

THE UNIVERSITY OF ZAMBIA

SCHOOL OF VETERINARY MEDICINE EXAM PAPERS 1ST AND
2ND SEMESTER 2010/2011

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|--------------|--|
| VMB 211..... | Veterinary Anatomy and Physiology |
| VMB 212..... | Veterinary Anatomy and Physiology II |
| VMB 211..... | Veterinary Embryology |
| VMB 311..... | Veterinary Anatomy |
| VMB 311..... | Veterinary Anatomy |
| VMB 312..... | Veterinary Anatomy II |
| VMB 321..... | Veterinary Histology |
| VMB 321..... | Veterinary Histology |
| VMB 331..... | Veterinary Biochemistry |
| VMB 332..... | Veterinary Biochemistry II |
| VMB 341..... | Veterinary Physiology I |
| VMB 342..... | Veterinary Physiology II |
| VMC 511..... | Veterinary Clinical Medicine I |
| VM 511..... | Veterinary Clinical Medicine I (Deferred/ Supplementary) |
| VMC 521..... | Principles of General Veterinary Surgery and Anaesthesiology |
| VMC 521..... | Principles of Anaesthesiology and Veterinary Surgery |
| VMC 611..... | Clinical Veterinary Medicine II |
| VMC 611..... | Clinical Veterinary Medicine III |
| VMC 611..... | Veterinary Medicine III (Deferred/ Supplementary) |

VMC 621..... Veterinary Operative Surgery II
 VMC 631.....Theriogenology II
 VMD 512..... Veterinary Clinical Pathology
 VMD 521.....Infectious Diseases of Livestock
 VMD 521..... Veterinary Infectious Diseases
 VMD 531..... Veterinary Epidemiology
 VMD 531..... Veterinary Epidemiology
 VMD 532..... Veterinary Economics
 VMD 641..... Veterinary Preventive Medicine
 VMD 641..... Veterinary Preventive Medicine (Supplementary)
 VMD 642..... Veterinary Jurisprudence and Extension
 VMD 651..... Veterinary Public Health
 VMD 652..... Veterinary Public Health
 VMP 412.....Systematic Veterinary Pathology
 VMP 431..... Veterinary Bacteriology and Immunology
 VMP 432..... Veterinary Virology and Mycology
 VMP 441..... Veterinary Parasitology
 VMP 441..... Veterinary Parasitology
 VMP 442..... Veterinary Parasitology

THE UNIVERSITY OF ZAMBIA
SCHOOL OF VETERINARY MEDICINE

SECOND YEAR: END OF FIRST SEMESTER EXAMINATIONS

VMB 211: VETERINARY ANATOMY AND PHYSIOLOGY I

| | |
|---------------|------------------------|
| DATE: | October 2010 |
| TIME: | Three (3) HOURS |
| PLACE: | OTHER ROOMS |

INSTRUCTIONS:

1. Write your computer number on all the answer sheets that you will hand in.
2. There are two sections in this paper.

SECTION A

- Short answer questions.
- Answer **ALL** questions.
- Each question carries 10 marks. **(total = 60 marks)**

SECTION B

- Long answer questions (Essays)
 - Answer two questions, one from anatomy and one from cytology
 - Each question carries 20 marks **(total = 40 marks)**
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SECTION A

- **Short answer questions**
 - **Answer all questions**
 - **Each question carries 10 marks**
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1.
 - (i) Briefly explain the classification of bones based on shape. **(3 marks)**
 - (ii) Name and briefly explain the three important parts of a long bone
(3 marks)
 - (iii) What are the two major divisions of the skeleton? Name two constituents of each of the divisions of the skeleton. **(4 marks)**
2. For each of the muscles listed below state its location, major action, and innervation
 - (i) Biceps femoris **(3marks)**
 - (ii) Biceps brachii **(3marks)**
 - (iii) Gastrocnemius **(3marks)**
 - (iv) In one sentence explain what is meant by “extrinsic muscles of the forelimb” **(1 mark)**

3. Write a short essay about the epaxial muscles of the dog (10 marks)
 4. Compare and contrast between the stifle joint and the hip joint (10 marks)
 5. List down;
 - (i) The four (4) basic types of tissues (4 marks).
 - (ii) Components of the stroma of compound glands (4 marks).
 - (iii) Structural components of the plasma membrane (5 marks).
 - (iv) Types of cellular junctions (5 marks).
 - (v) Names of monocytes and lymphocytes found in connective tissue (2 marks).
 6. Write short notes on:
 - (i) Transitional and stratified columnar epithelium (5 marks).
 - (ii) Macroscopic structure of a longitudinal section of a long bone and the microscopic structure of its cross section (5 marks).
 - (iii) The histological organization of nerve fibres in the peripheral nervous system (10 marks).
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SECTION B

- Long answer questions (essays)
 - Answer two (2) questions, one from anatomy and the other from cytology and general histology
 - Each question carries 20 marks
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Anatomy

1. Discuss the anatomy of the cardiovascular system under the following headings: (i) Pericardium, (ii) The Great Vessels (iii) Coronary circulation (iv) Conducting system (20 marks)
2. Discuss the anatomy of the respiratory system under the following headings: (i) Air passageways (ii) Nasal cavity and paranasal sinuses (iii) The Diaphragm (iv) Anatomy of respiration (20 marks)

Cytology and General Histology

3. Describe the main histological features that are visible with a light microscope used to identify eosinophils, neutrophils, basophils, lymphocytes, monocytes, smooth muscle fibres and cardiac muscle fibres (20 marks).
4. Discuss in detail the microscopic structure of different types of cartilage (20 marks).

===== **END OF EXAMINATION** =====

THE UNIVERSITY OF ZAMBIA
SCHOOL OF VETERINARY MEDICINE
BACHELOR OF VETERINARY MEDICINE (BVM)
SECOND YEAR: SECOND SEMESTER EXAMINATIONS

VMB 212: VETERINARY ANATOMY AND PHYSIOLOGYII

| | |
|---------------|-----------------------------------|
| DATE: | 29TH APRIL 2010 |
| TIME: | 09:00-12:00 HOURS |
| PLACE: | OTHER ROOMS |

INSTRUCTIONS:

1. Write your computer number on all the answer sheet(s).
2. There are two sections in this paper

SECTION A: SHORT ANSWER QUESTIONS

- Each question carries 10 marks
- Total marks 60 marks
- Time allowed 90 minutes

SECTION B: LONG ANSWER QUESTIONS

- Each question carries 20 marks
- Total marks 40 marks
- Time allowed 90 minutes

SECTION A

- Answer all questions
 - Anatomy and physiology answers should be written in **separate** answer books
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Physiology

1. Draw and explain the various phases of the action potential in a purkinje cell/ventricular myocardial cell, and explain the significance of the plateau in the action potential. 10 marks
2. Explain the indicator-dilution principle for measuring body fluid volumes. Give one (1) example. 10 marks
3. Provide a brief explanation of the following:
 - (a) Bohr effect 5 marks
 - (b) The intrinsic pathway in blood coagulation 5 marks

Anatomy

4. Describe the fate and distribution in the abdominal cavity of the celiac artery, cranial mesenteric artery and caudal mesenteric artery. 10 marks
 5. Describe the anatomy of the inguinal canal in the dog and name the various structures that are transmitted through it in the male and female. 10 marks
 6. What are the names of the seven extraocular muscles? For each extraocular muscle give the points of attachment, action and nerve supply. 10 marks
-

END OF SECTION A

SECTION B

- Answer two (2) questions.
 - Answer one (1) question from anatomy and one (1) question from physiology
 - Anatomy and physiology answers should be written in **separate** answer books.
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Anatomy

1. (a) Draw a well-labeled diagram of a transverse section of the spinal cord showing the following parts: **central canal, gray commissure, horns, dorsal roots, ventral roots, dorsal column, ventral column, lateral column, communicating branch, dorsal root ganglion.** 10 marks
(b) Explain the anatomical, functional and pharmacological aspects of the autonomic nervous system of the dog. 10 marks
2. (a) Explain the arterial blood supply to the following organs of the dog: **stomach, colon, liver, testis, and ovary of dog.** 10 marks
(b) Write brief notes on the following anatomical terms: **pampiniform plexus; metencephalon; oculomotor nerve; osseous labyrinth.** 10 marks

Physiology

3. Describe the sequence of events to the arrival of the action potential at the neuromuscular junction to the commencement of excitation contraction coupling in skeletal muscle fibres. 20 marks
 4. Describe in detail, with the help of an illustration, the metabolism of iron, including its absorption from foodstuffs, its transfer across the enterocyte and its storage. 20 marks
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END OF SECTION B

THE UNIVERSITY OF ZAMBIA

UNIVERSITY FIRST SEMESTER EXAMINATIONS – NOVEMBER 2011

VMB 221 – VETERINARY EMBRYOLOGY

TIME: THREE (3) HOURS

INSTRUCTIONS: ANSWER ALL QUESTIONS. ALL QUESTIONS CARRY EQUAL MARKS

1. The cardiovascular system is one of the earliest systems to develop in a developing embryo, visible already at 10 mmCR stage. However, due to the complex pattern of its development, a number of complex changes occur at birth. Therefore discuss the following:
 - a) Atria septation.
 - b) Abnormalities of cardiac development.
 2. Briefly discuss:
 - a) Two theories of embryonic development propagated in early centuries.
 - b) Elements that spermatozoa will have to overcome in order for fertilization to take place.
 - c) Two types of twinning.
 - d) Functions of the placenta.
 3. In a sentence or two define the following:
 - a) Paramesonephric duct
 - b) Gubernaculum
 - c) Dermatome
 - d) Epimere
 - e) Ureteric bud
 - f) Proctodeum
 - g) Paraxial mesoderm
 - h) Tetralogy of fallot
 - i) Recarpituration
 - j) Notochord
 4. Write short notes on the following
 - a) Cojoined or fused symmetrical twins.
 - b) Results of sperm penetration.
 - c) Five components of the primitive brain.
 - d) Intersex conditions.
 - e) Role of surfactants in embryo development.
 5. With the aid of two separate drawings discuss and compare blood circulation in an adult animal and a developing foetus taking into consideration the major vessels entering and leaving the heart.
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END OF EXAM

