. (4)
 - b.) Define bacterial food poisoning. Discuss the prevention and control of food poisoning caused by two bacteria. (4)
3. You are a veterinarian in charge of Livingstone district and has been requested to help in designing an abattoir for a local population.
 - a.) List down a number of considerations to be taken into account when designing such an abattoir. (3)
 - b.) What are the main objectives for conducting ante-mortem inspection? (3)
 - c.) Outline, briefly, the final judgement options to a veterinarian following an ante-mortem inspection. (2)
- 4.) During a post-mortem meat inspection, you came across cysts in the masseter muscle upon making an incision. One of the cysts is embedded in a thickened opaque and grayish-white color capsule.
 - a.) What is the name of the parasite? How would you evaluate the entire carcass and state why? (3)
 - b.) Briefly, discuss the life cycle of this parasite. (2)
 - c.) How would you prevent humans from contracting infections from such parasites? (3)
- 5.) Anthrax has been suspected in one carcass at ante-mortem inspection.
 - a.) Briefly, discuss the immediate steps to be taken by the veterinarian in charge of the operations. (4)
 - b.) Indicate how you would go about disinfecting the premises and with which chemicals. (4)

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY FIRST SEMESTER EXAMINATIONS - MARCH 1998

VMP 411

GENERAL VETERINARY PATHOLOGY

TIME : THREE HOURS

ANSWER : ALL QUESTIONS

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1. Define necrosis and describe the different types of necrosis which can occur. (20 marks)
 2. Write short notes on each of the following: (4 marks each)
 - (a) Rigor mortis
 - (b) Metastatic calcification
 - (c) Atrophy
 - (d) Host reaction against protozoan parasites
 - (e) Immediate hypersensitivity (anaphylaxis)
 3. List the common disorders of circulation. Describe briefly the etiology, pathogenesis, and consequences of one of the disorders you have listed. (20 marks)
 4. Define inflammation and describe the types of exudate which can occur. (20 marks)
 5. Describe briefly the distinctive tissue and cellular features that are characteristic of malignant tumors. (20 marks)
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END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY FIRST SEMESTER EXAMINATIONS -- MARCH 1998

VMP 441

VETERINARY PARASITOLOGY

TIME: THREE (3) HOURS

INSTRUCTIONS: ANSWER ALL QUESTIONS

PROTOZOOLOGY

Q1. Outline the following topics:

- (a) Classification of Trypanosoma congolense
- (b) Characterization of Coccidia oocysts
- (c) Apicomplexan protozoa
- (d) Biotic Potential and Virulence
- (e) Prey and Predator hosts

Q2. Outline the modes of reproduction in protozoan parasites.

ENTOMOLOGY

Q3. State the various classes of the Phylum Arthropoda and briefly discuss the three (3) important characteristics common to all arthropods.

Q4. Discuss the major differences between the insects that belong to the sub order Nematocera and Cyclorrhapha.

HELMINTHOLOGY

Q5. Compare and contrast the morphological difference between Trematodes and Nematodes by using genus examples.

Q6. (a) What do you understand by the following terminologies?

- Commensalism
- Mutualism and
- Parasitism

(b) Characterise Parasitism

END OF EXAMINATION.

THE UNIVERSITY OF ZAMBIA

UNIVERSITY SECOND SEMESTER EXAMINATIONS - SEPTEMBER 1998

VMB 212

VETERINARY ANATOMY AND PHYSIOLOGY II

TIME : THREE (3) HOURS

INSTRUCTIONS : ANSWER FIVE (5) QUESTIONS. ALL QUESTIONS CARRY EQUAL MARKS

1. (a) Give an account of the location and attachments of the canine stomach in a healthy, well-fed labrador.
(b) Describe the structure of the canine liver, noting its blood supply, neighbouring organs and the impressions that it bears on its surfaces.
2. A transverse section of the spinal cord at the intervertebral foramen can reveal the appearance of a typical spinal cord and spinal nerve. Please describe these structures in detail.
3. Discuss the physiological mechanisms of contraction in skeletal muscle.
4. (i) Briefly describe the composition of the autonomic nervous system outside the central nervous system.
(ii) List major organs innervated by the vagus nerve (i.e cranial nerve number X).
(iii) Describe parts of the brain that can clearly be observed from the dorsal and ventral view.
5. Write short notes on each of the following:-
 - (i) Active transport
 - (ii) Dilution technique
 - (iii) Phagocytosis
 - (iv) Haemoglobin
 - (v) Action potential
6. (a) What is the function of the auditory ossicles. Write brief descriptive notes on each of the three (3) ossicles.
(b) Describe the lacrimal apparatus of the dog. Please, also give an illustration.
7. Define haematocrit. A sample of blood is centrifuged in a glass capillary tube yields the following measurements:
 - (a) Length occupied by plasma is 29mm
 - (b) Length occupied by red blood cells is 21mmWhat is the haematocrit?
What is the slightly less dense layer above the red cells?

END OF EXAMINATION

UNIVERSITY SECOND SEMESTER EXAMINATIONS - SEPTEMBER 1998

VETERINARY EMBRYOLOGY

INSTRUCTIONS: ANSWER ALL QUESTIONS.

1. i) Define the statement “mammalian ontogenetic development”. Briefly outline the developmental stages involved. (3 marks)

ii) What is capacitation? In which part/s of the female reproductive tract does it occur? (1marks)

iii) What structures are shed from the ovary at ovulation in the bitch? (1 mark)

iv) Draw a simple labelled diagram of a blastocyst. (3marks)

v) In embryo transfer in cattle, recovering of embryos ~~from~~ is usually done after day 5 post-estrus and before day 8 post-estrus. Explain this. (2marks)
2. i) List in sequence the structures found at the cranial and caudal ends of the embryo before body folding occur. (2marks)

ii) What are the typical external features of a 10mm CR mammalian embryo? (2marks)

iii) Define gastrulation. (1mark)

iv) Briefly describe how the following forms (4 marks)

a. Primitive streak b. Notochord

v). What adult structures are derived from the intra-embryonic coelom? (1mark)
3. i) List the foetal membranes that occur in mammals? (1mark)

ii) What structures constitute the umbilical cord? (2marks)

iii) For each of the following placenta list the domestic species that fall in the category (3marks)

a. Villous b. Labyrinthine c. Diffuse

iv) In one sentence define the following (2marks)

a. Marginal hematoma b. Syncytiotrophoblast

v) In what respect would the early placenta differ from the placenta of late pregnancy in the sow? (2marks)

