

THE UNIVERSITY OF ZAMBIA
UNIVERSITY EXAMINATIONS
SCHOOL OF VETERINARY

FIRST AND SECOND SEMESTER

1996

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THE UNIVERSITY OF ZAMBIA

UNIVERSITY FIRST SEMESTER EXAMINATIONS - JUNE 1996

VMB 211

VETERINARY ANATOMY AND PHYSIOLOGY I

TIME: THREE (3) HOURS

INSTRUCTIONS: ATTEMPT ONLY FIVE (5) QUESTIONS
ILLUSTRATE YOUR ANSWERS WITH DIAGRAMS WHERE POSSIBLE

1.
 - i) Draw a simple labelled diagram to show the general features of a typical synovial joint. [4]
 - ii) Name three (3) different groups of synovial joints for which an example occurs in the forelimb of the dog. [3]
 - iii) List five (5) main groups of bones based on their general shape and give two (2) examples of each type which you mention. [5]
 - iv) Name two (2) extrinsic muscles of the forelimb which are important in protracting the limb in the dog. [2]
 - v) Define the term supination and indicate at which joint(s) this movement occurs. [3]
 - vi) Give three (3) muscles which flex the shoulder joint in the dog. [3]
2.
 - i) List three (3) structures which can normally be palpated in the hip region of the dog. [3]
 - ii) Name the main muscles which form the hamstring group. What is the main origin of these muscles in the dog? List four (4) possible actions of this group of muscles. [6]
 - iii) List the individual joints which constitute the tarsal or hock joint in the dog. Where does the majority of movement occur and what movements are permitted? [6]
 - iv) What are the boundaries of the deep inguinal ring? [3]
 - v) What joints are formed between a pair of typical vertebrae? Which types of joints are these? [2]

3.
 - i) What vessels normally communicate into the right atrium in the adult dog? [3]
 - ii) List the components of the conducting system of the heart and indicate the location of each component. [4]
 - iii) Name the main branches of the aortic arch in the dog. [3]
 - iv) Give the temporary and permanent dental formulae in the dog. ✓ [2]
 - v) List three (3) major salivary glands in the dog and indicate where each gland discharges. [3]
 - vi) List the major abdominal organs supplied by the celiac artery in the dog. [5]
4.
 - i) What histological types of muscle occur in the body? Briefly summarise the general distribution of these various types. [3]
 - ii) Describe the structure of skeletal muscle as seen:
 - a. With the light microscope [6]
 - b. With the electron microscope [6]
 - iii) What are the essential histological differences between skeletal and cardiac muscle? [5]
5. Write concise notes on the histological structure of each of the following:
 - i) Osteones (Haversian Systems) [5]
 - ii) Collagen fibres [5]
 - iii) Transitional epithelium [5]
 - iv) Junctional complex [5]
6. Write short notes on each of the following:
 - i) Monocytes [5]
 - ii) Astrocytes [5]
 - iii) Ganglia [5]
 - iv) Nerve fibres [5]

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY SECOND SEMESTER EXAMINATIONS - NOV/DEC 1996

VMB 212

VETERINARY ANATOMY AND PHYSIOLOGY II

TIME: THREE (3) HOURS

INSTRUCTIONS: ATTEMPT ONLY FIVE (5) QUESTIONS.
ILLUSTRATE YOUR ANSWERS WITH DIAGRAMS WHERE POSSIBLE

1. i) Write short notes on each of the following:
 - A. Diaphragm
 - B. Larynx
 - C. Nasal cavity
 - D. Paranasal sinuses in the dog
 - E. Pleura

[20]
2. i) Draw a simple, labelled diagram to indicate the internal features of the kidney in the dog.

[3]
- ii) List the components of the genital tract in the bitch.

[2]
- iii) Briefly describe the arterial supply to the genital tract in the bitch.

[3]
- iv) Define each of the following terms:
 - A. Tunica vaginalis
 - B. Tunica dartos
 - C. Spermatic cord

[3]
- v) Draw a simple, labelled diagram of a transverse section of the spinal cord and the spinal meninges.

[4]
- vi) Name the main sites of production of the cerebrospinal fluid [CSF].

[2]
- vii) Which of the cranial nerves would be showing signs of dysfunction in the following clinical situations:
 - A. Drooping face, drooling and accumulation of food in the cheeks.
 - B. Deviation and atrophy of the tongue.
 - C. Dysphagia, megaesophagus, laryngeal paralysis and change in phonation?

[3]

3. i) With the aid of a labelled diagram indicate the important features of the sympathetic nervous pathway to the stomach. [2]
- ii) A dog is presented to you in which the cornea of the eye shows signs of damage resulting from a prolonged period of desiccation (dryness). What anatomical structures might be implicated in such a case? [4]
- iii) List four (4) important "command centres" of the extrapyramidal system. [4]
- iv) Briefly describe the sites of production, circulation and removal of the aqueous humor. [3]
- v) Define the term "proprioception". Explain the important features of the pathways of proprioception from the forelimb to conscious level. [4]
- vi) With the aid of a labelled diagram indicate the important structures located in the tympanic or middle ear cavity. [3]

4. i) Indicate True (T) or False (F).

The action potential in nerve:

- A. is initiated by a depolarisation of the membrane []
- B. is a change in membrane potential towards the equilibrium potential for sodium (Na⁺) ions []
- C. involves a decrease in the membrane permeability to potassium (K⁺) ions []
- D. is associated with an increase in the electrical resistance of the membrane []
- E. is propagated along the axon by means of the release of acetylcholine []

- ii) Indicate True (T) or False (F)

With reference to conduction along nerve axons:

- A. conduction velocity in a particular axon is related to the strength of the stimulus []
- B. in myelinated axons the action potential is generated only at nodes of Ranvier []

- C. if a stimulus is applied way along a motor axon the action potential will travel only in the direction towards the muscle it supplies []
- D. the smaller the diameter of the axon the greater is the conduction velocity []
- E. action potential^s are transmitted by non-decremental conduction along the axon []

iii) Briefly discuss the sliding theory of skeletal muscle contraction. [20]

- 5. Describe the differences and similarities between action potential, receptor potentials, and synaptic potentials. [20]
- 6. Discuss how the "dilution principle" may be applied in determination of the size of ~~A~~ body fluid compartments [20]

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY SECOND SEMESTER EXAMINATIONS - NOV/DEC 1996

VMB 222

VETERINARY EMBRYOLOGY

TIME: THREE (3) HOURS

INSTRUCTIONS: ANSWER ALL QUESTIONS

1. i) Give the germ layer of origin of each of the following:
- A. alveolar epithelial cells
 - B. dilator pupili muscle
 - C. odontoblasts
 - D. male germ cells
 - E. pancreatic islet cells [5]
- ii) Briefly but accurately define each of the following:
- A. gastrulation
 - B. morula
 - C. splanchnopleure
 - D. buccopharyngeal membrane
 - E. freemartin [5]
- iii) What is meant by the term placental barrier? [1]
- iv) What layers constitute the placental barrier in:
- A. the pig
 - B. the dog? [4]
- v) The placenta of the cow is described as chorioallantoic, villous, cotyledonary, epitheliochorial and partially deciduate in type. Explain this description. [5]
2. i) Briefly but accurately define each of the following terms:
- A. Sinus venosus
 - B. Foramen ovale
 - C. Ligamentum arteriosum
 - D. Ectopia cordis
 - E. Ductus venosus [5]
- ii) Indicate the adult derivatives of each of the aortic arch arteries in the embryo. [5]

- iii) What are the original sites of formation of primitive blood islands in the embryo? Where are the other important sites of haemopoiesis during prenatal life? [5]
- iv) Briefly describe the processes of the partitioning of the primitive atrium that finally result in the formation of the interatrial septum. [5]
3. i) List the structures derived from the embryonic midgut in the dog. [3]
- ii) Which is the "artery of the midgut"? [1]
- iii) Define the term "physiological hernia of the midgut". What leads to its occurrence? [2]
- iv) What embryonic structure gives rise to the lesser omentum? What other adult structures develop from this same embryonic structure? [2]
- v) Give the precise site of origin of the ventral pancreatic bud. To what structures does it contribute? [2]
- vi) Name the parts of the urogenital sinus in the embryo. [1]
- vii) What are the adult derivatives of each part of the urogenital sinus in the male? [3]
- viii) Indicate the embryonic structure from which each of the following adult structures develops:
- A. Ductuli efferents
 - B. Seminal vesicles
 - C. Uterine tube
 - D. Round ligament of the uterus [4]
- ix) Briefly explain the anatomical basis of each of the following developmental abnormalities:
- A. Hypospadias
 - B. Cystic kidney [2]
4. i) Define the term somite. List three (3) recognisable subdivisions of the somite and indicate the tissue/structures derived from each subdivision. [6]
- ii) Define briefly but accurately each of the following:
- A. Pharyngeal arch
 - B. Pharyngeal cleft
 - C. Pharyngeal pouch [3]

- iii) List three (3) muscles that are derived from pharyngeal arch I. [3]
- iv) List the bones formed by intramembranous ossification in the vault of the skull. [4]
- v) Due to the complex nature of development of the facial region many developmental abnormalities of this region can be observed in mammals. Name four (4) such abnormalities and explain concisely the nature of each abnormality. [4]
5. i) What is the developmental origin of each of the following:
- A. afferent neurones
 - B. interneurones
 - C. efferent neurones? [3]
- ii) What cell columns are represented in the embryonic hind brain? [3]
- iii) What parts of the adult brain are derived from the embryonic hind brain? [3]
- iv) Define the term "induction". Give two (2) examples in embryonic development. [3]
- v) Name the embryonic structure which gives rise to each of the following:
- A. external acoustic meatus
 - B. auditory tube
 - C. incus
 - D. lens of eye
 - E. retina [5]
- vi) Give three (3) derivatives of the neural crest which are not component parts of the nervous system. [3]

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA
UNIVERSITY FIRST SEMESTER EXAMINATIONS - JUNE 1996

VMB 311

VETERINARY ANATOMY I

TIME: THREE (3) HOURS

INSTRUCTIONS: ATTEMPT ONLY FIVE (5) QUESTIONS
 ILLUSTRATE YOUR ANSWERS WITH DIAGRAMS WHERE POSSIBLE

1. Write short notes on each of the following structures in cattle:
 - i) jugular groove [5]
 - ii) nuchal ligament [5]
 - iii) pleural sac [5]
 - iv) mediastinum [5]
2. i) List in sequence the various parts of the intestine in ruminants. [6]
- ii) Make a brief but accurate statement of the location of each part in the abdominal cavity. [8]
- iii) What is the arterial supply of each part? [6]
3. Indicate the general position and the important immediate relations of each of the following in cattle:
 - i) liver [5]
 - ii) reticulum [5]
 - iii) heart [5]
 - iv) left kidney [5]
4. Write concise notes on each of the following:
 - i) pelvic canal in the cow [5]
 - ii) suspensory apparatus of the udder in the cow [5]
 - iii) penis of the bull [5]
 - iv) accessory glands present in the male goat [5]
5. i) List the carpal bones present in ruminants. [3]
- ii) List the muscles which flex the carpus and digits in ruminants. [4]
- iii) Give the insertion for each muscle mentioned in (ii). [4]

- iv) Name the nerves supplying cutaneous sensation to the digits in the ox. Indicate which of the nerves arising from the brachial plexus gives rise to each of these nerves. [4]
- v) What names are given to the principal arterial trunk in the bovine forelimb from its point of origin to the point where it supplies the digits. [5]
6. i) List the muscles which extend the hip joint in ruminants. [4]
- ii) Give the nerve supply of each of the muscles which you list in (i). [4]
- iii) List the main ligaments of the bovine stifle joint indicating the attachments of each ligament which you mention. [6]
- iv) Describe the location of the important lymph nodes which receive the lymph from the hind limb in ruminants indicating the parts of the limb from which each lymph node receives lymph. [6]

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY SECOND SEMESTER EXAMINATIONS - NOV/DEC 1996

VMB 312

VETERINARY ANATOMY II

TIME: THREE (3) HOURS

INSTRUCTIONS: ANSWER ALL QUESTIONS

1.
 - i) List the paranasal sinuses in the ox and indicate their sites of communication. (5)
 - ii) Briefly describe the form and the location of the mandibular salivary gland in cattle. (2)
 - iii) Indicate the course and termination of the parotid duct in cattle. (1)
 - iv) Give the temporary and permanent dental formulae of ruminants. (2)
 - v) Describe the origin and course of the cornual nerve in cattle. (2)
 - vi) After performing a cornual nerve block in a cow you detect persistence of sensation in the horn. Give two (2) possible explanations of this. (2)
 - vii) Trace the main route of arterial blood flow from the heart to the arterial circle in the goat. (3)
 - viii) Briefly indicate the location of each of the following in cattle:
 - A. Vomeronasal organ
 - B. Tonsillar sinus
 - C. Medial retropharyngeal lymph node (3)
2.
 - i) Give the vertebral formula of the pig. (3)
 - ii) Indicate the lobes present in the lungs of the pig and explain how you would distinguish between the lungs of a pig and those of a small ruminant. (3)
 - iii) Briefly explain the anatomical basis of the frequency of inguinal and scrotal hernia in the pig. (2)