THE UNIVERSITY OF ZAMBIA

UNIVERSITY FIRST SEMESTER EXAMINATIONS – NOVEMBER 2010

VMB 221 – VETERINARY EMBRYOLOGY

TIME: THREE (3) HOURS

**INSTRUCTIONS: ANSWER ALL QUESTIONS. ALL QUESTIONS CARRY
EQUAL MARKS**

1. The development of the Urogenital system plays out as one of the most intriguing events during embryonic development. Based on your understanding of these developmental events of this system write brief notes on the following:
 - a) Derivatives of the paramesonephric duct in male and female embryos
 - b) Indifferent stages of embryonic development
 - c) Development of the metanephros
 - d) Recarpituration
 - e) Cryptorchidism
2. The cardiovascular system is one of the earliest systems to develop in a developing embryo, visible already at 10mm CR stage. However, due to the complex pattern of its development, a number of developmental anomalies are possible. Therefore discuss the following:
 - a) The conducting system of the heart
 - b) Using arrow-heads to show the direction of flow of blood, illustrate with the aid of diagrams the blood circulation flow at heart level of an adult normal animal also indicating relationships of major blood vessels entering and leaving various heart chambers.
 - c) Tetralogy of Fallot
 - d) The two systems involved in ventricular septation
3. Write short notes on the following
 - a) Cojoined or fused symmetrical twins.
 - b) Results of sperm penetration.
 - c) Five components of the primitive brain.
 - d) Intersex conditions.
 - e) Role of surfactants in embryo development.
4. In detail discuss the equine placenta.
5. Give a detailed description of the Sites of Genesis of skeletal muscles

END OF EXAM

THE UNIVERSITY OF ZAMBIA

SCHOOL OF VETERINARY MEDICINE DEPARTMENT OF BIOMEDICAL SCIENCES

FIRST SEMESTER EXAMINATIONS – NOVEMBER 2010

VMB 311

VETERINARY ANATOMY

TIME: THREE (3) HOURS

INSTRUCTIONS: ATTEMPT ONLY FIVE (5) QUESTIONS

1. Trace the course of the vagus nerve from the neck to its final destination in ruminants noting the structures it innervates and important relations.
2. Describe in detail the mediastinum of ruminants noting the positions and relations of the various important structures.
3. Describe in detail the lymphatics of the thorax in ruminants.
4. Describe the bovine rumen under the following headings
 - (i) External features
 - (ii) Physical examination
 - (iii) Blood supply
 - (iv) Nerve supply
5. Describe the manus of the bovine under the following headings
 - (i) Osteology
 - (ii) Nerves
 - (iii) Blood vessels
 - (iv) Any (one) muscle of the manus

6. Describe the bovine kidneys under the following headings
- (i) Topography and relations
 - (ii) External form
 - (iii) Internal form
 - (iv) Nerve supply and blood supply
7. Write short notes on the following structures
- (i) Sternoccephalicus muscle of ruminants
 - (ii) Suspensory apparatus of the bovine udder
 - (iii) Prepuce of the bovine penis
 - (iv) Pudendal nerve

END OF EXAM

THE UNIVERSITY OF ZAMBIA

SCHOOL OF VETERINARY MEDICINE

DEPARTMENT OF BIOMEDICAL SCIENCES

FIRST SEMEMESTER SUPPLIMENTARY EXAMINATIONS- DECEMBER 2010

VMB 311-VETERINARY ANATOMY

TIME: THREE (3) HOURS

INSTRUCTIONS: ATTEMPT ONLY FIVE (5) QUESTIONS

1. Give a detailed description of the structure of the bovine atlas. Include in your answer the joints this bone forms with adjacent osteological elements and the clinical relevance of these joints.
 2. Describe the thorax of ruminants under the following
 - (i) Palpable surface bony landmarks
 - (ii) External size of the thoracic cavity
 - (iii) Ribs
 - (iv) Clinical anatomy
 3. Outline the layers that constitute the abdominal wall of ruminants.
 4. Write short notes on the following
 - (i) Lymph nodes at meat inspection
 - (ii) Rectal palpation
 - (iii) Rationale of digital nerve blocks
 - (iv) Anatomical changes of the reproductive tract associated with pregnancy
 5. Describe the form, location and relations of the bovine liver in detail.
 6. Compare and contrast the uterus of the cow and the ewe.
 7. Describe in detail the bovine hoof.
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END OF EXAM

THE UNIVERSITY OF ZAMBIA

SCHOOL OF VETERINARY MEDICINE DEPARTMENT OF BIOMEDICAL SCIENCES

SECOND SEMESTER EXAMINATIONS – APRIL 2010

VMB 312 -VETERINARY ANATOMY II

TIME: THREE (3) HOURS

INSTRUCTIONS:

1. ATTEMPT ONLY FIVE (5) QUESTIONS
 2. EACH QUESTION SHOULD BE ANSWERED IN A SEPARATE ANSWER BOOK
 3. ALL QUESTIONS CARRY EQUAL MARKS
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1. Write short notes on the following in ruminants
 - (i) occipital bone
 - (ii) blood supply of the brain
 - (iii) major salivary glands
 - (iv) innervation of the oral mucosae
2. Describe the clinical anatomy of the thorax of horse under the following headings.
 - (i) Clinical objectives
 - (ii) Topography of the thorax
 - (iii) Anatomical obstacles to percussion and auscultation
 - (iv) Physical examination of the lungs and heart
3. Write short notes on the following in the pig
 - (i) kidneys
 - (ii) pancreas
 - (iii) blood collection
 - (iv) cervix

4. Give a detailed description of the large intestine in the horse noting structural features that aid in the identification of the various segments.
5. Describe the equine stifle under the following headings
 - (i) articulating bones
 - (ii) Joint capsule and associated ligaments
 - (iii) muscles acting of the joint (any two (2) including attachment, action and innervation)
 - (iv) its involvement as a component of the passive stay apparatus
6. Describe the penis of the stallion in detail and comment on its innervation and blood supply.
7. Give a detailed description of the structures of the avian male **OR** female reproductive organs noting differences to those of mammals.

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY FIRST SEMESTER EXAMINATIONS –NOVEMBER
2009

VMB 321 – VETERINARY HISTOLOGY

TIME: 3 HOURS

INSTRUCTIONS: ANSWER ALL QUESTIONS. ALL QUESTIONS
CARRY EQUAL MARKS

1. Write brief notes on the histological features of the following organs when viewed under a light microscope:
 - i) Gall bladder of the cat
 - ii) Aorta of a Horse
 - iii) Duodenum of a dog
 - iv) Trachea of a goat
 - v) Spleen of a pig
 2. The Lymphoreticular System is made up of several organs with almost similar histological features, therefore describe the:
 - i) histological structure of the spleen
 - ii) three theories of splenic circulation
 3. With the aid of a diagram
 - i) compare and contrast the histological structure lay-out of the pig and cow lymph nodes including the lymphatic and blood vessels orientations
 - ii) compare and contrast the different types of secretory units of salivary glands
 - iii) describe the composition of a taste bud
 - iv) describe the histological relationship of dentine, periodontal membrane, cementum and enamel of a canine tooth.
 4. The respiratory system is very essential to animal survival following birth. However, it is susceptible to all forms of infection due to its direct connection to the environment. Briefly describe this system's protection against infection.
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END OF EXAM

THE UNIVERSITY OF ZAMBIA

UNIVERSITY FIRST SEMESTER EXAMINATIONS – NOVEMBER 2011

VMB 321 – VETERINARY HISTOLOGY

TIME: THREE (3) HOURS

INSTRUCTIONS: ANSWER ALL QUESTIONS. ALL QUESTIONS CARRY EQUAL MARKS

- 1. Briefly outline, with the aid a diagram where possible, the histological features of the following organs when view under a light microscope:**
 - a) Bovine oesophagus
 - b) Uterine horn of a cat
 - c) Thymus of a dog
 - d) Duodenum of a dog
 - e) Ovary of a bitch
 - 2. In a sentence or two describe the type of epithelium or cell types lining the following organs/structures:**
 - a) Terminal bronchioles
 - b) Activated thyroid follicles
 - c) Vagina mucosa
 - d) Proximal convolute tubule of the nephron
 - e) Male urethra
 - f) Infundibulum of the uterine tube
 - g) Vela Abomasica
 - h) Eye lens
 - i) Cardiac region of the simple stomach
 - j) Retina
 - 3. Discuss the following;**
 - a) The vallate
 - b) Histological layers of the cornea
 - c) Splenic circulation
 - d) Histology of the Neurohypophysis
 - 4. With the aid of a diagram discuss the elements of the**
 - a) blood air-barrier in the lungs
 - b) taste bud
 - 5. In detail compare and contrast the histology of the hypsodont and brachydont teeth.**
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END OF EXAM

THE UNIVERSITY OF ZAMBIA
SCHOOL OF VETERINARY MEDICINE
2011 ACADEMIC YEAR FIRST SEMESTER
FINAL EXAMINATIONS

VMB 331: VETERINARY BIOCHEMISTRY I

TIME: THREE (3) HOURS

INSTRUCTIONS: ANSWER QUESTIONS 1 & 2 AND ANY TWO OTHER QUESTIONS ONLY

THERE ARE FOUR PRINTED PAGES WITH SIX QUESTIONS

ALL QUESTIONS CARRY 25 EQUAL MARKS EACH

Question 1

Pyruvate and lactate dehydrogenases are important allosteric enzymes normally present in all tissues and have 127 and 5 subunits, respectively.