4. i) List the blood vessels that drain into the sinus venosus. (2marks)

ii) What structures of the heart tube contribute to the definitive right and left atria? (2marks)

iii) Name the derivatives of the truncus arteriosus? (1mark)

iv) Briefly outline the pattern of arterial out flow from the foetal heart. (2marks)

v) In one sentence define the following (3marks)

a. Cardiac Jelly b. Ligamentum venosum c. Eisenmenger complex

5. i). Which germ layer/s form the gut wall? (2marks)

ii) Define the statement “physiological herniation of the mid gut” How does this occur? (3marks)

iii) What is the precise site of development of the pancreas? (1mark)

iv) List the structures derived from the foregut. (2marks)

v) Trace the line of attachment of the lesser omentum. (2marks)

6.i). Name the different types of kidneys that occur in vertebrates. (1marks)

ii) Which embryonic germ layer give rise to the urogenital system? (1mark)

iii) How is the mesonephric duct formed? Which adult structures are derived from this duct? (3marks)

iv). In the female which structures are derived from the urogenital sinus? (2marks)

v) Briefly describe the origin and development of the permanent kidney of mammals. (3marks)

7. i). Briefly explain the development of the following (8 marks)

a. Internal ear b. Tooth

ii). What adult structures are derived from (2marks)

a. Mullerian duct b. Wolffian duct

8. i). Describe the origin and development of the following (8marks)

a. Tongue b. Long bone

ii) What adult structures are derived from

(2marks)

a. Rathke's pouch

b. Meckel's cartilage

9. i) Name the structure(s) in adult derived from the following embryonic structure

a. Sclerotomes

b. Occipital somites

c. Notochord

d. First pharyngeal cleft

e. Third ~~First~~ pharyngeal pouch

f. Metencephalon

g. Diencephalon

h. Intermediate mesoderm

(8 marks)

ii) Define the term "teratology". At what developmental stage (s) is susceptibility high

(2marks)

10. i) What is gametogenesis?

(1 mark)

ii) Write short notes on any three of the following

(9 marks)

a. Primordial germ cell

b. Freemartin

c. Neural crest cells

d. Desmocranium

END OF EXAM

THE UNIVERSITY OF ZAMBIA
UNIVERSITY SECOND SEMESTER EXAMINATIONS - SEPTEMBER 1998

VMB 312

VETERINARY ANATOMY

TIME: THREE(3) HOURS

INSTRUCTIONS: ANSWER ANY (5) FIVE QUESTIONS.

1. List the lymph nodes of the head in ruminants including the general area of drainage for each node you mention. How does the lymph reach the thorax?
2. Write short notes on any three of the following
 - a. Penis of the boar
 - b. Age estimation in cattle
 - c. Ligamentum nuchae of the horse
 - d. Structures of the passive stay apparatus of the equine forelimb.
3. Describe the innervation of the forelimb of the horse. Which nerves innervate structures distal to the carpus. How can these nerves be blocked and why?
4. Trace the pass taken by ingesta from the stomach to the rectum in the horse, pointing out possible sites of impaction. Describe how the various segments of the large intestines may be distinguished from each other in the horse.
5.
 - a. Describe the anatomical location and chief relations of the guttural pouch.
 - b. Explain the factor/s which may lead to infection of the guttural pouch and the possible sequelae.
 - c. Describe the various routes to drain the an infected guttural pouch.

6. Give a detailed description of the equine stomach noting its structure, topographic position, innervation and blood supply. Also indicate those features that are different from other species.

7. Describe the salient features of the avian respiratory system with special emphasis on the air sacs.

END OF EXAM

THE UNIVERSITY OF ZAMBIA
UNIVERSITY SECOND SEMESTER EXAMINATIONS – AUGUST, 1998

VMB 332

VETERINARY BIOCHEMISTRY II

TIME: THREE HOURS

ANSWER: ALL QUESTIONS IN SECTION A
 THREE QUESTIONS IN SECTION B

SECTION A

1. Write **short notes** on the following:
 - i.) Essential amino acids
 - ii.) Positive nitrogen balance
 - iii.) Trypsin. (8-marks)
2. Describe the role of uric acid, including its synthesis. (8-marks)
3. Discuss the importance of nitrogen fixation. (8-marks)
4. Explain how a repressor protein molecule affects gene activity. (8-marks)
5. Outline the synthesis of lactose by the mammary gland. (8-marks)

SECTION B

- 1.)
 - a.) Describe the reaction of glutamate dehydrogenase
 - b.) How is it linked with transaminase reactions and amino acid degradation?
 - c.) Can aminotransferases be used in clinical diagnosis? (20-marks)
- 2.) Describe the molecule which carries the genetic code from the chromosome to the ribosome, giving its structure, synthesis and function. (20-marks)

- 3.) a.) Describe the four major classes of plasma lipoproteins. (5-marks)
- b.) Two fractions of lipoproteins, one containing high density lipoproteins (fraction A), and the other containing high density lipoproteins plus low density lipoproteins (fraction B) were separated from a cow's plasma. 3.0 ml of each fraction was saponified with potassium hydroxide and later mixed with 1.5 ml of sodium metaperiodate solution and 0.75 ml of acetyl acetone and incubated for 30 minutes at 60°C. 3.0 ml of cow plasma and 3.0 ml of standard tripalmitin (at concentration of 60 µg/dl) were treated in a similar manner. The tubes containing the treated samples were cooled and the absorbances read at 405 nm. The results were as follows:

SAMPLE	ABSORBANCE _{405 nm}
Fraction A	0.190
Fraction B	0.250
Standard	0.200
Plasma	0.370

Calculate the concentration of:

- i.) High density lipoproteins
- ii.) Low density lipoproteins
- iii.) Very low density lipoproteins

Express the values as mg/dl plasma. (15-marks)

- 4.) Discuss ruminant energy metabolism. (20-marks)

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA
UNIVERSITY SECOND SEMESTER EXAMINATIONS
SEPTEMBER, 1998

VMB 342
VETERINARY PHYSIOLOGY II

TIME: THREE HOURS

ANSWER: ANY FIVE QUESTIONS

- 1.) Write short notes on the following:
 - i.) Hormonal regulation of milk ejection
 - ii.) Ovulation in avian
 - iii.) Ejaculation in domestic animals
 - iv.) Follicular genesis

(10-marks)

 - 2.) Write brief notes on each of the following:
 - i.) Endocrine functions of the kidney
 - ii.) Fever
 - iii.) Metabolic alkalosis
 - iv.) Respiratory acidosis

(10-marks)

 - 3.) Discuss the different stages of parturition in domestic animals. (10-marks)

 - 4.) Describe the reproductive cycle in a **mare** and clearly elaborate how different female reproductive hormones influence each stage of the cycle. (10-marks)

 - 5.) What thermoregulatory mechanisms are available to a homeotherm at temperature below and above the thermoneutral zone? What metabolic influences can be made due to chronic cold exposure, and what hormones are involved? (10-marks)

 - 6.)
 - i.) What is glomerular filtration rate?
 - ii.) Describe the autoregulatory mechanisms of glomerular filtration rate.
 - iii.) How is the glomerular filtration estimated in clinical practise?