- iv) Draw a labelled diagram to show the important internal features of the pig stomach. (3)
 - v) Describe the locations and gross appearances of each of the accessory male glands in the boar. (3)
 - vi) Briefly but accurately describe the location of each of the following in the pig:
 - A. Pharyngeal diverticulum
 - B. Preputial diverticulum
 - C. Suburethral diverticulum (3)
 - vii) Describe the features of the pig kidney which allow you to distinguish it from that of the other domestic species. (3)
- 3.
- i) What main parts of the ligamentum muchae are recognised in the horse? Indicate the main attachments of those parts which you mention. (3)
 - ii) Give the boundaries of the jugular groove in the horse. (3)
 - iii) List in sequence the parts of the large colon of the horse. (3)
 - iv) Briefly describe the form and location of the equine caecum. (3)
 - v) Give two (2) features of the equine ovary, which are characteristic of the species. (2)
 - vi) Draw a simple labelled diagram to show the important features of the prepuce and penis in the stallion. (3)
 - vii) List the main blood vessels which supply the equine penis. (3)
- 4.
- i) What bones form the metacarpophalangeal (fetlock) joint in the horse? (3)
 - ii) List the main ligaments of the metacarpophalangeal (fetlock) joint in the horse indicating the principal attachments of each ligament which you name. (5)
 - iii) Describe one technique to perform a digital nerve block in the forelimb of the horse. Briefly summarise the effects which you would expect to result from the particular nerve block which you mention. (3)

- iv) Name the components of the "reciprocal apparatus" in the hindlimb of the horse. Explain how this apparatus operates. (3)
 - v) Briefly but precisely describe two (2) sites where the pulse may be taken in the horse. (2)
 - vi) Describe the location of the equine guttural pouch. List its relations which are of particular clinical importance. (4)
- 5.
- i) Explain how the avian mandible articulates with the remainder of the skull. (2)
 - ii) List the airsacs present in the domestic fowl. (3)
 - iii) Summarise the functional importance of the airsacs in birds. (2)
 - iv) Write brief notes on each of the following in the bird:
 - A. Pessulus
 - B. Pecten
 - C. Glycogen body
 - D. Columella (4)
 - v) List in sequence the parts of the oviduct in the chicken. Indicate the main function(s) of each part which you mention. (5)
 - vi) Name the parts of the avian stomach. How is the structure of each part related to its specific functions? (4)

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY FIRST SEMESTER EXAMINATIONS - JUNE 1996

VMB 321

VETERINARY HISTOLOGY

TIME: THREE (3) HOURS

INSTRUCTIONS: ATTEMPT ONLY FIVE (5) QUESTIONS.
ILLUSTRATE YOUR ANSWERS WITH DIAGRAMS WHERE POSSIBLE

1.
 - i) List four (4) types of capillaries and give an example of where each type occurs. Indicate how the differences in structure are correlated with the special functions of each type. [6]
 - ii) List the types of lingual papillae occurring in the domestic species and indicate the specific functions of each type. [6]
 - iii) Draw a longitudinal section through an equine incisor tooth indicating the tissues present. Indicate three (3) significant points of difference for the distribution of these tissues in an incisor of a carnivore. [8]
2.
 - i) What are the important cytological differences between the proximal and distal tubules of the nephron? Relate these differences to the specific functions of these parts of the nephron. [4]
 - ii) Define the term renal corpuscle. What structures compose the filtration barrier of the kidney? [5]
 - iii) Give three (3) significant differences between the processes of spermatogenesis and oogenesis. [3]
 - iv) Briefly describe the structure of a sustentacular [Sertoli] cell indicating how it is adapted to perform its functions. [4]
 - v) Draw a labelled diagram of a cross section through the uterine tube. [4]

3. i) Indicate what cells are responsible for mucous production in the following organs:

- a) stomach
- b) small intestine
- c) large intestine

What are the important functions of mucous in each of these organs? [6]

ii) Draw diagrams to indicate the essential differences between a classical hepatic lobule and a portal lobule. [2]

iii) What cell types are recognised in the pancreatic islets? Indicate what the functions of each cell type may be. [5]

iv) Briefly but precisely describe the location of:

- i) anal glands
- ii) circumanal glands
- iii) paranal sinuses [3]

v) Where is the myenteric plexus located? What type of cell bodies does it contain? [4]

4. i) Define the term "respiratory epithelium". In what parts of the respiratory tract does it occur. [4]

ii) Indicate the extent of each of the following in the bronchial tree:

- a) multicellular glands
- b) goblet cells
- c) cartilage
- d) cilia [4]

iii) Explain the origins of the pulmonary (alveolar) macrophages. What is their specific importance? [3]

iv) Indicate where elastic cartilage occurs within the larynx. [3]

v) Elastic and reticular fibres both occur in the intralveolar septa. Explain the functions of each. [2]

vi) Draw a simple labelled diagram to indicate the structure of the blood/air barrier. What is its approximate thickness? [4]

5. i) What parts of the pituitary gland are recognised? [4]
- ii) Write a short note on the cell types found in each part which you mention in (i). [8]
- iii) List the hormones produced in each part which you mention in (i). [4]
- iv) Write a short note on the functional relationship between the pituitary gland and the hypothalamus. [4]
6. Write short notes on the microscopic structure of each of the following:
- | | |
|-----------------------|-----|
| i) thymus | [5] |
| ii) cerebellum | [5] |
| iii) sebaceous glands | [5] |
| iv) cornea | [5] |
-

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA
UNIVERSITY FIRST SEMESTER EXAMINATIONS - JUNE 1996

VMB 331

VETERINARY BIOCHEMISTRY I

TIME: THREE HOURS

ANSWER: ALL QUESTIONS IN SECTION A (10 MARKS EACH)

THREE QUESTIONS IN SECTION B (20 MARKS EACH)

SECTION A

1. (a) Two peptides are present in a mixture;

- (i) aspartyl - histidine pI = 4.9
- (ii) glycyl - arginine pI = 11.1

Draw the structures at pH 7.0

(b) The mixture was placed on a cationic exchanger at pH 4.0. Explain whether the dipeptides would be separated and which would come out of the column first.

(c) Explain the structure of the peptide bond.

2. (a) Draw lactose and explain whether its component sugars are hexoses or ketoses. What is its function?

(b) How many ATP can be formed by the oxidation of lactose? Explain briefly.

3. (a) Write the reaction for pyruvate kinase and name the metabolic pathway where it occurs.

(b) Define K_m for an enzyme and explain how it is related to substrate affinity.

- (c) Determine the K_m of pyruvate kinase using the following data and a reciprocal graph:

[PEP] mM	velocity $\mu\text{mol/min}$
0.25	44
0.30	50
0.50	65
1.00	82
2.00	97

4. (a) Write the structure and function of UDPG (uridine diphosphate glucose), ATP (adenosine triphosphate) lecithin
- (b) Compare briefly the following aspects of fatty acid oxidation and synthesis.
- (i) Site of synthesis
 - (ii) Acyl carrier
 - (iii) Reductants and oxidants
 - (iv) Energetics

SECTION B

1. Describe the quaternary structure of a protein and how it applies to the protein haemoglobin. How is the quaternary structure related to its function?
2. Describe the effect of changes of temperature, pH and substrate concentration on the activity of an enzyme.
3. Discuss the metabolism of cholesterol.

OR

Give a complete account of the classification of lipids. Illustrate with structures.

4. Discuss the regulation of glycogen metabolism.

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY SECOND SEMESTER EXAMINATIONS - NOV/DEC 1996

VMB 332

VETERINARY BIOCHEMISTRY II

TIME: THREE HOURS

INSTRUCTIONS: ANSWER ALL THE QUESTIONS FROM SECTION A
 ANSWER ANY THREE QUESTIONS FROM SECTION B

SECTION A

1. What is negative nitrogen balance? Explain it with examples.
2. Write an equation to describe the transamination reaction? What is the difference between transamination and oxidative deamination.
3. Name the different type of lipoproteins and their functions.
4. Give an account of the marker enzymes for liver damage.
5. Write briefly about tryptophan operon.
6. Describe the synthesis of uric acid in excretion of nitrogen.
7. Discuss the role of liver microsomes.
8. Describe the synthesis of melanin and the genetic defect that may occur.

(8x5=40)

SECTION B

1. Genetic code is universal. Discuss this.

or

Give a detailed outline of the synthesis of protein.

2. Write notes on
 - a. Phosphorus metabolism
 - b. Pyridoxal phosphate
 - c. Restriction enzymes
 - d. Southern and Northern blotting
3. Discuss the constituents of milk and how their structure relates to their function.
4. Describe the structure of the thin filament in the muscle fibril and how it functions during muscle contraction.
5. An animal is suffering from atherosclerosis and a plasma sample is given for the analysis.
 - a. What are the components of this plasma that you would like to estimate for this particular pathological condition and why?
 - b. If you are asked to estimate the plasma triacylglycerols (TAG) give mathematical equations to estimate the different fractions of lipoproteins-TAG.
 - c. An experiment was set up to estimate the concentration of TAG in plasma and plasma lipoprotein fractions.

	B	1	2	3	4	5	a	b	c
Plasma(ml)							0.2	0.2	0.2
Isopropanol (ml)							3.8	3.8	3.8
Alumina							Added 300mg and centrifuged		
Supernatant (ml)							2.0	2.0	2.0
Standard volume(ml)	0	0.5	1.0	1.5	2.0	2.5			
Concen- tration(mg)	?	?	?	?	?	?			
Isopropanol (ml)	0.5	2.5	2.0	1.5	1.0	0.5	1.0	1.0	1.0
Alkaline KOH	0.6ml to all the tubes. Incubated at 60°C for 30 minutes								
Sodium meta periodate	1.0ml to all the tubes								
Acetyl acetone	0.5 ml to all the tubes. Incubated at 60°C for 30 minutes								
Absorbance (405nm)	0.00	0.06	0.12	0.17	0.24	0.31	0.30	0.22	0.17

The concentration of the tripalmitin standard is 25mg/dl. From this the standard solutions were pipetted out directly into tubes 1-5 directly.

- i) Calculate the standard concentration per tube and draw a graph of concentration versus absorbance.

Note: Tubes 1-5 are standards, and, b and c are different fractions of lipoproteins.

- ii) Estimate the concentration of TAG in a, b and c from the graph and calculate it for 100ml of plasma.

- iii) Identify a, b and c.

- iv) Calculate the amount of VLDL-TAG.

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY SUPPLEMENTARY/DEFERRED EXAMINATIONS - JANUARY 1997

VMB 332

VETERINARY BIOCHEMISTRY II

TIME: THREE HOURS

**INSTRUCTIONS: ANSWER ALL THE QUESTIONS FROM SECTION A
 ANSWER ANY THREE QUESTIONS FROM SECTION B**

SECTION A

1. Write a brief account of lipid digestion.
 2. List the role of iron in metabolism.
 3. Name the classes of ribonucleic acid and their functions.
 4. Draw the complementary structure that would be produced during DNA (deoxyribonucleic acid) replication and mRNA synthesis of the following sequence of the sense strand 5'TAGATCA3'
 5. What is Western blotting?
 6. What is the importance of glutamine synthetase? Give the reaction.
 7. Describe the role of propionic acid in a ruminant.
 8. Describe actin (the muscle protein).
- (8x5=40 Marks)

SECTION B

1. Outline the various steps in the transcription process in the synthesis of ribonucleic acid.
2. Write short notes on
 - a) Catabolic repression by glucose
 - b) Activation step in protein biosynthesis
 - c) Nitrogen Balance

3. An animal was suffering from liver dysfunction and had been brought for the investigations.
- a) Which enzymes are considered as specific markers for liver damage?
 - b) Describe a diagnostic test for liver function.
 - c) Name two enzymes which would be considered as markers in each of the following conditions.
 - 1. Myocardial infarction
 - 2. Pancreatitis
 - d) Describe different detoxication mechanisms carried out by the liver.
4. Discuss the synthesis and degradation of acetylcholine and noradrenalin. What is their function?
5. Describe the nitrogen cycle.

(3x20=60 Marks)

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY FIRST SEMESTER EXAMINATIONS - JUNE 1996

VMB 341

VETERINARY PHYSIOLOGY I

TIME: THREE (3) HOURS

INSTRUCTIONS: ANSWER ONLY FIVE (5) QUESTIONS OUT OF SEVEN (7)

All questions have equal marks

1. (a) Trace the spread of an excitation wave through the heart

(b) Explain the normal electrocardiogram (ECG)
What is its use? Explain some of the commoner irregularities which may occur.
2. (a) Define vital capacity, total lung capacity, residual volume, inspiratory and expiratory reserve volume.
How are they determined?

(b) Discuss the mechanisms involved in pulmonary ventilatory control.
3. Briefly describe the functions of each of the following:

(a) Cerebellum
(b) Extra-pyramidal system
(c) Hypothalamus
(d) Reticular Activating System (RAS)
(e) Thalamus
4. (a) Describe the physiological anatomy and motility of a ruminant stomach.

(b) What is the fate of a protein diet and a carbohydrate diet in the digestive tract of a ruminant and non-ruminant?
5. (a) Describe the structure of a muscle spindle and its mode of operation. What does the muscle spindle measure?

(b) State the different classes of receptors for acetylcholine and for norepinephrine and epinephrine. Give their physiological importance.

6. (a) Discuss the physiological differences between the pulmonary circulation and the systemic circulation.
(b) Describe the factors that determine the flow of lymph.
 7. Discuss the physiology of the retina and describe the visual pathways.
-

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY SECOND SEMESTER EXAMINATIONS - NOV/DEC 1996

VMB 342

VETERINARY PHYSIOLOGY

TIME: THREE (3) HOURS

INSTRUCTIONS: ANSWER ONLY FIVE (5) QUESTIONS OUT OF SEVEN (7)

ALL QUESTIONS HAVE EQUAL MARKS.

1. Why is the regulation of calcium ion concentration in the extracellular fluid important in animals? How is the regulation achieved? When and why does hypocalcaemia occur in cows?
2.
 - a) Mention the hormones produced in the pancreatic islets and indicate the cell types involved in their secretion.
 - b) Briefly describe the synthesis, release and functions of the hormone secreted by the beta cells (β -cells) of the pancreatic islets.
 - c) Pancreatic islets insufficiency lead to what clinical condition? What is the clinical picture of the animal (e.g. dog) with this condition and how can you confirm your diagnosis?
3. What tubular processes tend to make urine:
 - a. more dilute than plasma?
 - b. more concentrated than plasma?