- a) Sketch simplified diagrams for the subunits of lactate dehydrogenase and predict in which tissue each non-hybrid subunit will occur predominantly. [3]
- b) Write the chemical equations for the reactions catalysed by these two enzymes. [4]
- c) Based on your answers to b) above, state the major function achieved by each of the enzymes in biologic oxidation. [2]
- d) The effect of pH on α -amylase was studied using starch solutions at different pH values and using Beer-Lambert's Law at 540 nm, the following data was obtained:

| Tube (Standards) | Blank | 1 | 2 | 3 | 4 | 5 |
|--|-------|------|------|------|------|------|
| Sugar ($\mu\text{mol}/20\text{ ml}$) | 0 | 3.0 | 6.0 | 9.0 | 12.0 | 15.0 |
| Absorbance | 0.0 | 0.20 | 0.35 | 0.50 | 0.65 | 0.82 |

| Tube | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|------------|------|------|------|------|------|------|------|------|
| pH | 3.0 | 4.0 | 5.0 | 6.0 | 7.0 | 8.0 | 9.0 | 10.0 |
| Absorbance | 0.09 | 0.18 | 0.29 | 0.41 | 0.52 | 0.43 | 0.39 | 0.32 |

- i. Draw a fully labeled graph of pH against sugar concentration and indicate the optimum pH for the enzyme. [10]
- ii. Name two other factors that could affect the activity of α -amylase. Explain. [6]

Question 2

- a) Sketch the electron transport chain and clearly explain the function(s) of each named complex's contribution to the overall performance of the system. [10]
- b) Compare the energy balance sheet for the catabolism of glucose and the catabolism of the fatty acid with six carbon atoms. Explain clearly how you arrive at the numbers of the molecules you state. [15]

Question 3

- a) Giving two named examples for each, briefly describe the differences between:
 - i. exergonic and endergonic reactions [3]
 - ii. metabolites and intermediates in the same biological process [3]
 - iii. reversible and irreversible biochemical reactions [4]
- b) Often a single equation is used to summarize a major process of metabolism. Showing how you arrive at the single equation, deduce the single equation for the production of:
 - i. glucose-6-phosphate from pyruvate [5]
 - ii. oxaloacetate from pyruvate via acetyl CoA and malate [5]
 - iii. ribose-5-phosphate from glucose [5]

Question 4

Imagine opening this examination and found that you were taking an anatomy examination this morning, not the biochemistry you had been studying for. This has resulted in a substantial release of epinephrine which is accompanied by increased glycogenolysis in liver and muscle.

- a) Name five enzymes the liver would require for the mobilization of glucose from glycogen. [5]
- b) With the help of chemical equations, explain the role of each enzyme named in (a) above. [10]
- c) What would be the role of adenylate cyclase and protein phosphorylation in ensuring that glycogenolysis is maintained? [6]
- d) Would glycogenolysis be maintained in the organs of an individual with McArdle's disease to contain the 'fight or flight response? Explain. [4]

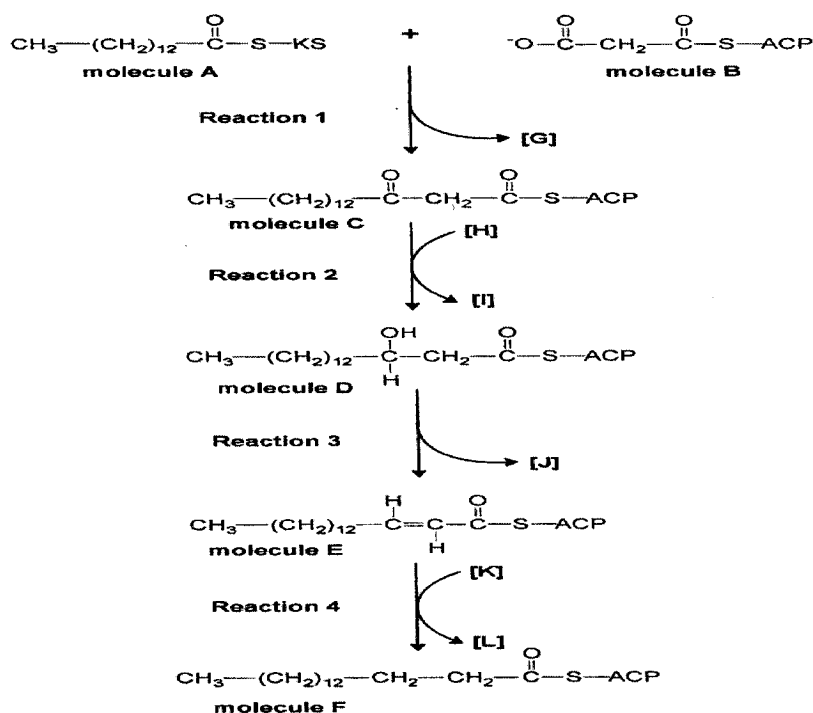
Question 5

The haemoglobin (Hb) has a role of transporting oxygen to various parts of the body and carbon dioxide to the lungs.

- a) Name and define the different levels of protein structural organization you find in haemoglobin. [4]
- b) With the aid of diagrams, describe the forces that stabilize the tertiary structure of this molecule. [8]
- c) Give a brief explanation on role of haemoglobin as a transporter of carbon dioxide and its release in the lungs. [5]
- d) Why is a high oxygen concentration in the lungs necessary for above process to take place? [3]
- e) What are thalassemias and how do they differ from sickle cell anemia? [5]

Question 6

The following equations represent reactions of a specific pathway:



- Identify the pathway and the reactants, products, proteins shown as KS, G, K, F. [5]
- If all molecules of B used in formation of F were synthesized from a precursor that was ^{14}C labeled at both carbons #1 and #2, and initially reacted with unlabeled acetyl CoA, which of the carbons of the final product, F, will be ^{14}C labeled? Explain. [3]
- If you needed to convert product F to palmitoleic acid, show all the reactions you would use to achieve this. [4]
- Explain clearly how the biosynthesis of F is regulated both at the hormonal and allosteric levels. For allosteric regulation, this should include stating the reason why a particular metabolite is a positive or negative modulator. [8]
- What would be the fate of product F and similar products in an event that the cells are energy efficient? [1]
- Name four enzymes you would need to achieve this if this "fate" was to occur in the liver using the major pathway. [4]

**THE UNIVERSITY OF ZAMBIA
SCHOOL OF VETERINARY MEDICINE
2009 ACADEMIC YEAR SECOND SEMESTER
FINAL EXAMINATIONS – MAY 2010**

VMB 332: VETERINARY BIOCHEMISTRY II

DURATION: THREE (3) HOURS

INSTRUCTIONS: There are **seven (7)** questions in this paper. Answer any **five (5)** questions. All questions carry equal marks.

Q 1 A great deal of energy is consumed during de-novo pyrimidine nucleotide synthesis than through the salvage synthesis. To prove this statement, Uridine triphosphate (UTP) was synthesized **indirectly** through the salvage pathway on paper. Define de novo synthesis and salvage synthesis as applied in pyrimidine and purine nucleotide synthesis. Confirm the above statements by outlining the synthesis of UTP by way of the salvage pathway and calculate, *show all your working*, the difference in the equivalent amount of ATP between that used in synthesis of UTP through the salvage pathway and that which could be used in the synthesis of UTP through the de novo pathway.

Q 2 Degradation of porphyrins or biosynthesis of bile pigments is best exemplified by the degradation of iron-free porphyrin portion of heme.

- a) Outline the degradation of iron-free porphyrin portion of heme and state how each of the final products of heme degradation are eliminated from a mammalian body.
- b) An intermediate of heme degradation responsible for yellow colouration of tissues in jaundice, is known to be slightly soluble in aqueous conditions in the liver, identify this intermediate and using a three (3) reaction step show the conversion of this intermediate to a more soluble intermediate.
- c) Other than jaundice, this intermediate in (b) may accumulate in the blood to a level exceeding 17 $\mu\text{mol/L}$. What is the name given to the condition where this intermediate accumulates to the mentioned level above in blood and hence clearly, suggest three reasons that could lead to the named condition.

Q 3

- a) Amino acids are derived from metabolites from common pathways
 - i) Name the three metabolites from which alanine, aspartic acid and glutamic acid are synthesized directly by transamination and name the common pathway(s) that provide these metabolites.
 - ii) Show the transaminase reaction catalysed by alanine transaminase in the synthesis of alanine.

- b) The start of the urea cycle may be regarded as the reaction between the amino acid ornithine and carbamoyl phosphate.
 - i) Show the series of reactions known as the urea cycle.
 - ii) Deduce the net stoichiometric word equation for the urea cycle.
 - iii) The urea cycle is regulated by N-acetyl glutamate. Draw the structure of this molecule.

Q 4 The catabolism of phenylalanine and tyrosine has special interest because of the associated hereditary diseases.

Step A and enzyme A convert phenylalanine to tyrosine. Step B and enzyme B convert tyrosine to homogentisate. Step C and enzyme C convert homogentisate to maleylacetoacetate. Step D and enzyme D converts tyrosine to the melanins.

- a) Give individual chemical equations for this information.
- b) Name the enzymes A to D.
- c) Name and briefly state one symptom for the disease that results if each of the enzymes A to D is missing.

Q 5

- a) You are given a glycogen residue arising from partial digestion by salivary α -amylase and requested to digest it to glucose.
 - i) Name all the enzymes you would require to digest this product in the stomach, and the small intestine.
 - ii) Indicate the products of digestion of each enzyme in (i) above.
- b) Outline the functions of bile salts and co-lipase in lipid digestion.
- c) Using a table, outline the specific functions of the enzymes trypsin, chymotrypsin and carboxypeptidase A and B. Also indicate whether the particular enzyme is an endo or exopeptidase.