(10-marks)

 - 7.)
 - i.) Describe the relationship of iodine to thyroid function.
 - ii.) Briefly discuss the formation of thyroid hormones.
 - iii.) What is the significance of iodine in livestock production?

(10-marks)
-

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA
UNIVERSITY SECOND SEMESTER DEFFERED/SUPPLEMENTARY
EXAMINATIONS, OCTOBER, 1998

VMB342
VETERINARY PHYSIOLOGY II

TIME: THREE HOURS

ANSWER: ANY FIVE QUESTIONS

- 1.) Write brief notes on each of the following:
 - i.) Autoregulatory mechanisms of glomerular filtration rate
 - ii.) Metabolic alkalosis
 - iii.) Fever.
- 2.) Describe the Renin-Angiotensin-Aldosterone system with regard to the control of blood volume.
- 3.) What are glucocorticoids? Explain the functions of glucocorticoids with regard to energy metabolism in a mammalian body.
- 4.) Describe the different factors affecting growth and development of the mammary glands in domestic animals.
- 5.) Discuss the different stages of the reproductive cycle in a cow and state the influence of reproductive hormones.
- 6.) Describe the endocrine events occurring in a cow to successfully accomplish the process of parturition.

7.) Explain the process of ejaculation in domestic animals. State the site of deposition of the semen, time of ejaculation and the approximate volume of ejaculate in different domestic animals.

END OF EXAMINATION

VETERINARY PHARMACOLOGY

TIME : THREE (3) HOURS

INSTRUCTIONS : ANSWER FIVE (5) QUESTIONS. ALL QUESTIONS CARRY
EQUAL MARKS

1. What do you understand by the terms drug absorption, bioavailability, elimination half-life, volume of distribution and total body clearance. Outline the factors that may affect the gastrointestinal absorption of drugs in domestic animals.
2. Write short notes on:-
 - i) Enzyme induction
 - ii) Plasma protein binding
 - iii) Organophosphorus compounds
 - iv) Furosemide
3. Discuss in detail dissociative and general anaesthetics
4. Write short notes on the following:-
 - i) Suxamethonium, Pancuronium and Guaiphenesin
 - ii) Atropine, Propranolol and Detomidine
 - iii) Lignocaine, Doxapram and Phenobarbitone
 - iv) Etorphine - acetylpromazine combination, Dexamethasone and antitussives.
5. Discuss briefly, giving examples of drugs that can be used to manage congestive heart failure and non-steroidal antiinflammatory drugs (NSAIDs).
6. Describe the different factors that influence the selection of an appropriate antibiotic.
7. Describe the mode of action and the pharmacokinetics of benzimidazole anthelmintics in different domestic animal species. How does this influence their administration and efficacy?

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY SECOND SEMESTER EXAMINATIONS AUGUST 1998

VMC 512.

CLINICAL VETERINARY MEDICINE

TIME: THREE HOURS.

INSTRUCTIONS:

1. PLEASE READ THE INSTRUCTIONS AND EACH QUESTION VERY CAREFULLY.
 2. ANSWER ALL QUESTIONS IN SECTION A AND THREE QUESTIONS IN SECTION B.
 3. WRITE THE ANSWER TO EACH QUESTION IN A SEPARATE ANSWER BOOK.
 4. ALL QUESTIONS CARRY EQUAL MARKS.
-

SECTION A.

1. An 8 month old male Doberman is presented to your clinic with a problem of vomiting immediately after eating. He has also shown difficulties in swallowing for the past three days. The dog has had a ferocious appetite and likes to eat from the dust bin. A week prior to presentation, the dog had been vomiting and anorexic for two days but later improved. The vomitus contains undigested food and no retching is seen by the owner.

The dog is fully vaccinated and is dewormed every month. On examination, the dog is dull and drooling from the mouth. The other parameters are normal.

- a). What is your tentative diagnosis?
- b). Outline the possible pathogenesis of the above problem.
- c). What are your possible differential diagnoses?
- d). What ancillary tests would you perform?
- e). How would you treat this case?

2. An emergent dairy farmer calls you to attend to his cow that suddenly became anorexic and has had a sharp drop in milk yield. He explains to you that three days ago, he ran out of dairy meal and his four cows have since been fed on chopped straw. He further says that there has been ^a problem of ^a water on his farm for the past one week. No treatment has been given.

On examination, the cow is found to have a rectal temperature of 38.9°C, a pulse rate of 68 per minute and a respiratory rate of 36 per minute. On abdominal palpation, you find the rumen to be doughy and the motility to be 1 cycle per 2 minutes.

- a). What is your tentative diagnosis?
- b). What are your differential diagnoses?
- c). Explain how the problem might have occurred.
- d). Describe how you would treat this condition.

3. Mastitis is a common disease in dairy herds in Zambia.

- a). What factors affect the incidence of mastitis?
- b). What specific forms of mastitis do you know?
- c). Give and explain the four degrees of clinical mastitis.
- d). How would you go about diagnosing mastitis?
- e). Compare and contrast the treatment of mild and acute mastitis in lactating cows.

SECTION B

4. Shortly after moving house, a family consulted their new veterinarian with a complaint that their 18-month-old Labrador cross had been behaving strangely, crying persistently

for no reason, wandering restlessly around the house and sitting staring at blank walls. Records from the previous veterinarian showed that the dog had been investigated about 9 months ago for poor weight gain and chronic unthriftiness. Exocrine pancreatic insufficiency had been diagnosed and treated with pancreatic supplementation.

Routine biochemistry tests were done with the following results:

Total protein	5.5 g/dl	(5.5- 7.5)
Albumin	2.1 g/dl	(2.5- 3.5)
Globulin	3.4 g/dl	(3.0- 4.0)
Urea	2.3 mmol	(2-8)
Ammonia	310 mmol/ l	(< 60)
Creatinine	47 mmol/ l	(< 120)
ALT	114 iu/l	(< 100)
ALP	346 iu/l	(< 300)
Bile acids	814 mmol/ l	(< 10)
Fasting bile acids	25 mmol/ l	(< 10)
Post- feeding bile acids	286 mmol/ l	(<15)

a). Comment on the likely significance of such a result in a dog of this age.