. What hormone regulates urine osmolarity?
4. How do domestic animals regulate their body temperature?
5.
 - a) Mention the different buffers in the body involved in the acid-base balance.
 - b) What do you understand by the isohydric principle?
 - c) Why is the bicarbonate (HCO_3) the most important of all buffers?
 - d) Mention two other control components of the H^+ ion concentration in the body.

6. a) Briefly compare and contrast the two types of reproductive cycles.
- b) Describe briefly the hormonal and non-hormonal control of the oestrous cycle.
- c) Outline the various stages of the cow oestrous cycle and give some examples of malfunctions of the bovine ovaries.
7. Discuss the process of parturition in the cow, outlining the initiation and various stages of the process.
-

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY SECOND SEMESTER EXAMINATIONS - NOV/DEC 1996

VMB 451

VETERINARY PHARMACOLOGY

TIME: 3 HOURS

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

1. Discuss the mode of action, spectrum of activity, and uses of the macrocyclic lactone (ivermectins and milbemycins) family of antiparasitic drugs. How would you use these agents in the control of parasitic gastroenteritis in cattle?
2. Write short notes on the mode of action, indications and side effects associated with
 - a) chlorhexidine
 - b) cypermethrin
 - c) isometamidium
 - d) butorphanol
3. Write short notes on the mode of action, indications and side effects associated with
 - a) ketoconazole
 - b) clenbuterol
 - c) dimetridazole
 - d) cyclophosphamide
4. Discuss the different drugs suitable for treating acute and subacute E. coli mastitis in a dairy cow. Outline their modes of action, distribution and different administration routes.
5. Write short notes on the mode of action, indications and side effects associated with
 - a) enalapril
 - b) oxytocin
 - c) nitrous oxide
 - d) praziquantel

6. Pruritis is a common problem in dogs. Discuss appropriate drug regimes and the modes of action of the agents used in the treatment of pruritis. What are the potential side effects of these agents and how would you avoid them?
7. Write short notes on the mode of action, indications and side effects associated with
- a) triclabendazole
 - b) delmadinone acetate
 - c) doxycycline
 - d) methohexitone
-

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY SUPPLEMENTARY/DEFERRED EXAMINATIONS - JANUARY 1997

VMB 451

VETERINARY PHARMACOLOGY

TIME: THREE HOURS

**INSTRUCTIONS: ANSWER FIVE (5) OF THE FOLLOWING QUESTIONS.
ALL QUESTIONS CARRY EQUAL MARKS.**

1. Discuss the local anaesthetic agents used in large animals (horse, cattle, sheep, goats) with reference to their mode of action, administration routes and side effects.
2. Outline the mode of action, side effects and the strategic use of drugs suitable for the control of chronic fascioliasis in ruminants (cattle, sheep and goats).
3. Write notes mode of action, indications and side effects of
 - (a) thiopentone
 - (b) praziquantel
 - (c) cloprostenol
 - (d) frusemide
4. Write notes mode of action, indications and side effects of
 - (a) gentamicin
 - (b) amitraz
 - (c) amoxicillin
 - (d) clavulanic acid
5. Inflammation is important in many disease conditions. Discuss the mode of action, administration routes and side effects of steroidal and non-steroidal anti-inflammatory agents used in animals giving examples.
6. Discuss the aims of anaesthetic premedication. Which agents can be combined to provide a suitable regime for premedicating a dog prior to routine ovariohysterectomy. Give reasons and discuss the mode of action and side effects of the agents used.

7. Write notes on the mode of action, indications and side effects of

- (a) proligestone
- (b) fenbendazole
- (c) amitraz
- (d) griseofulvin

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY FIRST SEMESTER EXAMINATIONS - JUNE 1996

VMC 511

INTRODUCTION TO VETERINARY MEDICINE I

TIME: THREE HOURS

ANSWER ALL QUESTIONS IN SECTION A AND THREE QUESTIONS IN SECTION B. WRITE THE ANSWER TO EACH QUESTION ON A SEPARATE SHEET OF PAPER.

SECTION A

1. Discuss the procedure for investigation of alimentary tract dysfunction in a dairy cow.
2. (a) A three year old male Labrador is presented with dysuria and increased frequency of urination. On examination the dog resents palpation of the caudal abdomen. How would you investigate the problem in order to reach a definitive diagnosis?

(b) Explain briefly how each of the following tests may aid in the investigation of canine kidney disease:
 - (i) urine specific gravity
 - (ii) blood urea nitrogen
 - (iii) serum creatinine
 - (iv) radiology
3. You are called to attend to a six month old lamb that has been sick for the last three days. The lamb is off its feed, lags behind the others and exhibits severe dyspnoea and coughing when driven. On examination the lamb is depressed, has a copious nasal discharge and there is froth from the mouth.
 - (a) What system is affected?

- (b) Outline the methods you would use to examine this system, briefly explain how you would apply them.
- (c) Indicate the information you might expect to obtain from each of the methods described above and explain the significance of each.

SECTION B

- 4. "A veterinarian must be inquisitive, questioning and observant". Give an account of this statement in relation to clinical examination procedures and diagnostic principles in the individual bovine animal and in a herd of cattle.
- 5. You were called to a farm where four cows were recumbent and five were dead out of the total of 100 cattle. The sick cattle were ataxic, weak and had laboured breathing. The owner reported that the animals were salivating earlier and had exhibited muscle tremors. You also noticed slight dilation of the pupils. On post mortem examination, you found that the rumen was distended with gas, the blood was bright red and there were multiple serosal haemorrhages. A day later you were informed that more animals were sick.
 - (a) From the above what differential diagnoses would you consider?
 - (b) What would be your tentative diagnosis and how would you arrive at a definitive diagnosis?
 - (c) What treatment would you recommend in this situation?
- 6. An eight month old Friesian heifer is presented with a history of frequent urination, passage of small amounts of urine, swishing of the tail and kicking at its belly. The heifer also maintains the urinating posture for prolonged periods and makes additional expulsive efforts.

- (a) Which system(s) and organ(s) are involved?
 - (b) Briefly describe how you would examine the system(s) and organ(s) involved.
 - (c) Describe what information you would expect to obtain from such an examination and explain its significance.
7. (a) A two year old dog of mixed breed is presented with a cough of 10 days duration. On clinical examination there is slight pyrexia (39.4 C) and moist rales are detected on auscultation. The cough is easily elicited. The vaccination status of the dog is up to date and it has been dewormed. What further diagnostic tests and examinations would you carry out in order to reach a definitive diagnosis?
- (b) Explain how each of the following will assist you in the investigation of a dog with diarrhoea:
- (i) complete blood count (haematology)
 - (ii) faecal parasitic evaluation
 - (iii) faecal digestion tests
 - (iv) faecal culture.

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY DEFERRED AND SUPPLEMENTARY EXAMINATIONS --July/August 1996

VMC 511

INTRODUCTION TO VETERINARY MEDICINE I

TIME THREE HOURS

ANSWER ALL QUESTIONS IN SECTION A and THREE QUESTIONS IN SECTION B
WRITE THE ANSWER TO EACH QUESTION ON A SEPARATE SHEET OF PAPER

SECTION A

1. A four year old male cat is presented with a distended abdomen. Although the owner had not seen the cat pass any urine for the past two days, he had been seen to adopt a squatting position as if attempting to urinate.

Explain the steps you would take to investigate this problem in order to reach a definitive diagnosis.

a) At which anatomical sites is the arterial pulse accessible for palpation in each of the mammalian domestic species? Mention which sites are commonly used during routine physical examination.

b) Explain the characteristics and significance of each of the various changes detectable during examination of the pulse.

3. You are called to examine a three year old horse which had arrived the previous day from a race track in Ndola. On arrival the horse appeared depressed. This morning the horse refused to eat or drink and is breathing rapidly. The owner reports that there was much coughing through traffic of young horses on the race track at Ndola, many of which were coughing. On clinical examination you notice that the horse stands with its elbows slightly abducted,

head lowered and nostrils flared. Respiratory and pulse rates are increased, the horse is febrile and the mucous membranes are dark red.

a) Which system(s) is/are affected?

b) Describe briefly how you would examine the horse.

c) How do you think the horse acquired this condition?

SECTION B

4. Explain how each of the following are used in the examination of the alimentary system of a dog.

i. palpation

ii. endoscopy

iii. radiology

iv. faecal digestion test

v. ultrasonography

5. Describe in detail how you would examine a five year old cow with a suspected urinary tract infection

6. Describe in detail how you would examine the alimentary tract of a sick yearling bull

a) How will you take the body temperature of a pregnant sow? What useful clinical information can be obtained from this simple but important exercise?

b) What steps will you take to investigate an outbreak of diarrhoea in calves. How would you manage such cases during your initial visit?

TIME:

ANSWER ALL QUESTIONS IN SECTION A AND SELECT QUESTIONS IN SECTION B.

START EACH ANSWER ON A SEPARATE SHEET OF PAPER

SECTION A

1. A seven month old puppy is presented to the clinic with severe vomiting of a day duration. According to the owner the puppy had not shown any other sign of illness. The dog is fed on pet food, but is usually found scavenging in the rubbish bins despite feeding him twice a day. On examination the puppy is depressed, has sunken eyes and decreased skin elasticity. The mucous membranes are pink but dry.

a) What is your tentative diagnosis?

b) What are your differential diagnoses?

c) What further tests/examinations would you carry out to aid your diagnosis?

d) How would you treat this case?

2. (a) Define the term: Bacterial pyelonephritis. Give a short account of the pathogenesis and diagnosis of bacterial pyelonephritis.

(b) Write short notes on the factors which predispose to urinary tract infections and outline the principles of treatment of pyelonephritis.

3. You are presented with a 5 year old Thoroughbred horse with a complaint of restlessness, profuse sweating, occasional rolling over the back, paddling movements of the limbs while being in lateral recumbency, anxious expression on the face; frequent reaching of the flank with the nose and mouth and dilated nostrils. These symptoms were noticed within the last 24 hours by the owner.

THE UNIVERSITY OF ZAMBIA

UNIVERSITY SECOND SEMESTER EXAMINATIONS - NOV/DEC 1996

VMC 512

CLINICAL VETERINARY MEDICINE II

TIME: THREE HOURS

ANSWER ALL QUESTIONS IN SECTION A AND THREE QUESTIONS IN SECTION B.

START EACH ANSWER ON A SEPARATE SHEET OF PAPER.

SECTION A

1. A seven month old puppy is presented to the clinic with severe vomiting of a day duration. According to the owner the puppy had not shown any other sign of illness. The dog is fed on pet food, but is usually found scavenging in the rubbish bins despite feeding him twice a day. On examination the puppy is depressed, has sunken eyes and decreased skin elasticity. The mucous membranes are pink but dry.
 - a) What is your tentative diagnosis?
 - b) What are your differential diagnoses?
 - c) What further tests/examinations would you carry out to aid your diagnosis?
 - d) How would you treat this case?
2.
 - (a) Define the term: Bacterial pyelonephritis. Give a short account of the pathogenesis and diagnosis of bacterial pyelonephritis.
 - (b) Write short notes on the factors which predispose to urinary tract infections and outline the principles of treatment of pyelonephritis.
3. You are presented with a 9 year old Thoroughbred horse with a complaint of restlessness, profuse sweating, occasional rolling over the back, paddling movements of the limbs while being in lateral recumbency, anxious expression on the face; frequent reaching of the flank with the nose and mouth and dilated nostrils. These symptoms were noticed within the last 24 hours by the owner.

- a) How would you proceed on a comprehensive clinical examination and diagnostic procedures on this case?
- b) What is your tentative diagnosis?
- c) What laboratory samples would you take to help confirm your diagnosis?
- d) Give an account of the possible aetiological factors responsible for the problem(s) and recommend appropriate therapeutic management for the case.

SECTION B

4. A 4 month old Doberman puppy is presented with a sudden on-set of convulsions after eating his evening meal. The owner complains that despite adequate feeding the puppy is stunted, appears blind at times and is non-responsive. These periods of abnormal behaviour however are only episodic. On examination there are no remarkable findings apart from slight pallor and depression. The puppy is fully vaccinated and dewormed.
 - a) What is your tentative diagnosis?
 - b) What are your differential diagnoses?
 - c) What further tests/examinations would you carry out to confirm your diagnosis?
 - d) How would you manage this case?
5. What symptoms will make you suspect liver fluke in a 3000 beef cattle ranch? How will you reach a conclusive diagnosis? Advise on treatment and prevention of the disease?
6. Three German Shepherd puppies from the same litter, aged 6 months, are presented to you with similar skin lesions. There is alopecia around the eyes and on the feet. Pruritus is evident.
 - (a) List the differential diagnoses for this litter problem, explaining why you have selected each condition.
 - (b) Describe the steps you would take to reach a final diagnosis.
 - (c) Briefly suggest appropriate treatment and preventive measures.

7. You are called to give veterinary attention to a group of 3 month old pigs in an intensively managed fattening house. There are 20 pigs in a pen and there are multiple similar pens within the barn. In the last 2 days in this particular pen of pigs the animals were reluctant to eat and have started huddling together with the ones on the outside appearing to be trembling. When you enter the barn and and the pigs are disturbed, they show sneezing and coughing and some are reluctant to move. On detailed examination of 3 pigs, the rectal temperature is 41.3 °C, there is nasal discharge and nasal mucosae are congested. You treat the pigs with antibiotics and over several days the pigs recover. However the disease spreads through the remaining pens. There is no mortality recorded.

- a) What is your tentative diagnosis?
- b) Which other diseases have similar clinical presentation?
- c) How would you control this outbreak?