Q 6

- a) Given the base sequence of a template strand of DNA below, what amino acid sequence would be encoded by this sequence:
5'CTTCACTTAAAATCCATCC3'
- b) Explain the steps followed to deduce the amino acid sequence in (a) above, giving reasons for each.
- c) If you were given a molecule of DNA and requested to digest it so as to obtain your gene of interest, what type of enzymes would you use to accomplish this task?

- d) Describe a reaction that would help multiply your desired gene.
- Q 7** Give a detailed account (showing equations/illustrations where possible) of the role of RNA in amino acid activation, initiation and elongation of prokaryotic protein synthesis on the ribosomes and explain how this role may be initiated.

The Genetic Code

| | U | C | A | G |
|---|--|--|--|--|
| U | UUU Phe UUC Phe UUA Leu UUG Leu | UCU Ser UCC Ser UCA Ser UCG Ser | UAU Tyr UAC Tyr UAA End UAG End | UGU Cys UGC Cys UGA End UGG Trp |
| C | CUU Leu CUC Leu CUA Leu CUG Leu | CCU Pro CCC Pro CCA Pro CCG Pro | CAU His CAC His CAA Gln CAG Gln | CGU Arg CGC Arg CGA Arg CGG Arg |
| A | AUU Ile AUC Ile AUA Ile AUG Met | ACU Thr ACC Thr ACA Thr ACG Thr | AAU Asn AAC Asn AAA Lys AAG Lys | AGU Ser AGC Ser AGA Arg AGG Arg |
| G | GUU Val GUC Val GUA Val GUG Val | GCU Ala GCC Ala GCA Ala GCG Ala | GAU Asp GAC Asp GAA Glu GAG Glu | GGU Gly GGC Gly GGA Gly GGG Gly |

End of Examination

THE UNIVERSITY OF ZAMBIA
UNIVERSITY FIRST SEMESTER SUPPLEMENTARY EXAMINATIONS
DECEMBER 2010

VMB 341
VETERINARY PHYSIOLOGY I

TIME: Three hours

INSTRUCTIONS: Answer any five (5) questions. Use separate answer books for each question

1. Define the following clinically respiratory states
 - (a) Apnea
 - (b) Hypoxia
 - (c) Dyspnea
 - (d) Hyperpnea
 - (e) Eupnea
 - (f) Asphyxia
2. Distinguish between autonomic nervous system and somatic nervous system.
3. Describe the organization of the cardiovascular system.
4. Describe the transport of carbon dioxide in the blood.
5. Write short notes on:
 - (a) Final common pathway
 - (b) Basal ganglia
 - (c) Thalamus
6. Describe the nerve supply to the heart and the effects of the respective nervous stimulation on the heart.
7. Explain, with the aid of an illustration, the intrinsic and extrinsic nervous regulatory mechanisms involved in digestive function when food enters the stomach.
8. Write short explanatory notes on the following:
 - (a) Absorption of glucose from the small intestine
 - (b) Advantages and disadvantages of pre-gastric fermentation
 - (c) Constituents and functions of saliva in the ruminant

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY SECOND SEMESTER EXAMINATIONS – APRIL 2010

VMB 342

VETERINARY PHYSIOLOGY II

Time: Three (3) hours,

INSTRUCTIONS:

Answer any three (3) questions from Section A and two (2) questions from section B.
All questions carry equal marks.

SECTION A

1. (a) What is the importance of calcium in the body?
(b) Explain in detail the regulation of blood calcium level.
 2. Outline the renal handling of sodium. Why is the renal handling of sodium an important process?
 3. (a) What is basal metabolic rate (BMR) ?
(b) List the basal conditions necessary for measuring BMR.
(c) How is BMR measured?
(d) Enumerate the factors affecting BMR.
(e) What is Respiratory Quotient (RQ)?
 4. Outline the processes involved in the secretion of hydrogen ions into the renal tubules.
 5. Discuss the compensatory measures that occur in response to a fall in core body temperature as a result of cold exposure and in response to a rise in core body temperature as a result of heat exposure.
-

SECTION B

6. Discuss in detail:
 - (a) The stages of lactation control in a cow.

- (b) The relationship between the hypothalamus, the pituitary and the ovary during the follicular phase.
7. (a) Name two (2) male steroid hormones and explain in detail how one of them is produced and regulated.
(b) Describe in detail the process of spermiogenesis.
8. (a) Describe the mechanism of maternal recognition of pregnancy in;
(i) Pig
(ii) Cow
(b) Describe in detail the mechanism of parturition with special reference to the cow.
-

END OF EXAMINATION

**THE UNIVERSITY OF ZAMBIA
SCHOOL OF VETERINARY MEDICINE
DEPARTMENT OF CLINICAL STUDIES**

**2010/11 ACADEMIC YEAR FIRST SEMESTER
FINAL EXAMINATIONS**

VMC 511: VETERINARY CLINICAL MEDICINE I

TIME: THREE HOURS

INSTRUCTIONS:

1. Please read the instructions and each question carefully
 2. Answer **ALL** questions in **Section A** and **THREE** questions in **Section B**
 3. Write the answers to each question in a separate examination answer book
 4. **ALL** questions carry equal marks
-

SECTION A

1. Describe how you would systematically examine a 3-year-old dog presented with sneezing, dyspnoea and hyperpnoea. **(20 marks)**

2. You are presented with a 2-year-old bull that frequently attempts to urinate, kicks its abdomen and appears to be toxaemic. Examination of the preputial area reveals dry preputial hair and evidence of white crystal-like material. You suspect urethral obstruction.

- a) Describe how you would further examine this bull with a view of confirming your suspicion (indicate the possible physical examination findings). **(10 marks)**
- b) List other conditions that may cause similar clinical signs. **(3 marks)**
- c) State the physical examination findings in any two conditions listed in (b) above. **(4 marks)**
- d) Discuss possible adverse effects that may result if the bull is not treated. **(3 marks)**

3. A 2-year-old female domestic short-haired cat is presented to you with severe diarrhoea.

- a) List ten (10) important questions you would ask the owner of this cat in order to get history of this problem, (include the reason for asking each question). **(10 marks)**
- b) Outline how you would investigate this cat with a view of determining the origin of the diarrhoea. **(10 marks)** ,

SECTION B

4. A 5-year-old male dog is presented to you with severe ataxia and scuffing of the nails of the hindlimbs.

- a) Outline how you would differentiate upper motor neuron disease from lower motor neuron disease. **(10 marks)**
- b) Outline **five (5)** spinal reflexes and how you would use this information to localize the lesion in this dog. **(10 marks)**

5. The lymphatic system comprises numerous lymph nodes and lymphatic vessels and carries out various immunological functions in mammals. It is also connected to the cardiovascular system to facilitate the circulation of lymph.

- a) Examination of the lymphatic system is an essential component of a clinical examination in all animals.
 - i. List the important palpable lymph nodes in the dog **(2 marks)**
 - ii. Describe, in detail, how you would go about the clinical examination of lymph nodes, the type of abnormalities you would find and conditions that are associated with these abnormalities. **(6 marks)**
- b) Describe the physical examination and ancillary tests you would carry out to ascertain that a dog has right heart failure. **(12 marks)**

6. You are presented with a 14-year-old gelding that the owner says is losing hair on its *dorsum* and also around the head. The horse has also been seen to be stamping its fore-feet and rubbing one fore-limb against the other.

- a) Describe in detail how you would investigate this case to come up with an accurate diagnosis. **(12 marks)**
- b) Discuss, in detail, the diagnostic aids you would employ and the possible findings. **(8 marks)**

7. Lameness is one of the most common manifestation of musculoskeletal disorders in horses.

- a) Describe in detail how you would carry out an investigation to determine the cause of lameness in a horse. **(12 marks)**
- b) List the various diagnostic aids you can use to diagnose causes of lameness. **(4 marks)**
- c) Write short notes on any **two (2)** of the aids listed in (b). **(4 marks)**

***** END OF EXAMINATION *****

**THE UNIVERSITY OF ZAMBIA
SCHOOL OF VETERINARY MEDICINE
DEPARTMENT OF CLINICAL STUDIES**

**2010/11 ACADEMIC YEAR FIRST SEMESTER
DEFERRED/SUPPLEMENTARY EXAMINATIONS**

VMC 511: VETERINARY CLINICAL MEDICINE I

TIME: THREE HOURS

INSTRUCTIONS:

1. Please read the instructions and each question carefully
 2. Answer **ALL** questions in **Section A** and **THREE** questions in **Section B**
 3. Write the answers to each question in a separate examination answer book
 4. **ALL** questions carry equal marks
-

SECTION A

1. Principal manifestations of respiratory disorders are derived from hypoxia, which results in most clinical signs observed.
 - a) Define the term hypoxia. **(2 marks)**
 - b) Describe the types of hypoxia. **(8 marks)**
 - c) Give **one (1)** example of conditions that lead to each type of hypoxia. **(4 marks)**
 - d) State the types of hypoxia in which cyanosis does not occur and briefly explain why it does not occur. **(6 marks).**
2. Clinical signs of liver dysfunction only appear when about 75% of all lobules are inactive.
 - a) Discuss factors that make clinical examination of the liver a complex undertaking in large animal species? **(4 marks)**
 - b) Describe in detail how you would carry out a clinical examination of the liver in a cow. **(12 marks)**
 - c) List the diagnostic aids available for the diagnosis of liver disease. **(4 marks)**
3. A three-year-old Cocker Spaniel is presented to your practice due to head shaking, vocalization and pawing at his ears. Give a detailed description of the specific investigation (Physical examination and ancillary tests) you will carry out in order to determine the cause of the problem. **(20 marks)**