What is the probable diagnosis?

b). What tests should be carried out to confirm this?

c). What is the reason for the extremely large increase in bile acids after feeding that is experienced in this condition?

d). What is the next stage in investigation and treatment.

5. Write short notes on 3 (three) of the following:
- a). Greasy pig.
 - b). Mange in pigs.
 - c). Orf in sheep and goats.
 - d). Infectious keratoconjunctivitis
6. An over-weight neutered 4 year old female Labrador is presented to the clinic with severe vomiting. The dog has been vomiting for the past two days and the owner also noted bloody diarrhea. The dog was fed on pork two days prior to presentation. The owner also noted that the dog sits with it's posterior end elevated and is not eating at all. On examination, the dog shows severe abdominal guarding, cold extremities, a fast-thready pulse, delayed capillary refill time and dry mucous membranes.
- a). What are the problems in this case?
 - b). What is your tentative diagnosis?
 - c). List your differential diagnoses.
 - d). What ancillary tests would you perform in a bid to confirm the tentative diagnosis?
 - d). How would you manage this case?
7. A father and his son came to you for help over a skin problem at their farm. The description given by the father suggests Streptothricosis while the son's version suggests either Dermatomycosis or Demodicosis.
- a). What is the etiology, clinical signs and treatment of Streptothricosis?
 - b). Compare and contrast the clinical presentations of the two diseases noted in the son's narration.

THE UNIVERSITY OF ZAMBIA
UNIVERSITY SECOND SEMESTER DEFERRED/ SUPPLEMENTARY
EXAMINATIONS OCTOBER 1998
VMC 512.
CLINICAL VETERINARY MEDICINE

TIME: THREE HOURS.

INSTRUCTIONS:

1. PLEASE READ THE INSTRUCTIONS AND EACH QUESTION VERY CAREFULLY.
 2. ANSWER ALL QUESTIONS IN SECTION A AND THREE QUESTIONS IN SECTION B.
 3. WRITE THE ANSWER TO EACH QUESTION IN A SEPARATE ANSWER BOOK.
 4. ALL QUESTIONS CARRY EQUAL MARKS.
-

SECTION A.

1. A 9- month- old Irish Setter is presented in a comatose state after having eating a meal of chicken. The owner reported that the dog is often dull, depressed, and aimlessly paces after feeding. It occasionally shows episodes of head pressing, periodically it vomits and is polydipsic. Biochemical screening on admission reveals ALP, 245 iu/l; ALT, 22 iu/l; urea, 2.1 mmol/l and creatinine, 80 μ mol/l.
 - a). What is your provisional diagnosis and how would you manage the dog's neurological signs?
 - b). What additional laboratory tests would you perform to confirm the diagnosis?
 - c). What surgical procedure should now be attempted and what parameter should be monitored during surgery?

d). During the post -operative recovery period the dog begins to show signs of hypovolaemic shock. What is the most likely explanation of this complication and how should it be managed?

2. Write a complete account of : -

a). Bloat in cattle (Consider the different etiologies and treatment of each etiologic form).

b). Traumatic reticulopericarditis in cattle.

3. A 2 year old Chihuahua is presented because the owner has noticed it 'scooting' on the ground. The dog also attempts to bite the perineal area and is reluctant to defecate. On examination the temperature was 39.6° and the mucosal membranes were slightly injected. The dog is bright and active.

a). What are your differential diagnoses?

b). What is your tentative diagnosis?

c). What further investigations apart from the above would you carry out?

d). Explain how you would manage this case.

SECTION B

4. A 4 year old Lusaka local breed is presented with anorexia of two days duration. The dog shows hypersalivation and severe halitosis.

On examination pain was noted on attempts to open the mouth. The gingiva showed severe reddening with exposure of the tooth roots. The temperature was 39.1° c.

a). What is your differential diagnosis?

b). What is your tentative diagnosis?

c). Explain how you would manage this case.

5. Small animals with bladder rupture and uroperitoneum deteriorate rapidly and may die from the effects of which of the following- and why?
- a). Peritonitis.
 - b). Alkalosis.
 - c). Hyperkalaemia.
 - d). Hypokalaemia.
 - e). Uremia
6. Discuss in detail two liver conditions in cattle. In your discussion consider the etiologies, clinical signs, pathogenesis and treatment.
7. a). What is flea allergy dermatitis (FAD), and what clinical signs distinguish it from other skin diseases?
- b). How is flea allergy dermatitis diagnosed?
- c). How is the disease best treated or managed?

THE UNIVERSITY OF ZAMBIA

UNIVERSITY FIRST SEMESTER DEF/SUPP EXAMINATIONS - APRIL 1998

VMC 521

VETERINARY SURGERY

TIME: THREE HOURS

INSTRUCTIONS

1. PLEASE READ THE INSTRUCTIONS AND EACH QUESTION VERY CAREFULLY.
 2. ANSWER ALL QUESTIONS IN SECTION A AND THREE QUESTIONS IN SECTION B.
 3. ALL QUESTIONS CARRY EQUAL MARKS.
-

SECTION A

1. a) Discuss the pre-anaesthetic considerations for a 10 year old, 20 kg Doberman with gastric dilation and volvulus.
b) What anaesthetic regime would you use in the above case?
2. a) Define the following terms
(i) Anaesthesia
(ii) Analgesia
(iii) Dissociative anaesthesia
(iv) Sedative
b) (i) List the common causes of wounds and classification of wounds.
(ii) How would you manage a four day old degloving wound of the forelimb.
3. Describe one local anaesthetic technique which you would use for each of the following surgical procedures.
a) Caesarean section in a 450 kg friesian cow.
b) Digital amputation in a 200 kg bullock with severe coffin joint arthritis.
c) Amputation of a necrotic tail of a work ox.
d) Cosmetic dehorning of a steer to be presented at this year's Agriculture and Commercial Show.

SECTION B

- a) Discuss how improper preparation procedure of the surgical patient may contribute to contamination of the surgical wound.
- b) Outline the important considerations for fluid therapy in a diarrhoeic puppy.

Write short notes on the following:

- (i) Flow rates
- (ii) Intermittent positive pressure ventilation
- (iii) External cardiac massage
- (iv) Analgesia in the surgical patient

a) Write short notes on the following:

- (i) Three absorbable suture materials of your choice
- (ii) Three non-absorbable suture materials of your choice

b) Write short notes on classification of suture patterns.