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY EXAMINATIONS

SECOND SEMESTER SUPPLEMENTARY EXAMINATIONS - JANUARY 1997

VMC 512

CLINICAL VETERINARY MEDICINE II

TIME: THREE HOURS

ANSWER ALL QUESTIONS IN SECTION A AND THREE QUESTIONS IN SECTION B.
START ANSWER TO EACH QUESTION ON A NEW PAGE.

SECTION A

1. (a) What are the clinical features of exocrine pancreatic insufficiency in dogs?
(b) List the differential diagnoses for these features
(c) How would you investigate this condition in a 2 year old German shepherd dog?
(d) How would you treat / manage this condition?

2. A farmer approaches you to attend to his 5-day-old female calf. The owner reports that the patient appeared normal two days before but that morning, she is recumbent and will not rise. In addition, she shows no interest in suckling the dam. On clinical examination you find the calf's rectal temperature to be 35.7°C. The mouth is dry and the eyes are sunken into the orbit. The ears, tail and distal aspects of the legs are cold to touch. As you remove your thermometer, the calf passes a stream of liquid faeces which are nearly clear and yellow in colour. The faeces have a consistence of water. Simple laboratory tests show a PCV of 56% and total plasma protein of 9.8 g/dl
(a) What is your tentative diagnosis?
(b) Give your differential diagnoses.
(c) How would you treat this calf?
(d) What measures would you take to prevent any more cases from occurring?

3. Write CONCISE NOTES on ANY FOUR of the following:
(a) Congestive heart failure
(b) Peripheral circulatory failure
(c) Cardiac enlargement
(d) Hepatic dysfunction
(e) Haemolytic Anaemia

SECTION B.

- 4 (a) Define the following terms
- i) Azotaemia
 - ii) Uraemia
 - iii) Renal reserve
 - iv) Renal insufficiency / failure
- (b) Write short notes on chronic and acute renal failure and differentiate between the two.
- 5 (a) In which skin conditions are seasonal fluctuations seen in small animals?
- (b) How would you differentiate between them?
- (c) Suggest an appropriate treatment for each of them?
- 6 Discuss the manifestations of liver and biliary diseases in farm animals
- 7 (a) List the clinical features of large intestinal disease in dogs
- (b) List any 5 conditions / diseases of the large intestine in small animals
- (c) What tests / examinations are useful for the diagnosis of colonic disease in small animals?
- (d) How would you treat a case of colitis in a dog?
-

THE UNIVERSITY OF ZAMBIA
UNIVERSITY FIRST SEMESTER EXAMINATIONS - JUNE 1996

VMC 521

PRINCIPLES OF GENERAL VETERINARY SURGERY

AND

VETERINARY ANAESTHESIOLOGY

TIME: THREE HOURS

ANSWER ALL QUESTIONS IN SECTION A AND THREE QUESTIONS IN SECTION B.
WRITE THE ANSWER TO EACH QUESTION ON A SEPARATE SHEET OF PAPER

SECTION A

1. a) Discuss the differences in a wound that can be managed by primary surgical closure and one that should be managed by delayed primary closure (described by some as 3rd intention healing).
- b) Discuss the management of sarcoids.
2. a) Discuss three methods of producing local anaesthesia of the paralumbar fossa in a cow. Include anaesthetic agent and exact needle placement.
- b) Describe how you would anaesthetise (general) a 450 kg horse for a procedure that is expected to last 45.0 minutes.
3. Describe concisely the types, applications, advantages and disadvantages of:
 - a) suture needles.
 - b) absorbable suture materials.
 - c) non-absorbable suture materials.

SECTION B

4. a) Outline the deleterious (adverse) effects of shock on the following:
 - i) The heart
 - ii) The renal system
 - iii) The capillary vascular bed

- b) Explain briefly how each of the following are used in the treatment of shock:
- i) Fluid therapy
 - ii) Corticosteroids
5. You are presented with a six year old bitch with a history and clinical presentation suggestive of closed pyometra. The bitch was weak, depressed, unable to walk and showed clinical signs suggestive of septic shock.
- a) Discuss how you would premedicate this case for general anaesthesia, giving reasons for each step you take.
 - b) How would your actions differ from a) above in the case of a three year old bitch in good health presented for routine ovarohysterectomy?
 - c) You have administered 10.5 ml of 6% solution of pentobarbitone (Sagatal) rather fast to a 15 kg dog. The animal developed apnoea two minutes after your injection
 - i) What do you think may have happened to this dog?
 - ii) Describe what you will do to ascertain quickly that your suspicion in i) above is correct. Describe your possible findings.
 - iii) How would you manage this case?
6. a) Under the headings below, explain what factors may contribute to a break down in aseptic operative technique:
- i) Operating team.
 - ii) Scrub procedure.
 - iii) Touch contamination.
 - iv) Technique breaks.
- b) Outline step by step how you would prepare a patient for abdominal surgery up to the time when the initial incision is made.
7. a) What specific body system functions are critical for the pre-anaesthetic examination of veterinary patients?
- b) Discuss briefly one clinical finding in two of the systems described in a) above which would influence the technique you would adopt in anaesthetising animals.

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY FIRST SEMESTER EXAMINATIONS - JUNE 1996

VMC 521

PRINCIPLES OF GENERAL VETERINARY SURGERY

AND

VETERINARY ANAESTHESIOLOGY

TIME: THREE HOURS

ANSWER ALL QUESTIONS IN SECTION A AND THREE QUESTIONS IN SECTION B.
WRITE THE ANSWER TO EACH QUESTION ON A SEPARATE SHEET OF PAPER

SECTION A

1. a) Discuss the differences in a wound that can be managed by primary surgical closure and one that should be managed by delayed primary closure (described by some as 3rd intention healing).
- b) Discuss the management of sarcoids.
2. a) Discuss three methods of producing local anaesthesia of the paralumbar fossa in a cow. Include anaesthetic agent and exact needle placement.
- b) Describe how you would anaesthetise (general) a 450 kg horse for a procedure that is expected to last 45.0 minutes.
3. Describe concisely the types, applications, advantages and disadvantages of:
 - a) suture needles.
 - b) absorbable suture materials.
 - c) non-absorbable suture materials.

SECTION B

4. a) Outline the deleterious (adverse) effects of shock on the following:
 - i) The heart
 - ii) The renal system
 - iii) The capillary vascular bed

- b) Explain briefly how each of the following are used in the treatment of shock:
- i) Fluid therapy
 - ii) Corticosteroids
5. You are presented with a six year old bitch with a history and clinical presentation suggestive of closed pyometra. The bitch was weak, depressed, unable to walk and showed clinical signs suggestive of septic shock.
- a) Discuss how you would premedicate this case for general anaesthesia, giving reasons for each step you take.
 - b) How would your actions differ from a) above in the case of a three year old bitch in good health presented for routine ovariohysterectomy?
 - c) You have administered 10.5 ml of 6% solution of pentobarbitone (Sagatal) rather fast to a 15 kg dog. The animal developed apnoea two minutes after your injection
 - i) What do you think may have happened to this dog?
 - ii) Describe what you will do to ascertain quickly that your suspicion in i) above is correct. Describe your possible findings.
 - iii) How would you manage this case?
6. a) Under the headings below, explain what factors may contribute to a break down in aseptic operative technique:
- i) Operating team.
 - ii) Scrub procedure.
 - iii) Touch contamination.
 - iv) Technique breaks.
- b) Outline step by step how you would prepare a patient for abdominal surgery up to the time when the initial incision is made.
7. a) What specific body system functions are critical for the pre-anaesthetic examination of veterinary patients?
- b) Discuss briefly one clinical finding in two of the systems described in a) above which would influence the technique you would adopt in anaesthetising animals.

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY DEFERRED AND SUPPLEMENTARY EXAMINATIONS - July/August 1996

VMC 521

INTRODUCTION TO VETERINARY SURGERY I

TIME THREE HOURS

ANSWER ALL QUESTIONS IN SECTION A and THREE QUESTIONS IN SECTION B
WRITE THE ANSWER TO EACH QUESTION ON A SEPARATE SHEET OF PAPER

SECTION A

1.
 - a) Discuss the aetiology and management of a bone sequestrum.
 - b) Discuss the sedation and anaesthetic regimen that you would use to remove the lateral claw of a 450kg cow.
2.
 - a) A three year old dog is presented at your clinic after it was scalded with boiling water. The patient is recumbent, has cold ears and extremities and has sustained severe burns on the body and limbs. The pulse is fast, weak and thready.
 - i. Discuss the pathogenesis of the presenting signs in this case
 - ii. How would you treat such a case?
 - b) What are the effects of shock on the following:
 - i. the pancreas
 - ii. the intestines
 - iii. the myocardium
 - iv. blood viscosity
3.
 - a) What are the advantages and contraindications of pre-anaesthetic medication in veterinary practice?
 - b) Discuss in detail how the following factors would influence your choice of anaesthetic procedure or protocol:
 - i. the species/breed of the patients
 - ii. the type of operation
 - iii. the site of operation

SECTION B

4. Write concisely on any FOUR of the following:
 - a) absorbable suture material
 - b) non-absorbable suture material
 - c) Lembert suture pattern
 - d) suture needles
 - e) horizontal mattress sutures

- 5
- a) Briefly explain how each of the following may contribute to bacterial contamination of a surgical wound:
 - i. the patient
 - ii. the surgical equipment
 - iii. the operating theatre
 - iv. the surgical team
 - b) Outline the differences between wound contamination and wound infection
 - c) What factors may encourage wound infections?
- 6
- a) Define the terms:
 - i. asepsis
 - ii. antiseptics
 - iii. sterilisation
 - iv. disinfection
 - b) Discuss the importance of pre-anaesthetic patient assessment in veterinary anaesthesia
- 7
- For each of the instances listed below, give an outline of the commonly used anaesthetic options available for exploratory laparotomy, including the advantages and disadvantages for each of the techniques and agents mentioned
- a) in an adult cat
 - b) in a 4 month old foal
 - c) in a six month old calf

THE UNIVERSITY OF ZAMBIA

UNIVERSITY SECOND SEMESTER EXAMINATIONS - NOV/DEC 1996

VMC 522

OPERATIVE VETERINARY SURGERY I

TIME: THREE HOURS

INSTRUCTIONS: ANSWER THE THREE QUESTIONS IN SECTION A
AND THREE QUESTIONS FROM SECTION B

SECTION A

1. (a) Describe in detail the anaesthetic method you would use for an exploratory laparotomy in a 500.00 kg cow.
- (b) Describe the surgery in (a) above. Make sure to include the selection of the approach into the abdomen, a detailed discussion of the surgical procedure and any possible post operative complications that you should discuss with the owner prior to performing the surgery.
2. List the clinical correlations and radiological findings of the following conditions:-
 - (a) Pyometra in bitches
 - (b) Hip dysplasia
 - (c) Gastric dilation and torsion
 - (d) Osteosarcoma of the distal humerus
 - (e) ~~Pulmonary metastatic disease~~ *Nutritional Secondary hyperparathyroidism*
3. You are presented with a nine-month old mongrel puppy with a history of poor condition, underweight, frequent regurgitation of ingesta particularly solid food five to ten minutes after feeding and recently, of coughing. You examine the puppy clinically and apart from the evidence of a mild pneumonia and underweight, there was not much more you would detect. A plain radiographic examination reveals a gas filled pear-shaped oesophagus with the dilated oesophagus tapering off at the cardia.
 - (a) What is your tentative diagnosis of this case?
 - (b) What would be your differential diagnosis of this case?

- (c) Describe any further diagnostic procedures you would carry out in order to arrive at a definitive diagnosis.
- (d) Describe how you would manage this case medically and/or surgically.

SECTION B

- 4. (a) Discuss in detail the method you would use in correcting inguinal hernias in young pigs.
- (b) A horse that eats rapidly has been fed some finely ground concentrate feed and has choked. Discuss the method that you would use to attempt correction of the condition and the suggestions that you would give to the owner to enable him prevent the recurrence of this problem.
- 5. (a) Define the term intussusception and describe the components of an intussusception with the aid of appropriate illustrations.
- (b) Describe in detail how you would disengage the components of an ilio - caeco - colic intussusception in which the tissues appear fairly healthy.
- (c) Describe the three tests and the findings arising therefrom that may lead you to declare a part of the intestine involved in an intussusception as viable or non-viable.
- 6. (a) Discuss the factors which affect the quality of a diagnostic radiograph.
- (b) Discuss in detail the uses of the following accessories in radiology:-
 - i. a grid
 - ii. an intensifying screen
 - iii. lead aprons
 - iv. cones or diaphragms
- 7. (a) Discuss in detail two important features of the oesophagus that are of particular importance in its surgeries.
- (b) Describe how you would surgically treat a case of umbilical hernia in a cat in which there is loss of tissue due to repeated break down of sutured wound.

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY SECOND SEMESTER EXAMINATIONS - NOV/DEC 1996

VMC 532

THERIOGENOLOGY I

TIME: 3 HOURS

INSTRUCTIONS:

1. READ ALL QUESTIONS CAREFULLY BEFORE ATTEMPTING TO ANSWER ANY.
 2. ANSWER ALL QUESTIONS IN SECTION A AND ANY THREE QUESTIONS FROM SECTION B.
 3. EACH QUESTION CARRIES EQUAL MARKS.
-

SECTION A

1. A farmer tells you to examine a young Jersey bull of slightly over two years of age for breeding soundness. He would like to use this particular bull to run with his Jersey cows.