SECTION B

4. Write concise notes on any **four (4)** of the following: **(5 marks each)**
- a) Clinical stages of fever.
 - b) Types and causes of dyspnoea according to the phase of the respiratory cycle in which they occur.
 - c) Types of jugular pulse and their clinical differentiation.
 - d) Superficial lymph nodes which are readily accessible for clinical examination in cattle.
 - e) Physical examination techniques commonly used in veterinary practice.
5. Small animal patients with neurological problems are encountered often in general practice.
- a) Outline the **five (5)** states of consciousness which may be found in a patient **(5 marks)**.
 - b) Outline physical examination findings in a cat with deficits of the following cranial nerves – CN II, CN III, CN V, CN VII and CN VIII **(15 marks)**
6. Cardiovascular problems are common in veterinary practice.
- a) Discuss the causes of murmurs giving specific examples. **(5 marks)**
 - b) Discuss in detail, the classification criteria for murmurs. **(10 marks)**
 - c) Discuss the origin of the four ‘normal’ heart sounds that are audible on thoracic auscultation. **(5 marks)**.
7. Urinary Disorders are diagnosed more frequently in small animal practice than large animal practice
- a) Define the following terms **(2 marks each)**
 - i. Dysuria
 - ii. Polyuria
 - iii. Pollakiuria
 - b) Using sketches and line drawings, discuss how you would carry out cystocentesis in an adult male dog. **(8 marks)**
 - c) Briefly outline how a veterinary surgeon can clinically differentiate between urine originating from the bladder, urethra and prepuce. **(4 marks)**
 - d) List **two (2)** other methods of collecting diagnostic urine samples in the dog and in cattle. **(2 marks)**

***** END OF EXAMINATION *****

THE UNIVERSITY OF ZAMBIA
SCHOOL OF VETERINARY MEDICINE
DEPARTMENT OF CLINICAL STUDIES

2010/11 ACADEMIC YEAR FIRST SEMESTER EXAMINATIONS

**VMC 521: PRINCIPLES OF GENERAL VETERINARY SURGERY AND
ANAESTHESIOLOGY**

TIME: THREE HOURS

INSTRUCTIONS:

1. Please read the instructions and each question carefully
2. Answer **ALL** questions in Section A and **THREE** questions in Section B
3. Write the answers to each question in a separate examination answer book
4. **ALL** questions carry equal marks

SECTION A

1. Veterinary surgery involves the mastery of numerous basic techniques and skills. Mastering these enables a veterinary surgeon to become proficient at carrying out more complicated surgical procedures in various veterinary species.

- a) List six (6) properties of an ideal suture material. **(3 marks)**
- b) List two (2) general anaesthetic protocols you may use to carry out general anaesthesia in an adult stallion. **(2 marks)**
- c) Discuss the patient positioning and rationale when carrying out general anaesthesia in a 500 kg, adult stallion. **(6 marks)**
- d) Discuss the classification criterion of haemorrhage. **(4 marks)**
- e) Discuss how you would perform a brachial plexus nerve block in an adult mongrel dog, outlining what possible complications can occur and how you would avoid them. **(5 marks)**

2. You are presented with a stallion that the owner wishes you to castrate. You carry out a pre-anaesthetic examination and find that the patient is not a suitable candidate for general anaesthesia and you decide to use local analgesia.

- a) Describe your patient preparation for the local analgesia. **(5 marks)**
- b) Describe the various methods of local analgesia you can employ for the castration. **(15 marks)**

3. A wound is described as a “disruption of normal anatomic continuity and metabolic functions of body structures, including organs, tissues and cells”. The cornerstone of surgery, especially in small animals, is the restoration of function.

- a) Outline the categories of wound healing. (4 marks)
- b) List and discuss the local factors that can affect wound healing and what you would do to minimise or remove their effect. (8 marks)
- c) Discuss how you would undertake a burn evaluation (indicate the main evaluation pointers). (5 marks)
- d) Discuss the possible complications of wound healing. (3 marks)

SECTION B

4. Discuss the indications and technique for the following local analgesic techniques in cattle. (5 marks each)

- a) Zygomaticotemporal nerve block
- b) Intravenous limb analgesia
- c) Paravertebral block
- d) Four-point retrobulbar nerve block

5. Asepsis is important in ensuring proper healing of surgical wounds.

- a) Name the **two (2)** possible sources of contaminating microbes to surgical wounds and give **three (3)** examples of each source. (5 marks)
- b) A surgical suite or clinic should be delineated into three (3) areas. List these areas and give reasons for the delineation. (6 marks)
- c) Describe an ideal operating room design (use of sketches is encouraged). (9 marks)

6. A 2-month-old male Bulldog puppy is presented to your clinic following a road traffic accident. On examination you find that the puppy has a fractured right femur. The owner wants you to do all you can for his precious puppy.

- a) Describe the anaesthetic considerations for this case. (15 marks)
- b) Outline the anaesthetic protocol you would use in order to safeguard the puppy's life. (5 marks)

7. You are presented with a recumbent 2-year-old male mongrel which has been vomiting and has had diarrhoea for the last two days. You physically examine the patient and find that he is severely dehydrated and has all the obvious signs of shock.

- a) List other signs of shock that you may see. (5 marks)
- b) Name **three (3)** crystalloid solutions that may be used to treat such a patient. (3 marks)
- c) Discuss which of the named three you would use in this patient and give reasons. (5 marks)
- d) Assuming this patient weighs 10 kg and has lost 100 ml of fluid through vomiting and 300 ml through diarrhoea, calculate the total fluid deficit of this patient (indicate all the steps of your calculations). (7 marks)

*****END OF EXAMINATION*****

**THE UNIVERSITY OF ZAMBIA
SCHOOL OF VETERINARY MEDICINE
DEPARTMENT OF CLINICAL STUDIES**

**2011 ACADEMIC YEAR FIRST SEMESTER
FINAL EXAMINATIONS**

VMC 521: PRINCIPLES OF ANAESTHESIOLOGY AND VETERINARY SURGERY

TIME: THREE HOURS

INSTRUCTIONS:

1. Please read the instructions and each question carefully
2. Answer **ALL** questions in Section A and **THREE** questions in Section B
3. Write the answers to each question in a separate examination answer book
4. **ALL** questions carry equal marks

SECTION A

1. Surgery is a branch of discipline in which “physical means” are used to treat a patient; and the basic rules of surgery encompass “cleanliness, efficiency and gentleness”.
 - a) Define sepsis and asepsis. **(2 marks)**
 - b) List four (4) different sterilization methods that are commonly used in veterinary practice and give **two (2)** examples of materials that can be sterilized by each method. **(6 marks)**
 - c) Proper design of a theatre is important in ensuring sterility in the operating room. Outline how a theatre should be designed to avoid contamination of a surgical patient. **(8 marks)**
 - d) Outline the operating room protocol. **(4 marks)**
2. Indications for regional analgesia are fewer in equine species compared to the bovine species as the majority of equine surgical procedures are performed with the patient under general anaesthesia. Write short notes on any **four (4)** of the following: **(5 marks each)**
 - a) The rationale behind the use of digital nerve blocks.
 - b) Infraorbital nerve block.
 - c) Epidural analgesia in the horse.
 - d) Complete desensitization of the manus.
 - e) A local analgesic technique for castrating a colt.
3. Most surgical procedures require surgical incisions and wound closure. These are achieved using various equipment and materials.
 - a) Briefly discuss the use of haemostats and electrocautery in veterinary surgery. **(5 marks)**
 - b) Discuss the approach you would utilize to achieve safe anaesthesia for the purpose of inserting a physiological monitoring micro chip in the abdomen of a spitting cobra kept at Munda wanga zoo (include the pre-anaesthetic considerations, induction, maintenance, recovery and peri-anaesthetic considerations). **(10 marks)**
 - c) Discuss air-sac intubation in a 1kg guinea fowl (*Numida meleagris*) presented for elective surgery. **(5 marks)**

SECTION B

4. Shock can be defined as 'failure of the peripheral vascular system'.
- Outline the pathophysiology of shock. (6 marks)
 - List the clinical signs that you would see in a patient that is 14% dehydrated. (5 marks)
 - Discuss the factors you would consider before putting a patient on fluid therapy. (4 marks)
 - A 16-month old dog weighing 10 kg has been ill for two (2) days. In the last 24 hours, it has vomited 5 times (vomit ~ 1ml/kg). It has also passed watery diarrhoea 3 times in 12 hours. Volume of the diarrhoea is approximately 50 ml each time. Calculate the total fluid deficit (indicate all your calculations). (5 marks)
5. Write short notes on any **five (5)** of the following (4 marks each):
- Mapleson alphabet.
 - The constituents and use of 'double drips' and 'triple drips.'
 - The indications for the use of neuromuscular blockade in veterinary practice.
 - The aims and indications of the use of pre-anaesthetic medication.
 - The importance and the technique for carrying out intubation in a dog undergoing general anaesthesia.
 - Discuss the '3 P' rule in large animal anaesthesia.
6. A wound can be defined as "a disruption of normal anatomic continuity or integrity of a particular organ or tissue".
- Outline your approach to a patient presented to your practice with a wound. (4 marks)
 - Outline the different ways in which tension can be managed in large skin defects. (5 marks)
 - Outline **four (4)** ways in which dead space can be managed to ensure that wound healing is not delayed. (4 marks)
 - Discuss the factors to consider when contemplating closure of a wound. (4 marks)
 - Discuss the possible complications of wound healing. (3 marks)
7. A 7-year-old Schnauzer with massive hepatomegally due to hepatitis is presented to you with a femoral fracture. You decide to carry out surgery under general anaesthesia.
- Outline the important pre-anaesthetic considerations in this patient. (10 marks)
 - Briefly describe your anaesthetic protocol and the rationale for choosing the specific drugs in view of the considerations in (a) above. (5 marks)
 - Describe your management of the patient in the event that the dog goes into cardiac arrest while surgery is in progress. (5 marks)

*****END OF EXAMINATION*****

**THE UNIVERSITY OF ZAMBIA
SCHOOL OF VETERINARY MEDICINE
DEPARTMENT OF CLINICAL STUDIES**

**2010/11 ACADEMIC YEAR FIRST SEMESTER
FINAL EXAMINATIONS**

VMC 611: CLINICAL VETERINARY MEDICINE III

TIME: THREE HOURS

INSTRUCTIONS:

1. Please read the instructions and each question carefully
2. Answer **ALL** questions in **Section A** and **THREE** questions in **Section B**
3. Write the answer to each question in a separate answer book
4. **ALL** questions carry equal marks

SECTION A

1. You are the official veterinarian at a horse race track when a 9-year-old mare is presented to you with the rider saying that the horse could not continue at the expected level of performance. Your physical examination reveals profuse sweating, pyrexia, tachycardia, and tachypnea, markedly reduced borborygmis, increased capillary refill time, reduced skin turgor and increased jugular filling. Further examination reveals muscle cramps over the large muscles of the limbs and a synchronous diaphragmatic flutter on auscultation of the chest. The rider further informs you that the horse urinated a small amount of very thick and dark urine. From your physical findings, you estimate the dehydration to be 8%.