Write briefly on all of the following:

- a) General anaesthesia in a Gold fish with a solitary mass on the skin.
- b) Anaesthesia for capture of wild ruminants to be introduced on a game ranch.
- c) Use of dissociative anaesthesia in laboratory rodents
- d) The application of injectable anaesthesia to mice.
- e) Use of inhalation anaesthesia in a Buff adder.

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY SECOND SEMESTER EXAMINATIONS AUGUST 1998

VMC 522.

VETERINARY OPERATIVE SURGERY 2.

TIME: THREE HOURS.

INSTRUCTIONS:

1. PLEASE READ THE INSTRUCTIONS AND EACH QUESTION VERY CAREFULLY.
 2. ANSWER ALL QUESTIONS IN SECTION A AND THREE QUESTIONS IN SECTION B.
 3. WRITE THE ANSWER TO EACH QUESTION IN A SEPARATE ANSWER BOOK.
 4. ALL QUESTIONS CARRY EQUAL MARKS.
-

SECTION A.

1). Outline the radiographical findings of the following:

- a). Right renomegaly.
- b). Upper intestinal obstruction.
- c). Congestive heart failure.
- d). Pleural effusion.
- e). Osteosarcoma of the humerus.

2). Precisely define the term hernia.

Write detailed notes on how you would go about performing umbilical herniorrhaphy on a six month old Jersey heifer. Include pre- op, anaesthesia, post-op considerations, and possible complications.

- 3). List the structures adjacent to the equine navicular bone. Briefly describe one condition (clinical features, management) of one such structure.

SECTION B

- 4). A nine month old ^{male} dog that you have been treating for diarrhea over the past week is presented to your clinic with a pink mass protruding from the perineal area. The patient is active but is straining constantly. On examination, the mass shows severe discoloration and lacerations. On digital palpation, a fornix is felt.
- What are your differential diagnoses?
 - What is your tentative diagnosis?
 - Describe how you would manage this case.
- 5). Write short notes on the surgical management of the following:
- Proximal enteritis (horse).
 - Intussusception (Calf).
 - Squamous cell carcinoma of the eye area in: i). Beef cow.
ii). Horse.
- 6). List six common approaches to the abdominal cavity in veterinary surgery and write exhaustively on three of the listed approaches.
- 7). Define a). "Quittor".
- "Ringbone".
 - "Spavin".
- and state how you would diagnose and treat two of them?

THE UNIVERSITY OF ZAMBIA

UNIVERSITY SECOND SEMESTER DEFERRED/ SUPPLEMENTARY

EXAMINATIONS OCTOBER 1998

VMC 522.

VETERINARY OPERATIVE SURGERY 2

TIME: THREE HOURS.

INSTRUCTIONS:

1. PLEASE READ THE INSTRUCTIONS AND EACH QUESTION VERY CAREFULLY.
 2. ANSWER ALL QUESTIONS IN SECTION A AND THREE QUESTIONS IN SECTION B.
 3. WRITE THE ANSWER TO EACH QUESTION IN A SEPARATE ANSWER BOOK.
 4. ALL QUESTIONS CARRY EQUAL MARKS.
-

SECTION A.

1. Describe the radiological features of the following small animal conditions:
 - a). Pyometra.
 - b). Cranial mediastinal mass
 - c). Nasal neoplasm.
 - d). Splenomegaly.
2. Describe in detail, two methods of correcting left abomasal displacement in a dairy cow. Include pre-op considerations, anaesthesia, surgical techniques, post-op considerations, complications and prognosis.

3.
 - a). How is an ultrasound image produced?
 - a). What is the major advantage of a sector transducer over linear transducer?
 - b). Describe three of the following imaging artifacts: -
 - i). Acoustic shadowing.
 - ii). Side lobe artifacts.
 - iii). Reverberation artifacts.
 - iv). Mirror image artifact.

SECTION B

4. Write short notes on how each of the following may affect the production of a diagnostic radiograph:
 - a). Scatter radiation.
 - b). Kilovoltage peak.
 - c). Exposure time.
 - d). object: film distance.
5. Describe the surgical approach and procedure for the treatment of recurring small intestinal intussusception in a dog.
6.
 - a). Describe how you would go about performing flexion tests on the pastern/ fetlock, carpus and hock joints. Of what diagnostic value is each of these tests in relation to named disease conditions?
 - b). Write short notes on the management of equine laminitis.
7. List the main indications for a total splenectomy and describe the surgical approach and how you would carry out the procedure.

THE UNIVERSITY OF ZAMBIA
UNIVERSITY SECOND SEMESTER EXAMINATIONS-SEPTEMBER 1998

VMC 532

THERIOGENOLOGY I

TIME: THREE HOURS

INSTRUCTIONS

1. PLEASE READ THE INSTRUCTIONS AND EACH QUESTION VERY CAREFULLY.
 2. ANSWER ALL QUESTIONS IN SECTION A AND THREE QUESTIONS IN SECTION B.
 3. ALL QUESTIONS CARRY EQUAL MARKS.
-

SECTION A

1. Mrs. Nthemba, a good family friend, pops into your Clinic with her 4 year old female Maltese named "Sassie" to congratulate you on your election as Southern African Veterinary Association President. During the "dragging" conversation, she mentions to you that her bitch has recently been drinking more than usual and runs out frequently to relieve herself. All she remembers is a blood tinged vaginal discharge about 9 weeks ago which she was told was normal by Dr. Kambani of Matero Veterinary Clinic. Mrs. Nthemba also remembers, but considers unrelated to the present condition, that Dr. Kambani treated Sassie with a progestagen when she first had the same blood tinged discharge at about 8 months of age.

Sassie looks well to you on visual inspection but just to be sure you request your assistant to collect a blood specimen from Sassie. The Laboratory results are as follows;

WBC($\times 10^3$ /ul)	43.3	Band Neutrophils	6.0%
RBC ($\times 10^6$ /ul)	5.78	Segmented Neutrophils	80%
PCV (%)	34	Lymphocytes	6.0%
Plasma Protein (g/dl)	10.7	Eosinophils	0%
Hb (g/dl)	11.7		
BUN (mg/dl)	30.7		
Creatinine (mg/dl)	1.5		

- a) What is your tentative diagnosis?
- b) What is/are the predisposing factor(s)?
- c) How would you manage this particular case, bearing in mind that Mrs. Nthemba desperately wants a litter from Sassie?
- d) List two other options for treating such cases.
- e) Was your medical opinion/management going to be different from that of Dr. Kambani's at 8 months? If different, how would you have handled the case?