You carry out a thorough examination of the same bull and the following are your findings:

- The bull has a good general body condition.
- Scrotal circumference is 37 cm and the testes are turgid and elastic.
- The head and tail of epididymis are firm.
- The penis and prepuce are normal.
- No abnormalities can be detected on the accessory sexual glands.
- Libido is excellent.
- Semen volume is 5 ml, mass activity is two (2), progressive motility is 40% and sperm concentration is 1.3×10^6 sperms/mm³.
- Semen morphology reveals 22% of proximal cytoplasmic droplets and 42% of simple bent tails.
- No other cells other than spermatozoa are observed on the semen slide.

- (i) Discuss these findings.
- (ii) Which condition(s) would you suspect?
- (iii) Would you recommend this bull for breeding? Give reasons.

2. Mr. Hishinuma was out of town and on his return was informed by his servant that his two-year old Bull Mastiff bitch has had a vaginal discharge for the past three days. He rushes to your Clinic with the bitch eager to know whether she is ready for mating. You carry out a clinical and laboratory examination and the following are your findings:
- Vulval swelling
 - Vaginal discharge is blood tinged
 - Vaginal mucosa showing oedema and no crenulation on vaginoscopic examination.
 - Abundant red blood cells, no white blood cells, 50% large intermediate cells and 50% superficial cells with small nucleus on vaginal cytology.
- (i) Explain the stage of oestrous cycle of the bitch to Mr. Hishinuma.
- (ii) When would you recommend that the bitch be bred?
- (iii) Outline to Mr. Hishinuma the breeding management you would recommend for his bitch.
3. Mr. Champion Chakomboka's mare has been making unsuccessful attempts to deliver for the past one hour and he contacts you for assistance. He informs you that the fetal forelegs and the head are visible at the vulva and that he has tried modest traction without success. On vaginal examination you find the foal disposed as illustrated in Figure 1.
- (i) What is your full obstetrical diagnosis? Briefly, explain to Mr. Chakomboka the cause of the dystocia.
- (ii) Explain why this maldisposition is more common in the mare than in the cow.
- (iii) Discuss the manipulative delivery of the foal.

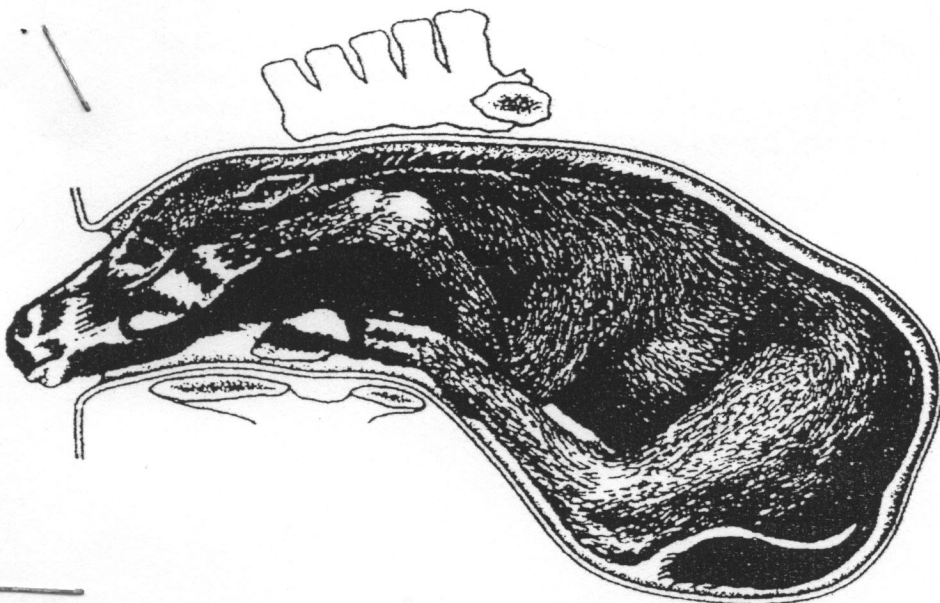


Figure 1.

SECTION B

4. A dairy farmer complains to you that the conception rate of his herd has actually dropped with the introduction of artificial insemination (A.I.) on his farm.
- (i) What are the possible causes of the poor conception rate?
 - (ii) Outline the importance of early oestrus detection in a dairy herd especially in the early postpartum period.
 - (iii) Advise the farmer on how to detect oestrus and the various methods available to improve the efficiency of identifying cows in oestrus.
5. (a) Prostaglandins are frequently used in the cow and the ewe to synchronise oestrus but they are of limited value in the sow.
- (i) Explain why?
 - (ii) Under what circumstances could Prostaglandins be used to synchronise oestrus in the sow?
 - (iii) Give two other practical methods of synchronising oestrus in the sow.
- (b) A cow is 45 days pregnant. What characterises this stage of pregnancy on rectal palpation?
- (c) When is the first heat observed after parturition in the mare and the sow, respectively? Is it advisable to breed at this heat?
6. Write short notes on the following:
- (a) Maternal recognition of pregnancy in the cow.
 - (b) Onset of breeding in the ewe.
 - (c) Induction of parturition in the cow.
 - (d) Methods of pregnancy diagnosis in goats.

7. On a routine farm visit to Mr. Nyirenda's farm, your attention is drawn to a 4 year old, 7 months pregnant Holstein-Friesen cow that has developed an enlarged abdomen rapidly over the past month. The animal has been recumbent for the past 48 hours and is anorexic.
- (i) What is your tentative diagnosis?
 - (ii) What other findings will help you to confirm your diagnosis?
 - (iii) What is the etiology of the condition?
 - (iv) How would you treat the condition and what would your prognosis be?
 - (v) The owner wants to know if the condition is heritable. Will this condition compromise the future breeding of the same animal?
-

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY FIRST SEMESTER EXAMINATIONS - JUNE 1996

VMC 611

CLINICAL VETERINARY MEDICINE III

TIME: THREE HOURS

ANSWER ALL QUESTIONS IN SECTION A AND THREE QUESTIONS IN SECTION B
WRITE THE ANSWER TO EACH QUESTION ON A SEPARATE SHEET OF PAPER

SECTION A

1. a) Discuss the different types of anaemia caused by Anaplasma marginale and Pteridium aquilinum in cattle.

 b) Describe the history, clinical, laboratory and pathological findings associated with these conditions.

 c) How would you prevent and treat these conditions?
2. A six month old German Shepherd puppy is presented with severe vomiting and foetid diarrhoea over the past 24 hours. On physical examination the puppy is depressed and there is blood on the thermometer but there are no further remarkable findings.

 a) List the differential diagnoses?

 b) What diagnostic test(s) and examination(s) are used to confirm your diagnosis?

 c) How would you treat this case?

 s) What measures should be taken to prevent further spread of disease?
3. a) Describe bovine botulism under the headings of history, clinical, laboratory and post mortem findings.

 b) List the differential diagnosis for this disease and mention how each condition may be eliminated to reach a final diagnosis.

SECTION B

4. List the likely causes of lameness in sheep as a flock problem.
Describe how you would proceed to establish a diagnosis and mention what control measures you would introduce.
5. Briefly explain what you understand by the terms shock and anaemia. Outline the causes, clinical manifestations, diagnosis and management of shock in farm animals.
6.
 - a) What signs will make you suspect an outbreak of Augesky's disease in a 300 sow herd?
 - b) How will you arrive at a conclusive diagnosis?
 - c) What steps will you take to control the outbreak?
7. A five year old female Rottweiller is presented with dysphagia and occasional cough. The owner has recently noticed firm swellings in the anterior neck region. The dog is otherwise bright and active.
 - a) What is your tentative diagnosis?
 - b) List the differential diagnoses?
 - c) How would you investigate the case to confirm your diagnosis?
 - d) How would you treat this case?

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY SECOND SEMESTER EXAMINATIONS - NOV/DEC 1996

VMC 612

CLINICAL VETERINARY MEDICINE III

TIME: THREE HOURS

ANSWER ALL QUESTIONS IN SECTION A AND THREE QUESTIONS IN SECTION B. BEGIN THE ANSWER TO EACH QUESTION ON A SEPARATE SHEET OF PAPER.

SECTION A

1. (a) List the tick-borne diseases of domestic ruminants in the Southern African Development Community (SADC).
(b) Give the species of the tick vector(s), relative pathogenicity and domestic ruminant species affected and list the disease causing organism by its correct species.

2. A 3 year old Labrador is presented to the clinic with depression, lethargy and according to the owner 'yellow' mucous membranes of acute onset. The dog had been alright the previous day and had recently been taken to a Vet for deworming. Levamisole was used to deworm the dog then.

On examination, there is evidence of pallor, splenomegaly and petechiae on the oral mucous membranes. Upon collection of a blood sample there was marked evidence of auto-agglutination on the glass tube.

- (a) What is your tentative diagnosis?
(b) What are your differential diagnoses?
(c) What further tests and examinations would you carry out to confirm your tentative diagnosis?
(d) Explain how you would manage this case.
3. You are called to clinically attend to a recently calved dairy cow which showed a worrying syndrome of depression, weak rapid pulse, lack of appetite, seriously reduced milk yield, sluggish ruminal and intestinal activities, an extremely dull expression, physical lethargy, pyrexia and muscular weakness almost to the point of collapse.
(a) Give a list of bovine disorders and or diseases which may account for these clinical manifestations.

- (b) How would you narrow your diagnosis down to a definitive diagnosis on this case, mentioning how each condition may be eliminated to reach a final diagnosis.
- (c) Recommend appropriate clinical treatment and management for these conditions and
- (d) Suggest necessary prevention and control measures to the farmer who has this patient in order to avoid possible recurrence in his herd.

SECTION B

4. A 2 year old German Shepherd dog is presented with a defecation problem. The owner tells you that the dog strains and produces soft blood-tinged stool. The dog's appetite has only reduced slightly but is otherwise normal.

On examination, the dog is pale and depressed. The faeces on examination contain blood and a copious amount of mucus.

- (a) What is your tentative diagnosis?
 - (b) What are the differential diagnoses?
 - (c) What further tests and examinations would you do to confirm your diagnosis?
 - (d) How would you treat this condition?
5. What are the causes of neonatal mortality in ruminants. Discuss intensive care of the new-born calves. Advise the farmer on prevention of neonatal mortality in his ruminant production.
6. Give an account of the occurrence, aetiological factors, pathogenesis, clinical manifestations, clinical pathology, diagnosis treatment, prevention and control of any Three of the following:
- (a) African horsesickness
 - (b) Equine influenza
 - (c) Equine infectious anaemia
 - (d) Equine strangles

7. (a) List the most problematic endoparasites in domestic livestock in Southern Africa.
- (b) Discuss the clinical signs, diagnosis, clinical pathology, treatment, prevention and control of any two of your listed endoparasites.
- (c) Outline the aetiology, clinical signs, control and treatment of coccidiosis in feedlot calves.
-

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY FIRST SEMESTER EXAMINATIONS - JUNE 1996

VMC 621

OPERATIVE VETERINARY SURGERY II

TIME: THREE HOURS

ANSWER ALL QUESTIONS IN SECTION A AND THREE QUESTIONS IN SECTION B.
WRITE THE ANSWER TO EACH QUESTION ON A SEPARATE SHEET OF PAPER.

SECTION A

1. a) Discuss the criteria that you would use to decide that a horse showing signs of abdominal pain would not respond to medical therapy.

 b) Discuss the pathophysiology of rupture of the equine stomach which is secondary to volvulus of the small intestine.
2. Discuss the anatomical features, the difference(s) in clinical signs and difference(s) in physical examination between a cow with right displacement of the abomasum and a cow with right torsion and volvulus of the abomasum.
3. a) A six year old Doberman Pinscher is presented with a history of vomiting a few minutes after eating, a sample of the vomitus reveals undigested food of an alkaline pH with no evidence of bile, there are no further remarkable findings on clinical examination.
 - i) What is your tentative diagnosis?
 - ii) List your differential diagnoses.
 - iii) Describe the patient position for radiology and list the radiological findings expected for the condition suggested as your tentative diagnosis.
- b) Outline the clinical correlations and radiological features of the following conditions
 - i) Cranial mediastinal mass.
 - ii) Renal secondary hyperparathyroidism.
 - iii) Pneumothorax.
 - iv) . Bacterial pneumonia.

SECTION B

4.
 - a) Discuss the clinical signs and management of radial nerve paralysis.
 - b) Discuss the clinical signs and management of the condition called "sweeney" (supra scapular paralysis)
5. Outline the clinical correlations (associated clinical findings) and list the radiological features for each of the following:
 - a) Osteosarcoma.
 - b) Ectopic ureter.
 - c) Generalised hepatomegaly.
 - d) Right heart enlargement.
6. A nine month old dog is presented with the history of poor growth, weakness and recurrent ascites and, lately, a cough which worsens at night. The owner reported that on two occasions the animal turned bluish on the abdomen and all four feet but not on the ears, face and mouth. Your physical examination revealed a very loud continuous cardiac murmur, heard throughout the cardiac cycle.
 - a) What conditions do you suspect?
 - b) Explain why the "bluish" colour was selective.
 - c) Describe the pathogenesis of the cough.
 - d) How would you manage this case and what would be the prognosis?
7. A seven year old Dachshund bitch is presented with a three day history of sudden loss of function of the hind limbs and the tail is flaccid. The bitch did not pass urine initially but over the past 24 hours there has been dribbling of urine.
 - a) Discuss the diagnostic procedures and management options in this case.
 - b) What prognosis would you give associated with your findings.

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY SECOND SEMESTER EXAMINATIONS - NOV/DEC 1996

VMC 622

OPERATIVE VETERINARY SURGERY III

TIME: THREE HOURS

INSTRUCTIONS: ANSWER THE THREE QUESTIONS IN SECTION A AND
THREE QUESTIONS FROM SECTION B.

SECTION A

1. A 20 year old horse develops a chronic unilateral nasal discharge. When you examine this animal you find that the discharge has a very fetid smell and the owner reports that there has been no evidence of respiratory disease in this or any other horse in the stable for the last one year.