- a) What is your tentative diagnosis? **(2 marks)**
- b) Give **two (2)** differential diagnoses. **(2 marks)**
- c) What diagnostic tests would you carry out and what would be the findings? **(4 marks)**
- d) Describe the pathophysiology of the condition in (a) above. **(4 marks)**
- e) Describe how you would manage the case in (a) above. **(8 marks)**

2. A 7-year-old German Shepherd dog is presented to you with pelvic limb ataxia and weakness of unknown duration. The owner speculates that probably the dog is growing old and becoming lethargic, but in the last seven months the dog has become unusually reluctant to move and do a lot of things it used to enjoy in its youth. When you make it walk, you observe truncal ataxia and "scrapping" of the dorsal paws. The thoracic limbs are apparently normal.

- a) What is your tentative diagnosis? **(2 marks)**
- b) List **three (3)** differential diagnoses. **(3 marks)**
- c) Indicate concisely how you would exclude the differential diagnoses in (b) above. **(6 marks)**
- d) Discuss in detail how you would manage this case. **(6 marks)**

- e) After your treatment in (d) the dog is presented a month later with no resolution of the clinical signs. Briefly outline your next course of action and rationale behind it. **(3 marks)**

3. You are presented with a 450 kg Boran bull showing signs of restlessness and straining when attempting to pass urine. The bull is reported to have been switching its tail and kicking its abdomen before the signs disappeared for 2 days. It is now severely depressed, anorexic, dehydrated and has ventral abdominal enlargement. The preputial hair appears dry.

- a) What is your tentative diagnosis? **(2 marks)**
- b) List **three (3)** differential diagnoses for this condition. **(6 marks)**
- c) Describe the pathogenesis for the condition you have stated in (a) above. **(6 marks)**
- d) Describe how you would confirm your diagnosis, stating major diagnostic findings. **(2 marks)**
- e) Describe how you would manage this condition. **(4 marks)**

SECTION B

4. A 3-year-old mongrel is presented to you by a farmer from Chongwe with a history of vomiting of two days duration. The client also asks you if you have cats to give away because he has a rat problem on his farm. Physical examination of the patient reveals anorexia, pyrexia, congested mucous membranes, icterus, oliguria and abdominal pain. The dog is also dehydrated and is vaccinated against rabies.

- a) What is your tentative diagnosis? **(2 marks)**
- b) List **three (3)** differential diagnoses. **(3 marks)**
- c) Describe how you would confirm your diagnosis in (a) above. **(8 marks)**
- d) Give a detailed description of the management of this case. **(7 marks)**

5. A 6-year-old female Labrador is presented with a skin lesion on the left flank that started the day prior to presentation. The owner also noticed the dog biting and licking the area. The lesion has since doubled in size according to the owner. On examination the lesion is about 10 x 7cm and is raised, alopecic, discrete and erythematous. There are also some pustules and papules around the area. The dog shows resentment of examination of the lesion. There are also a few fleas on the animal's body.

- a) What is your tentative diagnosis? **(2 marks)**
- b) List **three (3)** differential diagnoses. **(3 marks)**
- c) Describe how you would confirm your diagnosis in (a) above. **(5 marks)**
- d) Give a detailed description of the management of this case. **(10 marks)**

6. An emaciated Jersey cow is presented to your clinic for an expert opinion and treatment. On clinical examination, the animal shows an arched back, somnolence, pain on palpation over the last right rib and pale-yellowish mucous membranes.

- a) What is your tentative diagnosis? **(2 marks)**
- b) Outline your differential diagnosis. **(4 marks)**
- c) List other clinical signs you would expect to find according to your diagnosis in (a) above. **(4 marks)**
- d) Describe your treatment and management of the condition in (a) above. **(8 marks)**
- e) Briefly outline your client education. **(2 marks)**

7. You are called to a stable to examine a horse that the owner says has been showing signs of malaise and coughing with a nasal discharge. Your physical examination reveals a fever, miliary yellow ulcerated nodules of the nasal mucosa and skin nodules on the legs which are ulcerated and discharging sticky pus. There is also painful oedema of the legs and swollen joints.

- a) What is your diagnosis? **(2 marks)**
- b) Outline how you would confirm your diagnosis. **(4 marks)**
- c) List four **(4)** differential diagnoses. **(4 marks)**
- d) Discuss the transmission of this disease including implications on other animal species. **(4 marks)**
- e) Describe your management and prevention of the condition in (a). **(6 marks)**

*******END OF EXAMINATION*******

**UNIVERSITY OF ZAMBIA
SCHOOL OF VETERINARY MEDICINE
CLINICAL STUDIES DEPARTMENT**

**2011 ACADEMIC YEAR, FIRST SEMESTER
FINAL EXAMINATION**

VMC 611: VETERINARY CLINICAL MEDICINE III

TIME: THREE HOURS

INSTRUCTIONS:

1. Please read the instructions and each question carefully
2. Answer **ALL** the questions in **SECTION A** and **THREE** questions from **SECTION B**.
3. Write the answers to each question in a separate examination answer book.
4. All questions carry equal marks.

SECTION A

1. A three-year-old mongrel is presented with weight loss and epistaxis of two months duration. On clinical examination the dog shows the following clinical signs: depression, pale mucous membranes, abdominal pain, retinal haemorrhage, lymphadenopathy and splenomegaly. Serum electrophoresis reveals a polyclonal gammopathy. Dipping is done irregularly but vaccination status is up-to-date.
 - a) What is your tentative diagnosis? **(2 marks)**
 - b) List two **(2)** differential diagnoses. **(2 marks)**
 - c) Outline the pathogenesis of the condition in (a). **(4 marks)**
 - d) Describe how you would confirm your diagnosis in (a). **(4 marks)**
 - e) Draw a well-labeled sketch of a serum electrophoresis tracing showing polyclonal gammopathy. **(3 marks)**
 - f) Describe how you would manage this case? **(5 marks)**
2. You are presented with a four-year-old ram with a problem of dribbling blood-stained urine. A detailed clinical examination reveals that the ram is restless and strains when attempting to urinate. The ram is in a pen with two others that are being conditioned for an up-coming agricultural show.
 - a) What is your tentative diagnosis? **(2 marks)**
 - b) List four **(4)** differential diagnoses and justify why you have included each one of them. **(4 marks)**
 - c) Briefly describe the clinical entities that occur as a sequela to the condition in (a) above. **(6 marks)**

- d) Describe the aetiopathogenesis for this condition. **(6 marks)**
 - e) Describe how you would manage this case. **(2 marks)**
3. Poor performance can be defined as a sub-optimal level of performance or the inability of a horse to perform at a previous level of exercise. A wide range of conditions can affect the optimal performance of a horse
- a) List the body systems that you would pay particular attention to when evaluating a poorly performing horse. **(4 marks)**
 - b) Discuss your clinical evaluation of horse performing poorly. **(6 marks)**
 - c) List the diagnostic tests you would employ to aid the evaluation in (b). **(4 marks)**
 - d) For each system in (a), list three (3) conditions that commonly cause poor performance in horses. **(6 marks)**

SECTION B

4. A 10-year-old gelding from Kabwe is presented to you with anorexia, depression and weakness. It had experienced a mild bout of colic four days prior to presentation. The owner immediately commenced treatment with flunixin meglumine and tetracycline injections, and the horse was still on this treatment. No assessment for dehydration was done and fluids were not given. The condition has since become worse despite the treatment given by the owner.
- a) What is your tentative diagnosis? **(4 marks)**
 - b) List two (2) differential diagnoses. **(2 marks)**
 - c) Describe how you would confirm your diagnosis in (a). **(2 marks)**
 - d) Discuss the disadvantages of the treatment given by the owner. **(4 marks)**
 - e) Describe how you would manage this case. **(8 marks)**
5. Mrs Banda rushes into your practice with her three-year-old domestic short-haired cat, Donchi in her arms. She explains that the cat has been vomiting since the day before presentation. The only thing she remembers is that on that day, she administered 900 mg of acetaminophen to the cat because she thought he had a fever. The cat started vomiting a few hours after that. On examination the cat shows pale, cyanotic mucous membranes, facial oedema, and hypersalivation.
- a) What is your tentative diagnosis? **(2 marks)**
 - b) List **three (3)** differential diagnoses. **(3 marks)**
 - c) Outline the diagnostic tests (include the expected findings), you would carry out in order to confirm your diagnosis in (a). **(6 marks)**
 - d) Describe your management of this case in (a) above. **(9 marks)**