2. Mr. Ohlosunny, whose pedigree Dorper ewe has been making frantic efforts to deliver for the past 45 minutes contacts you for assistance. He informs you that only three foetal legs are visible at the vulva. You dash to his farm and on vaginal exploration find the disposition as illustrated in Figure 1.
- (a) What is your full obstetrical diagnosis?
- (b) Discuss the manipulative delivery in this case.
- (c) You try for 20 minutes to correct the disposition but fail. Briefly describe an alternative method to achieve live delivery.
- (d) Briefly explain the principles of resuscitating a neonatal calf.
3. Since you are the only reputable dairy cattle practitioner in the area, the Kasisi Dairy Farmers Union finds it befitting to invite you to give a talk during their annual field day. The theme of your talk is 'Uterine involution in dairy cattle and factors that influence it'. Discuss the pertinent points of your talk to these farmers.

SECTION B

4. Vaginal prolapse is a common condition of the cow, ewe, sow and the bitch. Compare and contrast the aetiology, predisposing factors, clinical signs, treatment and prognosis in these species.
5. (a) Briefly discuss the management of retained foetal membranes in the cow and the mare.
- (b) Name four ways of determining whether or not a sow is pregnant. Which two can the farmer use?
- (c) List the predisposing factors of "ringwomb" in the ewe.
- (d) IF YOU SAW A COW THAT HAD RAPIDLY ENLARGING ABDOMEN LATE IN PREGNANCY WHAT WOULD YOU SUSPECT? HOW WOULD YOU TREAT THE CONDITION AND WHAT WOULD YOUR PROGNOSIS BE?
6. Write short notes on :
- (a) Stages of parturition in the mare.
- (b) Why the cow has the highest incidence of uterine torsion among the domestic animals.
- (c) Pseudopregnancy in does.
- (d) Two methods of synchronising oestrus in the sow.
7. (a) Mr. Kambilo's 5 year old Bull Mastiff bitch delivered 10 healthy puppies without complications. Three weeks into the post-partum period the bitch still had an intermittent red-tinged vulval discharge. Other than that, the bitch was alert, had a good appetite and mothering instinct. When he consulted Dr. Smellie of Goma Lakes Clinic, he relieved Mr. Kambilo anxiety by confirming that it was normal for bitches to have a discharge during their post-partum period.
- The puppies were weaned at two months, but two weeks later Mr. Kambilo found the bitch in a "collapsed" state in his garden. The only significant observation he recalls was that the

vulva had remained blood tinged from the day of whelping. He rushes the bitch to your Clinic.

- (i) What is your tentative diagnosis?
- (ii) Do you agree with Dr. Smellie's opinion at three weeks? If not, discuss how you would have dealt with the case.
- (iii) Briefly explain the medical management of this case.
- (b) Describe the mechanism of ovulation in the queen. Outline method(s) to control it artificially.

1. PLEASE READ THE END OF EXAMINATION QUESTION VERY CAREFULLY.
2. ANSWER ALL QUESTIONS IN SECTION A AND THREE QUESTIONS IN SECTION B.
3. WRITE THE ANSWER TO EACH QUESTION IN A SEPARATE ANSWER BOOK.
4. ALL QUESTIONS CARRY EQUAL MARKS.

SECTION A

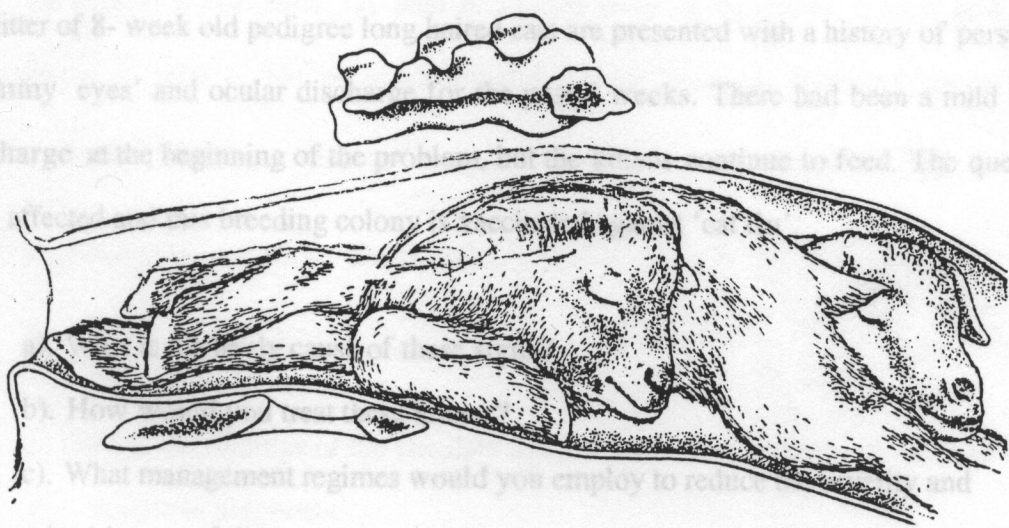
1. A litter of 8-week old pedigree longhorn puppies is presented with a history of persistent 'gummy' eyes' and ocular discharge. There had been a mild nasal discharge at the beginning of the problem. The puppies are reluctant to feed. The queen is not affected and is breeding normally.
- 
2. What management regimes would you employ to reduce the incidence of disease.

FIGURE 1.

2. An Angoni cow is presented to you. Upon examination you find that the cow is blind, bellows any how and shows ataxia and convulsions.

THE UNIVERSITY OF ZAMBIA

UNIVERSITY SECOND SEMESTER EXAMINATIONS AUGUST 1998

VMC 612.

CLINICAL VETERINARY MEDICINE

TIME: THREE HOURS.

INSTRUCTIONS:

1. PLEASE READ THE INSTRUCTIONS AND EACH QUESTION VERY CAREFULLY.
 2. ANSWER ALL QUESTIONS IN SECTION A AND THREE QUESTIONS IN SECTION B.
 3. WRITE THE ANSWER TO EACH QUESTION IN A SEPARATE ANSWER BOOK.
 4. ALL QUESTIONS CARRY EQUAL MARKS.
-

SECTION A.

1. A litter of 8- week old pedigree long haired cats are presented with a history of persistent 'gummy eyes' and ocular discharge for the past 4 weeks. There had been a mild nasal discharge at the beginning of the problem, but the kittens continue to feed. The queen is not affected and this breeding colony is vaccinated against 'cat flu'.
 - a). What is the likely cause of these signs?
 - b). How would you treat these kittens?
 - c). What management regimes would you employ to reduce the severity and incidence of disease.
2. An Angoni cow is presented to you. Upon examination you find that the cow is blind, bellows any how and shows ataxia and convulsions.