Discuss the conditions that this history would cause you to suspect and further diagnostic tests that should be done to definitively diagnose the condition.

2. A sixteen-year old Ridgeback male dog was presented with the history of impaired vision of about six months duration. On physical examination, you notice that both eyes are densely opaque and whitish over the area of the pupils.
- (a) What condition do you suspect in this animal?
 - (b) Describe two simple tests you would carry out to enable you determine if this dog was actually blind.
 - (c) What further tests would you carry out to confirm your diagnosis?
 - (d) Briefly describe how you would manage this condition? (limit your descriptions to the actual therapy).
3. A 5 year old male dog is presented to your clinic with a history of difficulty in urination of two days duration. The owner explains that the dog appears to strain when attempting to urinate but mostly dribbles urine. The dog is fed a diet of mostly meat. On examination, the dog is dull and depressed and its mucous membranes are ~~ejected~~. Abdominal palpation reveals pain and a distended viscus.

- (a) What is your tentative diagnosis?
- (b) What are your differential diagnoses?
- (c) Mention what further tests you would carry out to confirm your tentative diagnosis.
- (d) Describe in detail how would you manage this case
 - i. medically
 - ii. surgically

SECTION B

- 4. (a) Discuss in detail indications for and the procedure for performing a tracheotomy in large animals.
 - (b) Describe the restraint and the procedure you would suggest for dehorning 10 dairy cows and the possible complications of this procedure.
 - 5. Describe in detail the surgical technique ONLY for the management of the following conditions:
 - (a) chronic exudative otitis media in dogs.
 - (b) chronic hyperplastic otitis with severe ulceration of the tissues of the vertical ear canal in dogs.
 - (c) the surgical correction for entropion in dogs.
 - 6. (a) A four year old dog is presented 24 hours after being struck by a vehicle, the owner's main concern is that the dog is unable to close the mouth properly and on examination there is pain and excess mobility on manipulation of the lower jaw. The dog is otherwise bright and no further abnormalities are detected. Discuss the differential diagnosis, the means by which you would establish a definite diagnosis and how you would manage one of the conditions mentioned.
 - (b) Describe how you would manage a case of anal sacs impaction in a four year old alsatian male dog.
 - 7. List the complications associated with surgical management of fractures of long bones in small animals and discuss how each complication may be managed.
-

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY FIRST SEMESTER EXAMINATIONS - JUNE 1996

VMC 631

THERIOGENOLOGY II

TIME: THREE HOURS

READ ALL QUESTIONS CAREFULLY BEFORE ATTEMPTING TO ANSWER
ANSWER ALL QUESTIONS IN SECTION A AND THREE QUESTIONS IN SECTION B
WRITE THE ANSWER TO EACH QUESTION ON A SEPARATE SHEET OF PAPER
ALL QUESTIONS CARRY EQUAL MARKS.

SECTION A

1. You are called to examine a 10 years old Holstein/Friesian dairy cow which gave birth, with assistance three months ago, to a relatively large male calf. The cow is eating well and there is no sign of illness, however she has not been observed to come on heat and the farmer is worried because it is the highest milk producer on his farm. He usually uses artificial insemination for breeding but has a bull as well.
 - i) What would you expect to find on rectal examination?
 - ii) What disease condition(s) would you suspect?
 - iii) How would you resolve the problem(s) in ii) above?
 - iv) What advice would you give to the farmer?
2. You are asked to investigate a problem on a farm where 50 ewes are kept intensively. On arrival you notice that there is evidence of infestation with rats and/or mice even though cats are present. The history indicates that some ewes have aborted in late gestation and there have also been still births and weak lambs. Examination of the placenta of a recently aborted foetus reveals numerous grey white foci 1.0 - 3.0 mm in diameter on the cotyledons.
 - i) What is your tentative diagnosis?
 - ii) Explain briefly the source and mode of transmission of this disease to ewes.
 - iii) How would you prevent and control the disease?

3. a) When do the majority of ovulations occur in the bitch relative to:
- i) sexual receptivity?
 - ii) the onset of pro-estrual bleeding?
 - iii) the LH (lutenising hormone) surge?
 - iv) the peak serum oestrogen concentration?
- b) Prostaglandins are excellent abortifacients in the sheep and in the cow during the first half of gestation. However, they are of less value in the dog.
- i) Comment specifically on their safety and the stage of gestation at which they are effective in the bitch.
 - ii) Are there any other options for use in the bitch? If so name one.
- c) A mare is eight months gravid when she begins to lactate.
- i) Is this a cause for alarm?
 - ii) Give three probable causes for this problem.
 - iii) The owner tells you that the mare has been vaccinated against equine rhinopneumonitis. What is your response?
- d) A mare has a history of being diagnosed pregnant 35 to 50 days but then lost the pregnancy before 150 days.
- i) What is the most likely cause of this syndrome?
 - ii) How will you diagnose and treat this syndrome?

SECTION B

4. A farmer asks you to examine two of his high yielding Friesian milkers 70 days post partum. One has shown frequent but irregular oestrus cycles and the other shows anoestrus.
- a) What would be your tentative diagnosis?
 - b) How would you examine the animals in order to reach a definitive diagnosis?

- c) Explain briefly the pathogenesis, causes and/or risk factors for the condition you suspect.
 - d) What advice would you give to the farmer in order to prevent the condition?
 - e) Explain all the various treatment options you might use.
5. During a routine visit to a pig farm your attention is drawn to a fat sow which farrowed 48 hours ago. The sow is showing signs of sluggishness and tiredness.
- On physical examination you notice cyanotic spots on the skin, increased lochial discharge and the body temperature is 42°C. Moreover the sow is not interested in the piglets as manifested by her preference for sternal recumbency.
- a) Which disease condition would you suspect?
 - b) Describe its pathogenesis?
 - c) What factors predispose to this condition?
 - d) How would you treat and prevent this condition?
6. Diseases of the prostate gland are common in the dog. To initiate proper treatment it is essential for the clinician, not only to diagnose the presence of prostatic disease but also to identify the specific pathological process.
- a) Briefly discuss the separate diseases of the prostate in the dog and their clinical manifestation.
 - b) Outline the medical management of each of these conditions.
7. A farmer complains that two of his cows return to service at regular oestrus intervals (18 - 24 days) and have had more than three services already. On clinical examination they appear normal.
- a) What is your diagnosis?
 - b) What are the causes or risk factors for this condition?
 - c) What advice would you give the farmer to help to treat or prevent this condition?

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY FIRST SEMESTER SUPP/DEFERRED EXAMS - JULY 1996

VMD 511

VETERINARY CLINICAL PATHOLOGY I

TIME: THREE HOURS

NOTE: ANSWER ALL QUESTIONS

1. Describe in detail the requirements for establishment of Basic and Complete Pathology laboratory.
2. (a) What do you understand by exfoliative cytology. Write the advantages and disadvantages.
(b) Write the different methods of fluid collection from body cavities. How will you differentiate between transudate and exudate?
3. (a) Describe in detail the blood indices indicating their importance and method of calculation.
(b) What is anaemia. Classify indicating different parameters. Write the normal blood values of cattle, dog and that of a horse.
4. A 5 year old dog was presented to a veterinarian with a history of progressive weight loss for the last one month. The rectal temperature was normal. The pcv was 20%, TLC 30,000/ul. Neutrophils 70%, Eosinophils 10%, basophils 1%, monocyte 3% lymphocyte 16%, TRBC was 3×10^6 /ul. Six days later the pcv came down to 15% and other blood values remained almost same inspite of the treatment. Faecal examination revealed many hookworm ova for which the dog was treated and blood transfusion was given. Six days later the blood was collected and following were the detailed haematological findings.

RBC 2×10^6 /ul.	Plasma Protein 6gm/dl
Hb. 4gm/dl	WBC 110×10^3 /ul
PCV 8%	Neutrophils - m 22%
MCV 72fl.	Neutrophils - B 31%
MCHC 32gm/dl	Myelocyte 22%
MCH 24pg	Eosinophils 5%
Nucleated	Lymphocyte 10%
$\frac{4}{\text{RBC/100 WBC}}$	Monocyte 3%
Reticulocytes 1%	Myeloblasts 6%

Based on haematological findings give your clinicopathological diagnosis. Defend your diagnosis with suitable brief explanation. Give your prognosis.

5. Write short notes on the following:

- (a) Shift to the left and its importance in haematology.
- (b) Reticulocytes and procedure of determination and identification.
- (c) Developmental stages (from mature to immature) of the granulocyte and importance of each cell and their normal location.
- (d) Myeloproliferative disorder.

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY SECOND SEMESTER EXAMINATIONS - NOV/DEC 1996

VMD 512

VETERINARY CLINICAL PATHOLOGY II

TIME: THREE HOURS

ANSWER: ALL QUESTIONS

Q1. Give the name of enzymes or serum constituents that are responsible for following diseases: (10 marks)

- (a) Pancreatitis
- (b) Nutritional muscular dystrophy
- (c) Hepatic encephalopathy
- (d) Nephrotic syndrome
- (e) Haemolytic anaemia

Q2. Write the five highest concentration of ALP (SAP) activity organ. (10 marks)

- 1.
- 2.
- 3.
- 4.
- 5.

Q3. Choose five questions out of the eight and describe the characteristic laboratory findings of serum and/or urine. (20 marks)

- (a) Biliary obstruction
- (b) Liver cirrhosis
- (c) Lymphosarcoma
- (d) Renal amyloidosis
- (e) Acute myocarditis
- (f) Chronic pyelonephritis
- (g) Feline infectious peritonitis
- (h) Normal fetal serum

- Q4. Explain the following terminology giving a suitable example of disease or clinical findings occurring in domestic animals. (20 marks)
- (a) Haemoglobinuria
 - (b) Low specific gravity of the urine
 - (c) Bence-Jones proteins
 - (d) Hyperglobulinemia, Bacteriuria
 - (e) Hypocalcemia
- Q5. What do you know about diabetes mellitus? Give its causes, pathogenesis and method of determination of serum/plasma/blood glucose level. Write the normal plasma glucose level in chicken, dog, horse, cattle and pig. (20 marks)
- Q6. Describe in detail the different types of examination you would like to conduct on a urine sample received in a laboratory and different parameters of interpretation giving more emphasis on chemical examination. (20 marks)
-

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY FIRST SEMESTER EXAMINATIONS - JUNE 1996

VMD 521

INFECTIOUS DISEASES OF LIVESTOCK

TIME: THREE HOURS

ANSWER: ALL QUESTIONS (300 MARKS IN GRAND TOTAL)

1. Answer the following questions on African swine fever:
(50 marks in total)
 - (a) Aetiology of the disease. (10 marks)
 - (b) The epizootiology of the disease. (15 marks)
 - (c) Major clinical manifestations and pathological changes in the affected animals. (15 marks)
 - (d) Control measures of the disease. (10 marks)
2. Discuss the following: (50 marks in total)
 - (a) The infection, spread and shedding of rabies virus in the body. (10 marks)
 - (b) Aetiology, epizootiology and clinical manifestations of rinderpest. (10 marks)
 - (c) The epizootiology, clinical manifestations and gross pathological changes of bluetongue in sheep and cattle. (10 marks)
 - (d) Why is FMD regarded as one of the most important diseases in endemic countries such as Zambia? Why is it difficult to eradicate FMD in this country? (10 marks)
 - (e) 'Sentinel animal' as one of the control measures of infectious diseases of viral origin. (10 marks)
3. The government of a country in which CBPP (Contagious Bovine Pleuropneumonia) is endemic has embarked on a control programme of the disease:
 - (a) Discuss the aetiology and clinical manifestations of CBPP. (30 marks)
 - (b) Prepare an outline plan for the control of the above disease. (20 marks)

4. (a) Give an account of the distribution in nature, pathogenesis and control of any two of the following bacterial diseases:
- | | | |
|-------|-----------|------------|
| (i) | Anthrax. | (20 marks) |
| (ii) | Tetanus. | (20 marks) |
| (iii) | Botulism. | (20 marks) |
- (b) Design a simple control programme for infections due to Pasteurella multocida. The plan should be suitable for the traditional sector. (10 marks)
5. Considering the clinical and/or pathological features, how can you carry out the differential diagnosis between:
- Haemonchosis and ostertagiosis in sheep. (20 marks)
 - Sarcoptic, chorioptic and psoroptic manges in horses? (20 marks)
6. Discuss in brief the gross pathological findings, differential diagnosis and the control measures of anaplasmosis, babesiosis and theileriosis in cattle. (60 marks)

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY SECOND SEMESTER EXAMINATIONS - NOV/DEC, 1996

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.

Calculate

- (i) The mode
- (ii) The median
- (iii) The arithmetic mean
- (iv) The confidence interval for group A, showing your calculations.
- (v) Using the above statistics compare and contrast between the two groups.

1. (b) On the 22nd of March, 1989 you receive a disease occurrence report from a farmer. You visit the farm on the 24th of March, 1989 to investigate and collect specimen. You revisit the farm on the 24th of April 1989 (a month later) to report on your findings and give recommendations for possible control measures. You have the following minimum data:
- Total herd size on 24th March was 800
 - Number of animals sick on the same day was 30
 - Number of animals becoming sick between 24th March and 24th April is 100.
 - Number of deaths from the disease between 24th March and 24th April is 20.

Calculate

- (i) Attack rate
 - (ii) Incidence rate for the specified period
 - (iii) Prevalence rate on March 24th. What is the name of this rate?
 - (iv) Mortality rate
 - (v) Case fatality rate [10 points]
2. (a) Name and briefly describe the requirement of a diagnostic test.
- (b) What are the specialised uses of diagnostic tests?
- (c) A screening test revealed 62 cattle positive for a certain infectious disease out of a total herd of 700. Only 48 out of the 62 positive cattle were confirmed by culturing. Specimen were also collected from a randomly selected sample of the test negative animals. On culture it was revealed that 10% of these animals were actually infected.
- (i) From the data construct a 2 x 2 table filling in all the details.