6. A steer is presented to you with a primary problem of limping of two days duration. On clinical examination, you notice that it is febrile, depressed and has a swelling on the shoulder muscle region. On palpation, the swelling feels warm and has crepitations.
- a) What is your tentative diagnosis? **(2 marks)**
 - b) List **three (3)** differential diagnoses. **(3 marks)**
 - c) Describe how you would confirm your diagnosis in (a) above. **(5 marks)**
 - d) Discuss how you would manage this case. **(5 marks)**
 - e) Describe how you would prevent this condition? **(5 marks)**
7. An intact three-year-old female Basset hound belonging to a diplomat is presented to you for a skin condition causing mild pruritus. The client tells you that the dog has had the problem since it was a puppy, but it appears to be worsening. On clinical examination you find the following: dull dry, lusterless hair coat, excessive scaling (dandruff), follicular casts, scaly plaques and greasy, malodorous skin. The areas affected are the interdigital areas, perineum, face, axillae, ventral neck, abdomen and skin folds.
- a) What is your tentative diagnosis? **(2 marks)**
 - b) list **three (3)** differential diagnoses. **(3 marks)**
 - c) Describe how you would confirm your diagnosis in (a) above. **(4 marks)**
 - d) Discuss how you would manage this case. **(9 marks)**
 - e) Outline your client advice **(2 marks)**

END OF EXAMINATION

UNIVERSITY OF ZAMBIA
SCHOOL OF VETERINARY MEDICINE
VETERINARY MEDICINE III, VMC 611
2010/11 ACADEMIC YEAR FIRST SEMESTER DEFERRED AND
SUPPLEMENTARY EXAMINATIONS

TIME: Three hours

Instructions:

1. Please read the instructions and each question carefully
2. Answer **ALL** the questions in **SECTION A** and **THREE** questions from **SECTION B**.
3. Write the answers to each question in a separate booklet.
4. All questions carry equal marks.

SECTION A

1. A two-year-old Jersey heifer is presented to you with inappetence, weakness and depression. On clinical examination you find that the heifer has fever, icterus, tachycardia, tachypnea and has pale mucous membranes.
 - a) What is your tentative diagnosis? **(2 marks)**
 - b) Give **three (3)** differential diagnoses. **(6 marks)**
 - c) Briefly describe how you would confirm your diagnosis. **(4 marks)**
 - d) Briefly discuss how you would clinically manage this case. **(4 marks)**
 - e) Describe how you would prevent this condition on the farm. **(4 marks)**
2. Vaccination is very important in the prevention of infectious diseases in dogs and cats.
 - a) State the vaccines that we use routinely at the UNZAVET Clinic and the diseases that they protect against. **(5 marks)**
 - b) Outline the vaccination regimes that are employed in dogs and cats in this country. **(15 marks)**
3. Describe your diagnostic and therapeutic approach to a Bull terrier with recurrent staphylococcal skin infections. **(20 marks)**

SECTION B

4. You are presented with a five-year-old ewe with severe foot lameness. Clinical examination reveals necrotic foul smelling lesions on the skin in the interdigital space and the skin-horn junction, with a horn underun.
 - a) What is your tentative diagnosis? **(2 marks)**
 - b) State any **three (3)** differential diagnoses. **(6 marks)**
 - c) How would you confirm the condition in (a) above? **(2 marks)**
 - d) Describe how you would manage this condition. **(4 marks)**
 - e) Describe the possible risk factors for this condition and how you would prevent further occurrence of similar cases in the flock. **(6 marks)**

5. Briefly describe the pathophysiology of anaemia in the following scenarios **(5 marks each)**.
 - a) A puppy heavily infested with fleas.
 - b) A dog with babesiosis.
 - c) A cat with chronic renal failure.
 - d) A cat with liver disease.

6. Compare and contrast primary and secondary haemostatic disorders in dogs and cats. **(20 marks)**

7. A three-year-old male goat is presented with frequent non-productive urination, stretching, kicking and looking at its side, rapid tail swishing, and blood in its urine. The buck appears inappetant, constipated, has a bloated abdomen, and has crystals on the hairs around the preputial sheath.
 - a) What is your tentative diagnosis? **(2 marks)**
 - b) Give **three (3)** differential diagnoses. **(3 marks)**
 - c) Describe how you would confirm the diagnosis you have stated in (a) above. **(3 marks)**
 - d) Discuss the factors that would contribute to development of this condition. **(6 marks)**
 - e) Discuss how you would treat and prevent further occurrence of this condition? **(6 marks)**

THE UNIVERSITY OF ZAMBIA
SCHOOL OF VETERINARY MEDICINE
DEPARTMENT OF CLINICAL STUDIES

2010/11 ACADEMIC YEAR FIRST SEMESTER EXAMINATIONS

VMC 621: VETERINARY OPERATIVE SURGERY II

TIME: THREE HOURS

INSTRUCTIONS:

1. Please read the instructions and each question carefully
2. Answer **ALL** questions in Section A and **THREE** questions in Section B
3. Write the answers to each question in a separate examination answer book
4. **ALL** questions carry equal marks

SECTION A

1. A farmer calls you to treat one of his Friesian cows that has been lame on the left hind leg for over a month. Upon your thorough physical examination you find that there are severe penetrations of the sole on one of the digits with severe sepsis of the first interphalangeal joint. You decide that the case needs radical surgical management.
 - a) Describe the pre-operative preparation/care and analgesic technique that you would employ to manage the case. **(5 marks)**
 - b) Discuss the surgical technique you would to treat the condition. Include post-operative care. **(12 marks)**
 - c) Outline the client education you would give to the owner to avoid such problems in his herd. **(3 marks)**
2. You are presented with a 40 kg, intact, 8-year-old Alsatian male dog with a primary complaint of anorexia, lethargy/depression, tenesmus and dysuria. Clinical examination reveals a temperature of 40.1°C, pain on rectal and caudal abdominal palpation, sanguineous urethral discharge and a stilted hind limb gait. Introduction of a urethral catheter was without any undue resistance and revealed copious amounts of normal-looking urine. Haematology revealed an immature neutrophilia with toxic neutrophils. Survey lateral radiographs and ultrasonography revealed a cavitating soft tissue density mass in the pelvic region extending into the caudal abdomen.
 - a) What is your diagnosis? **(2 marks)**
 - b) List **three (3)** differential diagnoses **(3 marks)**
 - c) With the aid of sketches or line drawings, discuss how you would successfully surgically manage this case. **(12 marks)**
 - d) List other surgical management techniques that are available to the veterinarian to treat this condition. **(3 marks)**

3. You are presented with a 6-year-old gelding that the owner says has been exhibiting a progressively declining level of performance over a period several weeks. The owner goes on to say it also makes an inspiratory “roaring” sound when exercised.
- a) What is your diagnosis and cause of the condition? **(4 marks)**
 - b) Briefly outline how you would confirm your diagnosis. **(2 marks)**
 - c) List the available surgical options for the management of the condition in (a). **(2 marks)**
 - d) Describe in detail one of the surgical options listed in (c) above that would markedly improve the post-operative performance of the horse (Include anaesthesia and post-operative care). **(10 marks)**
 - e) Briefly discuss your client education? **(2 marks)**

SECTION B

4. A number of conditions are known to affect the respiratory system of dogs and a greater percentage of these require surgical intervention for their management.
- a) Define the following terms: **(2 marks each)**
 - i. Tracheotomy
 - ii. Tracheostomy
 - iii. Ventriculocordectomy
 - b) List **eight (8)** indications for upper respiratory tract surgery. **(8 marks)**
 - c) Briefly note possible complications of upper respiratory tract surgery. **(6 marks)**
5. Compare and contrast caesarean section in the cow and the mare with regards to anaesthesia, surgical technique and post-operative care. **(20 marks)**
6. A 9-month-old female Boxer is presented to your practice because she is always dribbling urine. The problem has been going on from as far back as when the owner obtained the dog four months ago.
- a) What is your tentative diagnosis? **(1 mark)**
 - b) Outline the diagnostic procedure you would carry out in order to confirm your diagnosis in (a). **(5 marks)**
 - c) Give a detailed description of the anaesthetic protocol and the surgical technique you would use in the management of this case **(14 marks)**

7. A mature dog is presented to you with a long standing lameness of insidious onset affecting one of its forelimbs. There is no history of surgery done to the dog or the dog experiencing trauma of any kind. According to the elderly owner, the problem seems to be worsening. She is willing to do anything it takes and at whatever cost to have her beloved companion saved and especially to alleviate its suffering.