- a). What is your diagnosis?
- b). What are your differential diagnoses? (please explain in detail).
- c). How would you treat the condition?

3. Discuss the following diseases:

- a). Spinal abscess in pigs.
- b). Cerebro-cortical necrosis in sheep.
- c). Rabies in cattle.
- d). Aujeszky disease in pigs.

SECTION B

4. A 5 year old male Great Dane recovering from a severe lower urinary tract infection is presented with a back pain of a week's duration. The dog is inactive and is not eating.

On clinical examination, the pain is located to be in the dorsal lumbar area. The temperature is 39.9°C. No other abnormalities were detected. Haematology revealed normal results. The dog is vaccinated regularly and dewormed every 6 months.

- a). What is your tentative diagnosis?
- b). What are your differential diagnoses?
- c) Outline the findings of the ancillary test (s) you would perform in order to reach a definitive diagnosis.
- d). How would you manage this case?

5. You are presented with a Friesian cow with a complaint of sudden drop in milk yield and complete anorexia. Through a discussion with the farmer you establish that he has 500 cows and 2 weeks ago he transferred half of these cows into a newly constructed barbed wire paddock and this cow is among the others in the new paddock.

Clinical examination reveals that the cow is reluctant to move, it stands with an arched and rigid back. The abdominal wall is tense and the cow has a tucked-up appearance. Rectal temperature is found to be 39.8°C, the respiratory rate is 40/min and pulse is 120/min. There are no ruminal movements. Application of firm pressure on the xiphoid elicits a grunt which is heard more clearly with tracheal auscultation.

- a). What is your tentative diagnosis?
- b). Give your differential diagnoses.
- c). How would you confirm your diagnosis?
- d). How would you treat and prevent this condition?
- e). What sequelae can you expect from this condition?

6. A 10 year old Domestic Shorthaired cat is presented with to your clinic by a referring veterinarian who writes that the cat has had a temperature of 39.9°C for 3 1/2 weeks. The only other signs seen were lethargy, anorexia, weight loss and respiratory distress. He had diagnosed pneumonia and put the cat on tetracycline with no resolution of the problem.

- a). How would you go about determining the cause of the signs seen?

b). You decide to carry out a thoracic tap and a small amount of purulent material is aspirated. What is your diagnosis?

c). Describe how you would manage this case.

7. a).How would you manage a case of organophosphate poisoning in ruminants during dipping?

b). The same herd has had recent access to *ad- lib* salt/ urea licks and a few mortalities have occurred. What other clinical signs would you notice and how would you manage the condition?

c). What would your advice to both the dip tank and feedlot manager be?

The University of Zambia
University Second Semester Examination- August 1998-

Veterinary Clinical Pathology
(VMD 512)

Time:	Three Hours
Total Mark:	100
Instructions	Answer all questions

- Q.1 Choose five of the following conditions and name the enzyme(s) of choice for a definitive diagnosis in a clinical laboratory.
- a. Liver necrosis in the dog. (4 marks)
 - b. Skeletal muscle degeneration. (4 marks)
 - c. Biliary obstruction in the cat. (4 marks)
 - d. Liver necrosis in cattle. (4 marks)
 - e. Acute pancreatitis in the dog. (4 marks)
 - f. Canine osteosarcoma. (4 marks)
 - g. Cardiac infarction. (4 marks)
- Q2. Clinical enzymology has been the most rapidly developing field in clinical chemistry. Demonstration that specific serum enzyme activity increases with disease stimulated investigators to evaluate a number of enzyme systems in search of those that are organ or tissue specific. List and VERY briefly describe some of the conditions for an enzyme to qualify before its acceptable for use in medical practice. (20 marks)
- Q.3. Microscopic examination of faeces is widely used as a diagnostic tool in a helminthology laboratory to check for the presence or absence of eggs or the parasites themselves. This method has further been found very useful as a pancreatic function test because its very easy but reliable. Describe briefly, what substances to look for and their appearance under the microscopy in faeces from dogs with chronic exocrine pancreatic deficiency. (20 marks)
- Q.4. When would you carry out a liver function test? (20 marks)

5. Write the importance of urinalysis to a clinician. What are the different methods of urine collection for its analysis and different examinations to be conducive.
A spayed dog aged 12 years with a history of vomiting, polydipsia, polyuria and weight loss was presented and a sample was taken. The following results were obtained following urinalysis: (20 marks)

Appearance	cloudy yellow.
Specific gravity.....	1.020
pH.....	5.4
Protein.....	Trace
Glucose.....	++++
Ketone.....	+++
Blood.....	(-)
Bilirubin.....	(-)
WBC.....	1 - 5 / hpf
RBC.....	Nil / hpf
Casts.....	None
Crystals.....	None
Bacteria.....	1 / hpf

Give your definitive diagnosis based on the above urine analysis keeping the symptoms in mind.

END OF EXAMINATION

The University Of Zambia
University Second Semester Examination, 1998

Veterinary Extension and Jurisprudence
(VMD 612)

Time: Three hours
Instruction: Answer All Questions.
Marks: 100

1. What do you mean by the term “euthanasia” and what are its objectives in Veterinary Medicine. Describe the different methods, giving advantages and disadvantages of each method. As a veterinary surgeon what principles you would like to follow when advising an euthanasia of a horse suffering from lung adenocarcinoma? (20)
 2. Write an essay on the examination of haem stains emphasising its significance in Veterinary Jurisprudence. (20)
 3. What do you understand by the term veterinary ethics? As a registered Veterinary Surgeon in Zambia, what are the different principles of veterinary ethics you would like to follow and be followed by your colleagues. (20)
 4. Write the different extension methods. How would you introduce a compulsory vaccination programme against anthrax in a particular area of traditional farming in Mongu and Sesheke district of Zambia if the farmers are against vaccination and believe (due to ignorance and rumors) that the vaccination can cause the disease? (20)
 5. Write short notes on the following: (20)
 - i. Contact man and contact farmer
 - ii. Veterinary Surgeon's act and Stock Disease Control Act
 - iii. Stock Movement Permit and Soundness Certificate
 - iv. Oath and Evidence
 - v. OIE and IBAR
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End of Examination

The University of Zambia

University Second Semester Examination-August 1998

Veterinary Public Health
(VMD 652)

Time: Three hours

Total Mark: 100

Instructions: Answer all questions from section A and any two from section B

Section A (60 marks)

- Q1. Give a detailed systematic description of a drinking water purification system and purification processes. (18 marks)
- Q2. (a) List the various categories of disinfectants and their corresponding objects of disinfection. (6 marks)
- (b) Define the term “pesticide” and give examples of major pesticide types. How are these pesticides important to the human environment? (10 marks)
- Q3. You have just been called to attend to a case of a rabid dog that was hit by a vehicle on a highway.
- (a) State the reasons why you should attend to the call immediately? (4 marks)
- (b) How would you go about disposing the dog cadaver? State reasons for your method of choice. (4 marks)
- (c) Differentiate between a gnotobiotic animal and a specific pathogen free (SPF) animal. (4 marks)
- Q4. As a government Veterinary Officer you intend to embark on a comprehensive rabies control programme in your district.