(ii) Calculate

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

- (d) 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]

3. (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) Diagnostibility
- (iii) Positive predictive value [15 points]

4. (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 follows:

	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 - JUNE 1996

VMD 532

VETERINARY ECONOMICS

TIME: 3 HOURS

ANSWER: ALL FOUR QUESTIONS

1. (a) What do the following terms mean: marginal cost, marginal revenue and marginal product? (15)
 - (b) In milk production considering labour as the variable input, show what you would expect to happen to the marginal cost, marginal (physical) product and marginal product value of labour when a dairy herd is affected by a fast moving disease (FMD) which reduces the efficiency of the production system. (15)
 - (c) By means of a diagram(s), explain the divergence between maximum production (as exemplified by disease eradication) and maximum profit. (10)
 - (d) List the determinants of aggregate supply of a livestock product and write down the supply function relating quantity supplied to price. (10)
 - (e) Using the above function, differentiate between an increase in supply and an increase in the quantity supplied. (10)
 - (f) A suspected fast moving disease attacks the dairy sector of an area. The disease reduces the level of milk production. Show with the aid of diagrams the effect of the disease on supply and price of milk (assume no importation). (40)
-
2. Assuming the FMD above has become endemic in an area and a special control project consisting mainly of vaccination and movement control and lasting 5 years is set up:
 - (a) Differentiate between, and show the relationship between, the disease cost, disease expenditure and disease loss. (20)
 - (b) In considering choices against the disease we can either employ strategy x or do nothing'. For each choice show how disease cost will relate to disease expenditure and disease loss. (10)

- (c) Give 4 examples of fixed costs and 4 examples of variable costs that you would expect to be encountered. (10)
- (d) If you are incharge of such a project would you worry about the ratio between fixed and variable costs? Briefly defend your answer. (20)
- (e) In such a project show how you would deal with the annual cost of a durable item which has a salvage value. (10)
- (f) Further more assuming a competitive market for milk, explain with the aid of a diagram (or diagrams) the long term impact of a successful control program on milk price, consumers and producers. (30)

3. A poultry farmer started his business with 5000 birds valued at \$ 7000. In 1995 he sold 98000 dozens of eggs and 3 850 cull birds for \$29 400 and \$2 175 respectively. He also gave his employees 1 500 dozens of eggs and 150 cull birds worth \$450 and \$75 respectively. He spent \$9 830 on concentrate feeds and utilise home-grown maize worth \$5 170 in compounding ration for the birds. The farmer also spent \$2 000 on veterinary services and medicines. The value of birds at the point of lay was estimated at \$7 500. He had no other cost. Evaluate the following for the year 1995.

- (a) Enterprise output, (40)
- (b) Total variable costs, (40)
- (c) Gross margin per bird. (20)

Please show all the steps taken in arriving at the answers.

4. An agricultural company is planning to run its own animal health services. The estimated cash flows at constant prices for the 5 year project are as follows.

Year	1	2	3	4	5
Incremental					
Net Benefit (K)	-345630	100 000	100 000	120 000	120 000

Given that the cost of capital is 10%

- a) Is the project worth undertaking? (40)
- b) Calculate the Internal rate of return for the project. Equate any Net Present Value less than K100 equal to zero (20).

- c) Give two main reasons and explain why a K100 000 in year 2 is not equal to K100 000 in year 5. (20)
- d) Define uncertainty and explain how you would deal with it. (20)
-

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY FIRST SEMESTER SUPP/DEFERRED EXAMS - JULY 1996

VMD 532

VETERINARY ECONOMICS

TIME: THREE HOURS

ANSWER: ALL FOUR QUESTIONS

1. An agricultural company in planning to run its own animal health service. The estimated cash flows at constant prices for the 5 years project are as follows:

YEAR	1	2	3	4	5
Incremental Net Benefit (K)	-345630	100,000	100,000	120,000	120,000

Given that the cost of capital is 10%

- (a) Analyse the project to determine if it is worth undertaking. (40)
- (b) Calculate the internal rate of return for the project. Equate any net present value less than K100 equal to zero. (20)
- (c) Give two main reasons and explain why a K100,000 in year 2 is not equal to K100,000 in years. (20)
- (d) Define uncertainty and explain how you would deal with. (20)
2. A dairy farmer has 10 dairy cows and always keeps his herd size fixed at this number of cows. In 1989 he sold a total of 12,600 litres of milk. In addition, his family consumed 1500 litres which were produced by his cows. The price of milk is \$0.50 per litre. He culled two cows and received \$250 per cow, and in order to replace them he bought two pregnant heifers costing \$350 per heifer. He sold 10 calves for \$65 each. He spent \$700 on medicines, insemination and veterinary costs for his cows. He spent \$1780 on minerals and concentrates for the cows. He estimated depreciation on all items at \$560 per year and miscellaneous fixed costs

at \$1000 per year. All the labour for his cows is provided by the family. He estimated that value of this labour that he and his wife and child put into the cows was worth about \$2600 a year. He had no other costs.

For the year 1989, calculate the following:

- (a) enterprise output (30)
 - (b) gross margin (30)
 - (c) net farm income (20)
 - (d) management and investment income (10)
 - (e) comment on your results (10)
3. (a) Discuss the ways in which you would use gross margin calculations in helping:
- (i) a commercial farmer (25)
 - (ii) a largely subsistence farm family to plan their activities (25)
- (b) Discuss the main limitations to how useful a tool gross margin analysis can be in farm analysis and planning (50)
4. Assuming FMD is endemic in an area and a special control project consisting - mainly of vaccination and movement control and lasting 5 years is set up:
- (a) Differentiate between, and show the relationship between, the disease cost, disease expenditure and disease loss. (20)
 - (b) In considering choices against the disease we can either employ strategy X or do nothing. For each choice show how disease cost will relate to disease expenditure and disease loss. (10)
 - (c) Give 4 examples of fixed costs and 4 examples of a variable costs that you would expect to be encountered. (10)
 - (d) If you are in charge of such a project would you worry about the ratio between fixed and variable costs? Briefly defend your answer. (20)
 - (e) In such a project show how you would deal with the annual cost of a durable item which has a salvage value. (10)
 - (f) Further more assuming a competitive market for milk, explain with the aid of a diagram (or diagrams) the long term impact of a successful control program on milk price, consumers and producers. (30)

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY SECOND SEMESTER EXAMINATIONS - NOV/DEC 1996

VMD 612

VETERINARY EXTENSION AND JURISPRUDENCE

TIME: THREE HOURS

ANSWER: ALL QUESTIONS

1. a) What do you understand by Veterinray Jurisprudence?
b) Why do you think it is essential to include this course in a Veterinary curriculum?
c) Give hints to what one should observe in a Court of Law when giving evidence as an expert witness. (15 points)
 2. What is death? Briefly describe the modes of death including its possible aetiology and symptoms. Enumerate the different signs of death. (15 points)
 3. Describe in detail Chapters 387 and 389 of the Laws of Zambia emphasizing on their major objectives. (15 points)
 4. a) Enumerate and briefly describe the different criteria for selecting an extension worker.
b) What is T and V Extension? (15 points)
 5. Describe in detail, how you would manage an agricultural extension project aimed at improving livestock production and health in rural areas. (15 points)
 6. Write short notes on the following:
 - a) i) OIE and its functions
ii) IBAR and its functions
 - b) Common offences of cruelty against animals.
 - c) The organizational structure of the Department of Animal Production and Health in Zambia.
 - d) Contact man and Contact farmer.
 - e) Oath, stock movement permit.(25 points)
-

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY FIRST SEMESTER EXAMINATIONS - JUNE 1996

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) Describe an important disease with typical clinical signs among warm water fish caused by:
- (i) Herpes virus
 - (ii) Iridovirus
- (c) Briefly describe the causative agents, natural habitats and ecological aspects of Motile Aeromonas Septicemia. (7 points)

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY FIRST SEMESTER SUPP/DEFERRED EXAMS - JULY 1996

VMD 641

PREVENTIVE VETERINARY MEDICINE

TIME: THREE HOURS

ANSWER: ALL QUESTIONS

1. What do you understand by preventive veterinary medicine?
Briefly discuss the different principles of disease control in livestock including poultry. (20 points)
2. (a) What is disinfection? Name four disinfectants commonly used in veterinary practice and in which diseases.
(b) How will control mastitis in a dairy herd consisting of 250 cows of which 180 are currently milking using a milking machine. (20 points)
3. (a) Discuss the role of wildlife in the epidemiology of.
 - (i) Malignant catarrhal fever
 - (ii) African swine fever
 - (iii) Foot and mouth disease
 - (iv) Trypanosomiasis(b) What do you know about anthrax in wildlife in Zambia.
Briefly describe its occurrence and distribution.
(c) What are the advantages of game ranching over livestock farming. (25 points)
4. Name a scheduled bacterial disease of poultry which can spread from hatcheries. Briefly describe its etiology, epidemiology, pathogenesis, clinical and postmortem findings, as well as its diagnosis, control and prevention. (20 points)

5. (a) Describe an important warm water fish caused by
- (i) A herpes virus
 - (ii) An iridovirus
- (b) How will you prevent infectious diseases in cultured fish?
- (c) Name the common condition of crocodile hatchlings and its control. (15 points)
-

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY FIRST SEMESTER EXAMINATIONS - JUNE 1996

VMD 651

VETERINARY PUBLIC HEALTH I

TIME: 3 HOURS

TOTAL MARKS: 100

ANSWER: ALL THE QUESTIONS

1. Define zoonosis. Using examples, explain how the transmission of direct zoonosis affects the method of control of those diseases transmitted directly to man. (20 marks)
 2. Explain egg's defense mechanism against spoilage. Discuss storage, processing and grading of eggs. (20 marks)
 3. Describe food poisoning due to food borne infections of bacterial origin. Discuss the prevention and control of food poisoning due to salmonella and the control of salmonellosis in animals. (20 marks)
 4. Compare and contrast Taenia solium and Taenia saginata infections in man and other animals. Write the meat inspection requirements and procedures of the above conditions. (20 marks)
 5. Describe the transmission cycle of anthrax, brucellosis, tuberculosis, plague, and rabies. List at least two groups of people at risk of acquiring each of the above diseases. (20 marks)
-

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY FIRST SEMESTER EXAMINATIONS - JUNE 1998

VMP 411

GENERAL VETERINARY PATHOLOGY

TIME: THREE HOURS

ANSWER: ALL QUESTIONS

1. Define each of the following, concisely: (1 mark each)
- (i) Pathology
 - (ii) Fatty degeneration
 - (iii) Gout
 - (iv) Fat necrosis
 - (v) Karyorrhexis
 - (vi) Livor mortis
 - (vii) Hemosiderosis
 - (viii) Calcification
 - (ix) Hemorrhage
 - (x) Embolus
 - (xi) Diphtheritic membrane
 - (xii) Ulceration
 - (xiii) Granulation tissue
 - (xiv) Trephones
 - (xv) Metaplasia
 - (xvi) Hyperplasia
 - (xvii) Neoplasm
 - (xviii) Virulence
 - (xix) Hypersensitivity
 - (xx) Lymphokines
2. Give an example for each of the following: (1 mark each)
- (i) A depositional hyalin change
 - (ii) A condition in which there would be glycogen infiltration
 - (iii) A condition characterized by fat necrosis
 - (iv) A condition in which there is coagulative necrosis
 - (v) The form of necrosis found in any tissue or organ where a pyogenic bacterium is involved
 - (vi) Pigmentation of tissues after death of an animal
 - (vii) A condition resulting from dust retention in lungs
 - (viii) An endogenous pathological pigmentation derived from hemoglobin
 - (ix) A type of edema due to decreased plasma colloidal osmotic pressure i.e., hypoproteinemia
 - (x) A condition in which you can expect mural thrombosis

- (xi) A pathogenic organism inducing granulomatous inflammation
- (xii) An inflammatory condition in which the exudate is mainly catarrhal (mucoid) in nature
- (xiii) Stable cells derived from mesenchyme
- (xiv) A local factor affecting the adequacy and quality of repair
- (xv) Pathologic hyperplasia
- (xvi) A type of atrophy
- (xvii) A malignant mesenchymal tumor
- (xviii) A mechanism of metastasis
- (xix) A pathogenic infectious agent causing disease
- (xx) A disease typified by cell mediated (or delayed) hypersensitivity.

3. Complete each of the following statements (single or double word): (1 mark each)

- (i) One of the histopathological stains used to detect fungi would be
- (ii) The systematic evaluation of a carcass for evidence of disease is known as
- (iii) Collections of crystals appearing as clefts in tissue after severe tissue damage or hemorrhage are known as
- (iv) A degenerative process by which an amorphous pale eosinophilic proteinaceous material is deposited in an extracellular position in certain tissues is
- (v) The distinctive form of necrosis commonly associated with tuberculous lesions is
- (vi) A condition in which necrotic tissue is invaded by saprophytic and putrefactive bacteria is known as

- (vii) Autolysis and putrefaction can be stopped by a variety of chemicals of which is the most common.
- (viii) Peroxidation of lipids results in the deposition of a yellowish-brown pigment, in the cytoplasm of affected parenchymal cells.
- (ix) infarcts are seen in organs with poor collateral circulation.
- (x) refers to a specific syndrome of acute cardiac failure due to massive hemopericardium.
- (xi) The azurophilic granules of neutrophils contain the enzyme,, which plays an important role during the process of phagocytosis.
- (xii) One of the consequences of the inflammatory process is
- (xiii) Cells that do not retain the capacity to regenerate throughout life are referred to as cells.
- (xiv) Healing by second intention inevitably results in the formation of large amounts of scar tissue and consequent excessive collagenization, a process known as
- (xv) refers to an increase in organ size or tissue mass due to an increase in the size of already existing cells.