- (a). State your would be objectives for such a programme? (4 marks)
- (b) What type of information would you require to run such a programme?
(6 marks)
- (c) Discuss the various optional control measures you can apply. (4 marks)

Section B (40 marks)

- Q5. With respect to the Zambian environment, discuss in detail elements of the environmental system that are likely to have significant and detectable effect(s) on human health and quality of life. (20 marks)
- Q6. What is air pollution? Discuss the various types of air pollutants, their sources and the effect(s) they impinge on a human environment.
(20 marks)
- Q7. Give a precise and concise scientific definition for each of the following terms:
- i. Public health (2 marks)
 - ii. Human environment (2 marks)
 - iii. Animal waste (2 marks)
 - iv. Biochemical oxygen demand (2 marks)
 - v. Rendering without sterilisation (2 marks)
 - vi. Feral dog (2 marks)
 - vii. Pet animal (2 marks)
 - viii. Consanguineous strain or animal (2 marks)
 - ix. Decontamination (2 marks)
 - x. ISO 14000 series (2 marks)

End of Examination

VMP 412

SYSTEMIC VETERINARY PATHOLOGY

TIME : THREE HOURS

ANSWER : ALL QUESTIONS

Define peritonitis and briefly outline the etiology, pathogenesis, lesions, and consequences of traumatic reticuloperitonitis.

(20 marks)

Write short notes on each of the following:

(4 marks each)

- (a) Acute tubular necrosis
- (b) Pulmonary adenomatosis
- (c) Skin lesions in streptothricosis
- (d) Goitre
- (e) Eosinophilic myositis

Outline the etiology, pathogenesis, lesions and sequelae of bacterial endocarditis.

(20 marks)

Describe the etiology, gross appearance, and complications of urolithiasis in animals.

(20 marks)

Write short notes on the pathology of each of the following diseases/conditions:

(4 marks each)

- (a) Theileriosis
- (b) Dietetic liver dystrophy
- (c) Rabies
- (d) Johne's disease
- (e) Ricketts

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA
UNIVERSITY SECOND SEMESTER EXAMINATIONS –
AUGUST/SEPTEMBER 1998
VMP 432

VETERINARY VIROLOGY AND MYCOLOGY

TIME: THREE HOURS

ANSWER: ALL THE 5 QUESTIONS ACCORDING TO THE INDICATIONS
GIVEN TO EACH QUESTION (USE SEPARATE ANSWER
BOOKLETS FOR EACH SECTION).

SECTION I - VETERINARY VIROLOGY

1. Describe the process of virus replication from entry to release (20 marks)
2. List at least five reasons for viral persistence and describe the three forms of viral persistence. (20 marks)
3. List the six principal portals of entry of viruses into host animals. (20 marks)

SECTION II - VETERINARY MYCOLOGY

4. Name the grouping of mycoses on the basis of tissues affected or the site attacked. Describe each grouping in detail, giving one example of a fungi genera or specie that attacks the site. (20 marks)
 - 5 a). Name three genera of pathogenic fungi causing skin and hair infections, describing their transmission and pathogenesis. (10 marks)
 - b). Outline the conventional techniques used in the laboratory diagnosis of these pathogenic fungi causing skin and hair infections indicating how samples are collected from the animals. (10 marks)
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END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA
UNIVERSITY SECOND SEMESTER EXAMINATIONS –
AUGUST/SEPTEMBER 1998
VMP 442
VETERINARY PARASITOLOGY

TIME: THREE HOURS

ANSWER: ALL QUESTIONS (USE SEPARATE ANSWER BOOKLETS FOR EACH SECTION).

ALL QUESTIONS CARRY EQUAL MARKS

SECTION A - PROTOZOOLOGY

1. Write brief notes on the following topics:
 - (a) Haemoprotozoa
 - (b) Anoestrus condition
 - (c) Enzootic stability
 - (d) Salivarian transmission
 - (e) Sarcomastigophora
2. Outline the life cycle of Theileria parva lawrencei. Briefly explain the control strategies of this parasite in Zambia.

SECTION B - ENTOMOLOGY

3. Write short notes on any four (4) of the following topics:
 - (a) Tunga penetrans
 - (b) Amblyoma variegatum
 - (c) Trypanosoma cruzi vectors
 - (d) With a species example, the life cycle of a 3 host tick.
 - (e) Glossina morsitans
4. Outline the veterinary importance of ACARI ectoparasites of domestic animals giving examples. Discuss how these parasites can be controlled.

SECTION C - HELMINTHOLOGY

5. Discuss in details the life cycle, pathogenesis and control of Fasciola gigantica.
6. Write short notes on the following:
- (a) Hypobiosis
 - (b) Taenia solium
 - (c) Infection routes of Ancylostoma caninum
 - (d) Objectives and procedures of coproculture of faeces
-

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA
SECOND SEMESTER SUPPLEMENTARY EXAMINATION

OCT. 1998

VMP 442

VETERINARY PARASITOLOGY II

TIME: 3 HOURS

ANSWER ALL QUESTIONS

USE SEPARATE ANSWER BOOKLETS FOR EACH SECTION

SECTION A PROTOZOOLOGY

Q1. Write short notes on each of the following

- (a) Schizont
- (b) Kinetoplast
- (c) Apicomplexa
- (d) Cytopyge
- (e) *Salivaria* trypanosomes

Q2. Outline in detail the life cycle of Eimeria tenella

SECTION B HELMINTHOLOGY

Q3. Describe in detail the life cycle and control of Taenia solium.

Q4. Write short notes on each of the following

- (a) Differential larval counts of nematodes
- (b) Hypobiosis
- (c) The control of Fascioliasis
- (d) Objectives and procedures of coprocultures

SECTION C ENTOMOLOGY

Q5. Describe the life cycle of Glossina morsitans briefly mentioning their veterinary importance. Discuss the most appropriate methods of controlling these vectors.

Q6. Write short notes on all the following

- (a) 1 - host ticks
- (b) facultative myiasis
- (c) Scabies
- (d) Ctenocephalides canis
- (e) Rhipicephalus appendiculatus