- (xvi) refers to the complete or almost complete failure of an organ to develop.
- (xvii) Neoplastic growths arising from more than one germ layer, and showing some tissue organization which is not normally present in the tissue in which it is occurring are known as
- (xviii) Agents known to induce neoplasia are called
- (xix) A carrier state in which an individual harbors and excretes a known pathogen but has no clinical evidence of the disease is referred to as
- (xx) Diseases resulting from production of antibody to cell antigens of the host are known as diseases.

4. Write short notes on each of the following: (4 marks each)
- (a) Hypovolemic shock
 - (b) List four chemical mediators of acute inflammation, and mention their source and function in the reaction.
 - (c) Porphyria
 - (d) Dysplasia
 - (e) Host response to an infectious fungus
5. Outline the sequence of events that occur in an area of acute inflammation. (10 marks)
6. Briefly differentiate between benign and malignant tumors in terms of structure, growth, differentiation, metastatic properties, and prognosis. (10 marks)

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY FIRST SEMESTER SUPP/DEFERRED EXAMS - JULY 1995

VMP 411

GENERAL VETERINARY PATHOLOGY

TIME: THREE HOURS

ANSWER: ALL QUESTIONS

1. Define each of the following, concisely: (1 mark each)

- (i) Pathogenesis
- (ii) Fibrinoid degeneration
- (iii) Corpora amylacea
- (iv) Caseous necrosis
- (v) Karyolysis
- (vi) Rigor mortis
- (vii) Jaundice
- (viii) Metastatic calcification
- (ix) Edema
- (x) Thrombus
- (xi) Diphtheritic membrane
- (xii) Cellulitis
- (xiii) Granulation tissue
- (xiv) Wound hormones
- (xv) Dysplasia
- (xvi) Atrophy
- (xvii) Anaplasia
- (xviii) Parasitism
- (xix) Hypersensitivity
- (xx) Chemotaxis

2. Give an example for each of the following: (1 mark each)

- (i) An intranuclear hyaline change
- (ii) A condition in which there would be fatty degeneration
- (iii) A condition characterized by caseous necrosis
- (iv) A condition in which there is gangrenous necrosis
- (v) The form of necrosis most commonly encountered when a tissue loses its blood supply
- (vi) Pigmentation of tissues after death of an animal
- (vii) A condition resulting from the abnormal accumulation of black carbon pigment in tissues
- (viii) An endogenous pathological pigmentation derived from lipids
- (ix) A type of edema due to increased tissue hydrostatic pressure

- (x) A condition in which you can expect widespread petechiae and ecchymoses
- (xi) A pathogenic organism inducing purulent (suppurative) inflammation
- (xii) An inflammatory condition in which the exudate is mainly granulomatous in nature
- (xiii) Labile cells
- (xiv) A systemic factor affecting the adequacy and quality of repair
- (xv) Physiologic atrophy
- (xvi) A type of hypertrophy
- (xvii) A malignant epithelial tumor
- (xviii) A route of metastasis
- (xix) A pathogenic parasitic agent causing disease
- (xx) A disease typified by cytotoxic or type II hypersensitivity

3. Complete each of the following statements
(single or double word):

(1 mark each)

- (i) One of the histopathological stains used to identify amyloid in tissue would be
- (ii) The systematic evaluation of a carcass for evidence of disease is known as
- (iii) is the name of the disease that occurs when uric acid and urate crystals are deposited in tissue as a result of defects in purine metabolism.
- (iv) An intracellular degenerative change in which there is the accumulation of fat in cells which do not normally contain fat is known as
- (v) The distinctive form of necrosis that commonly occurs in the central nervous system and in bacterial infections leading to pus formation is
- (vi) is a condition in which necrotic fat tissue is sometimes found in abnormal locations.
- (vii) In histopathology, one of the most commonly used chemical agent for fixation is
- (viii) The pigment that results from the action of acid or alkali on hemoglobin and is formed in tissues when exposed to acids or alkalis after death is known as
- (ix) infarcts are seen in organs with a dual/collateral circulation.
- (x) refers to the accumulation of pus within a body cavity.
- (xi) In a chronic inflammatory response, cells are those that are not required to phagocytize but work at destruction of the irritant from the outside by secretions instead of from the inside as in phagocytosis.

- (xii) One of the consequences of the inflammatory process is
- (xiii) Cells that ordinarily do not multiply during adult life but retain a latent capacity for mitotic division and can divide if need to are referred to as cells.
- (xiv) Healing by second intention inevitably results in the formation of large amounts of scar tissue and consequent excessive collagenization, a process known as
- (xv) refers to an increase in organ size or tissue mass due to an increase in the number of constituent cells.
- (xvi) is a reversible change in which one adult cell type (epithelial or mesenchymal) is replaced by another adult cell type following several generations of mitosis of the germinal layer.
- (xvii) Neoplastic growths arising from more than one germ layer, and showing some tissue organization which is not normally present in the tissue in which it is occurring are known as
- (xviii) Agents known to induce neoplasia are called
- (xix) A carrier state in which an individual harbors and excretes a known pathogen but has no clinical evidence of the disease is referred to as
- (xx) Diseases resulting from production of antibody to cell antigens of the host are known as diseases.

4. Write short notes on each of the following: (4 marks each)

- (a) Types of emboli which can occur
- (b) Hyalinization
- (c) Porphyria
- (d) Agenesis, aplasia and hypoplasia
- (e) Host response against toxins and poisons

5. Define inflammation and briefly describe the types of exudates which can occur. (10 marks)

6. Define neoplasia and outline the distinctive tissue and cellular features that are characteristic of tumors. (10 marks)

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY SECOND SEMESTER EXAMINATIONS - NOV/DEC 1996

VMP 412

SYSTEMIC VETERINARY PATHOLOGY

TIME: THREE HOURS

ANSWER: ALL QUESTIONS

1. Give examples of the viral stomatitides commonly encountered in domestic animals. Briefly outline the etiology, pathogenesis, gross, and microscopic findings in these diseases. (15 marks)
 2. Describe briefly the etiology, gross and microscopic pathology of interstitial pneumonia in cattle. (15 marks)
 3. Write short notes on each of the following: (4 marks each)
 - (a) Acute dermatitis
 - (b) Enzootic bovine leukosis
 - (c) Cushing's disease
 - (d) Hyaline degeneration in muscle
 - (e) Pyometra
 4. Give two examples of disorders often observed in the mitral valve and explain the etiology, pathologic findings and prognosis in each case. (15 marks)
 5. Outline briefly the etiology, pathology and sequelae of urolithiasis in animals. (15 marks)
 6. Write short notes on the pathology of each of the following diseases: (4 marks each)
 - (a) Cystic Graafian follicle
 - (b) Gastric ulceration
 - (c) Listerial meningoencephalitis
 - (d) Ricketts
 - (e) Diabetes mellitus
-

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY FIRST SEMESTER EXAMINATIONS - JUNE 1996

VMP 431

VETERINARY MICROBIOLOGY

THEORY PAPER

TIME: THREE HOURS

ANSWER: ALL QUESTIONS IN BOTH SECTIONS

SECTION A - IMMUNOLOGY

1. Discuss natural immunity under the following sub-headings:
 - i. phagocytosis
 - ii. complement system
2. Write short notes on ALL of the following:
 - a. Antibody response
 - b. Antigen-antibody interaction
 - c. Cell mediated immunity

SECTION B - BACTERIOLOGY

1. Discuss with examples the two basic mechanisms by which bacteria cause disease.
2. Discuss briefly on TWO of the following:
 - a. Koch's Postulate
 - b. Bacterial growth in batch culture
 - c. Bacterial endospores
3. Brucella abortus causes an important disease in cattle and man. Describe the diagnostic methods in laboratory on the following:
 - a. Isolation and identification of the aetiological agent
 - b. Serological examinations to disclose and control infection in herd.

4. Write short notes on ALL of the following:

- a. Coagulase test
- b. Clostridium chauvoet
- c. Family Enterobacteriaceae

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY FIRST SEMESTER SUPP/DEFERRED EXAMS - JULY 1996

VMP 431

VETERINARY IMMUNOLOGY AND BACTERIOLOGY

TIME: 3 HOURS

ANSWER: ALL QUESTIONS

SECTION A: IMMUNOLOGY

Q1. Discuss briefly

- a) the three main molecules of recognition of the immune system and
- b) the evolution of the immune mechanism

Q2. Discuss briefly

- a) the immune responses to bacterial, viral and parasitic worm infestation
- b) Vaccination

SECTION B: BACTERIOLOGY

Q1. Describe bacterial cell surface structures and discuss their role and function.

Q2. Define the following:

- a) Disinfectant
- b) antibiotic
- c) plasmid
- d) exotoxins

Illustrate your answer by giving three examples on each one.

Q3. Bacillus anthracis causes an important disease in animals and man. Write in details on the following:

- a) bacterial characteristics of the aetiological agent.
- b) Aetiological and serological diagnostic methods to differentiate from another Bacillus sp in the laboratory.

Q4. Write short notes on the following:

- a) Family Enterobacteriaceae
- b) Fasteurella multocida
- c) Milk Ring Test

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY SUPPLEMENTARY/DEFERRED EXAMINATIONS - JANUARY 1997

VMP 432

VETERINARY VIROLOGY AND MYCOLOGY

TIME: THREE HOURS

ANSWER: ALL QUESTIONS (200 MARKS IN TOTAL). USE SEPARATE
ANSWER BOOKS FOR SECTIONS I AND II.

SECTION I - VETERINARY VIROLOGY

1. Describe the infection, spread and shedding of rabies virus in the body. [30 marks]
2. Explain the principle of direct immunofluorescence procedure for detection of virus and/or viral antigens. [30 marks]
3. Briefly comment on the following:
 - (a) The primary criteria for classification of virus families. [18 marks]
 - (b) Syncytia. [18 marks]
 - (c) Phenotypic mixing between two enveloped viruses. [18 marks]
 - (d) Advantages and disadvantages of attenuated live virus vaccines. [18 marks]
 - (e) Transfer of maternal antibodies in birds. [18 marks]

SECTION II - VETERINARY MYCOLOGY

4. (a) What is a dimorphic fungus? Give its main characteristics. [20 marks]
- (b) Name one dimorphic fungus and the disease it causes. [4 marks]
- (c) What type of specimen would you collect from an animal suffering from this disease? How would the sample be processed in the microbiological laboratory to confirm the causative agent. [12 marks]

- (d) What precautions, if any have to be taken by the laboratory personnel handling the specimen? [6 marks]
- (e) How can the infected animal be treated? [8 marks]
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END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY FIRST SEMESTER EXAMINATIONS - JUNE 1996

VMP 441

VETERINARY PARASITOLOGY

THEORY PAPER

TIME: THREE (3) HOURS

ANSWER: ALL QUESTIONS IN ALL THE SECTIONS.
(ALL QUESTIONS CARRY EQUAL MARKS).

SECTION A - PARASITOLOGY

1. Describe with examples and preferable using sketches, the characteristic features of the Apicomplexa protozoan parasites.
2. Briefly explain what you understand by the following terminologies:
 - (a) Protozoa
 - (b) Schizogony
 - (c) Bradyzoites
 - (d) Ookinetes
 - (e) Sporozoites

SECTION B - HELMINTHOLOGY

1. Considering morphological features, how would you distinguish the following:
 - (a) mature Dicrocoelium dendriticum from Paragonimus africanus?
 - (b) the proglottids of Taenia hydatigena and Dipylidium canium?
 - (c) the eggs of Moniezia benedeni and Schistosoma mattheei?
2. Explain briefly, the life cycle and parasitic effects of the following:
 - (a) Fasciola gigantica
 - (b) Stilesia hepatica
 - (c) Schistosoma bovis

SECTION C - ENTOMOLOGY

1. Describe the morphological and habitual differences of insects belonging to the Suborders Nematocera, Brachycera and Cyclorrhapha. Name one insect in each suborder as an example.
2. Write short notes of ALL of the following:
 - (a) Spermatheca
 - (b) Pheromone system in insects
 - (c) Any four (4) differences between Insecta and Acarina
 - (d) Mallophaga and Anoplura
 - (e) Ixodidae

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY SECOND SEMESTER EXAMINATIONS - NOV/DEC 1996

VMP 442

VETERINARY PARASITOLOGY

TIME: THREE (3) HOURS

ANSWER: ALL QUESTIONS
ALL QUESTIONS CARRY EQUAL MARKS

SECTION A - PROTOZOOLOGY

Q1. Define the following terminologies:

- a) Zoonosis
- b) Enzootic Stability
- c) Quantum of Infection
- d) Virulence
- e) Polymorphic

- Q2. a) With the help of a diagram briefly explain the life cycle of Theileria parva lawrencei.
- b) What measures are in place for Theileriosis control in Zambia.

SECTION B - ENTOMOLOGY

Q3. Write short notes on all the following:

- a) Vectors of Leishmaniasis
- b) Simulium spp.
- c) Facultative Myiasis
- d) Non-chemical methods for controlling Glossina.
- e) Amblyomma variegatum

Q4. Write short notes on all the following:

- a) Rhipicephalus appendiculatus
- b) Myiasis
- c) Argas spp
- d) Ctenocephalides canis
- e) Vectors of Cowdria ruminantium

SECTION C - HELMINTHOLOGY

- Q5. Describe the morphological differences between adult Haemonchus placei and Cooperia punctata.
- Q6. Discuss briefly the host, site and parasite effect of Gnathostoma hispidum and Hyostrongylus rubidus.
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END OF EXAMINATION