- a) List and discuss the major radiographic findings depicted in the radiograph, **Figure 1** below. (3 marks)
- b) What is your tentative diagnosis and justify your answer? (4 marks)
- c) Elaborate in detail how you would manage this case? (6 marks)
- d) List any other available options of management of this case? (2 marks)
- e) Briefly outline your client education (3 marks)
- f) What are the possible complications you may encounter with such a case? (2 marks)



Figure 1: Lateral view of the affected forelimb

*****END OF EXAMINATION*****

**THE UNIVERSITY OF ZAMBIA
SCHOOL OF VETERINARY MEDICINE
DEPARTMENT OF CLINICAL STUDIES**

**2011 ACADEMIC YEAR FIRST SEMESTER
FINAL EXAMINATIONS**

VMC 621: VETERINARY OPERATIVE SURGERY II

TIME: THREE HOURS

INSTRUCTIONS:

1. Please read the instructions and each question carefully
 2. Answer **ALL** questions in Section A and **THREE** questions in Section B
 3. Write the answers to each question in a separate answer booklet
 4. **ALL** questions carry equal marks
-

SECTION A

1. A client presents to you a seven-year-old Lhasa Apso that he says has been showing signs of gagging and exercise intolerance. You examine the dog and on auscultation you hear abnormal respiratory noises. The dog is also exhibiting signs of dyspnoea and has a 'goose honk' type of cough.
 - a. What is your tentative diagnosis? **(2 marks)**
 - b. List two (2) differential diagnosis. **(2 marks)**
 - c. Discuss the predisposing factors for the condition named in a) above. **(4 marks)**
 - d. Discuss in detail, the surgical management of this case (Include pre-anaesthetic considerations, anaesthesia, and post operative care). **(12 marks)**
2. You are a fresh veterinary graduate and you join an existing large animal practice set up in Mbeza, Namwala. The practice serves the cattle farmers of the area and has hitherto been providing mostly clinical services, herd health and drug sales. You are employed specifically to carry out large animal surgery. A wealthy dairy farmer in the neighbourhood asks you to make a teaser bull for him so that his conception rates can improve through better heat detection.
 - a. List the available surgical methods of preparing a teaser bull that you would suggest to him in your consultation. **(4 marks)**
 - b. Discuss in detail, **two (2)** of the surgical methods that you have listed in (a) above (Include anaesthesia and post operative care. The use of line drawings or sketches is encouraged). **(16 marks)**

3. Immediately after parturition, a mare is noticed to have blood coming out from the vulva and the rectum. A thorough examination reveals a large rectovaginal fistula.
 - a. Describe how you would surgically manage this case (Include patient preparation, anaesthesia and post operative care). **(16 marks)**
 - b. Discuss your client education for this case. **(4 marks)**

SECTION B

4. You are presented with a horse that has been lame for two days. Gait examination reveals bilateral forelimb lameness with the left limb being more painful than the other. A “tiptoe” gait is also observed. The use of hoof testers locates the area of pain to be the heel in both feet.
 - a. What is your diagnosis? **(2 marks)**
 - b. Outline the expected findings of a gait evaluation in a case with the diagnosis of (a) above. **(2 marks)**
 - c. Discuss the aetiopathogenesis of the condition in (a) above **(4 marks)**
 - d. Discuss your management of this case. **(10 marks)**
 - e. Briefly outline the prognosis of this case. **(2 marks)**
5. A three-year-old neutered bitch is presented to your practice for routine vaccination. According to the owner, the dog has been healthy, eating well and drinking normally. During the general clinical examination, you discover a large flatulent mass in the right dorso-cranial quadrant of the abdomen. Radiography of the abdomen reveals a large fluid-density mass in the area of the right kidney. Ultrasonography reveals that the mass is large, anechoic, circular and encapsulated with the left kidney appearing normal but moderately enlarged.
 - a. What is your tentative diagnosis? **(2 marks)**
 - b. List **three (3)** differential diagnosis. **(3 marks)**
 - c. Describe the surgical technique (Include the anaesthetic protocol, required minimum data-base and any pre-anaesthetic treatment) you would carry out in order to manage this case. **(15 marks)**
6. Surgery of female reproductive and genital tracts is commonly done in small animals.
 - a. Define episiotomy and list **four (4)** indications. **(5 marks)**
 - b. Discuss in detail, how you would perform an episiotomy in **one (1)** of the listed indications in a) above. **(9 marks)**
 - c. Briefly describe how a vulvoplasty is performed. **(6 marks)**

7. Comprehensively discuss any **three (3)** of the following surgical topics (**6.7 marks each**):

- a. Surgical management of phimosis in a dog.
- b. Surgical approach to the prostate via caudal abdominal celiotomy with symphysiotomy.
- c. Canine vasectomy in a dog with a non-pendulous scrotum.
- d. Permanent tracheostomy in a horse.
- e. Lewellyn procedure.
- f. Equine Prosthetic laryngoplasty

***** **END OF EXAMINATION** *****

**THE UNIVERSITY OF ZAMBIA
SCHOOL OF VETERINARY MEDICINE
DEPARTMENT OF CLINICAL STUDIES**

**2010/11 ACADEMIC YEAR FIRST SEMESTER
DEFERRED AND SUPPLEMENTARY EXAMINATIONS**

VMC 631: THERIOGENOLOGY II

TIME: THREE HOURS

INSTRUCTIONS:

1. Please read the instructions and each question carefully
2. Answer **ALL** questions in Section A and **THREE** questions in Section B
3. Write the answer to each question in a separate answer book
4. **ALL** questions carry equal marks

SECTION A

1. A farmer calls you to see one of his Fresian dairy cows that calved 90 days ago. He complains that he has not seen it on heat since calving and is anxious to get it pregnant. Upon examination of reproductive tract by palpation *per rectum*, you find that the right ovary is 6x5x4 cm in size with a large fluid filled follicular structure approximately 3.5 cm in diameter and the left ovary 4x3x2 cm with a soft *corpus luteum* that has a crown.
 - a) What is your tentative diagnosis? **(4 marks)**
 - b) List **three (3)** differential diagnoses. **(3 marks)**
 - c) Discuss the aetio-pathogenesis of this condition. **(7 marks)**
 - d) Discuss how you would manage the case and the advice you would give to the farmer. **(6 marks)**
2. A six-year-old bitch is presented to you with a foul-smelling septic uterine discharge. The client tells you that the dog whelped a week prior to presentation and had been off her food and lethargic for the past two days. On examination, she has a temperature of 40°C and has congested mucous membranes.
 - a) What is your tentative diagnosis? **(2 marks)**
 - b) List **two** differential diagnoses. **(4 marks)**
 - c) Outline how you would confirm your diagnosis. **(6 marks)**
 - d) Outline your management of this case. **(8 marks)**
3. A mare that was bred naturally by a stallion is brought to you for examination. The history of the mare reveals it constantly comes into oestrus almost every 2 weeks and usually a foul smelling discharge is noticed from the vulva.
 - a. Which disease condition would you suspect? **(2 marks)**
 - b. List other clinical signs that you would expect to find. **(2 marks)**
 - c. Discuss in detail your differential diagnoses. **(6 marks)**

- d. Briefly discuss your treatment and control measures of the disease condition in (a) above. **(8 marks)**
- e. Briefly outline your client education. **(2 marks)**

SECTION B

- 4 Write short notes on any **four (4)** of the following in the cow. **(5 marks each)**
- a. Persistent *Corpus Luteum* (CL)
 - b. Sub-oestrus
 - c. Delayed ovulation
 - d. Superovulation
 - e. Inactive ovaries
5. A farmer calls you to check on one of his ewes that has aborted. Upon close examination of the placenta you notice numerous grey-white foci that are 1-3 mm in diameter.
- a) What is your tentative diagnosis? **(4 marks)**
 - b) List **three (3)** differential diagnoses. **(3 marks)**
 - c) Briefly discuss the aetiology of this condition. **(5 marks)**
 - d) Discuss how you would treat and control the situation on the farm. **(6 marks)**
 - e) Briefly outline the advice you would give the farmer. **(2 marks)**
6. During one of your routine farm visits, a three-year-old bull is presented to you for breeding soundness examination. The farmer, who is very worried, informs you that he has never seen the bull mounting cows in oestrus.
- a) Describe in detail the various conditions you would suspect. **(6 marks)**
 - b) Briefly outline the management of each of the conditions you suspect in (a). **(10 marks)**
 - c) Briefly outline your client education. **(4 marks)**
7. A pig farmer calls you to investigate why a high number of his sows have suddenly failed to conceive.
- a) What do you think is the cause of infertility? **(4 marks)**
 - b) Describe how you would investigate this case further to arrive at a definitive diagnosis? **(6 marks)**
 - c) Discuss the measures you would employ to improve fertility on this farm. **(6 marks)**
 - d) Outline your client education. **(4 marks)**

-----END OF EXAMINATION-----

THE UNIVERSITY OF ZAMBIA

UNIVERSITY SECOND SEMESTER EXAMINATION

APRIL, 2010

VETERINARY CLINICAL PATHOLOGY

(VMD 512)

Time: 3 hours

Total Marks: 100

Instructions: Answer All questions

1. Cerebrospinal Fluid (CSF) is an important component of the Central Nervous System. Briefly describe the following:
 - a) The common collection sites in cattle and dogs. **(10 Marks)**
 - b) How to carry out a total and differential cell count and its interpretation? **(10 Marks)**
2. The main responsibility of the kidney is to regulate the internal environment by producing urine. Briefly describe the following:
 - a) The two plasma non-protein nitrogen tests that you would carry out to evaluate kidney function. **(5 Marks)**
 - b) How you can use blood creatinine tests to determine the prognosis of kidney disease? **(5 Marks)**
 - c) The theory behind renal clearance tests. **(5 Marks)**
 - d) The common causes of pre-renal azotemia. **(5 Marks)**

3. Briefly explain the following:

- a) The principles of enzymology and the significance of creatine kinase determination. **(5 Marks)**
- b) How to carry out a Thyroid Hormone Stimulating (TSH) test. **(5 Marks)**
- c) The main electrolytes of the intracellular and extracellular compartments. **(5 Marks)**
- d) How to carry out a gelatin test in exocrine pancreatic insufficiency and its interpretation? **(5 Marks)**

4. a) Briefly describe the enzymes you would use to detect pancreatic inflammation/necrosis. **(10 Marks)**

b) How would you carry out a microscopic examination of feces to assess exocrine pancreatic insufficiency? **(10 Marks)**

5. Name the diseases/affections affecting the skin of cattle, goats, pigs and dogs. Write the etiology of each disease you mention and the clinico-pathological picture (laboratory findings that can help with a confirmatory diagnosis) of each one of them. **(20 Marks)**

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA
UNIVERSITY FIRST SEMESTER EXAMINATIONS
October/November, 2010

VMD 521
INFECTIOUS DISEASES OF LIVESTOCK

TIME: 3 HOURS

TOTAL MARKS: 100

INSTRUCTIONS: ANSWER ALL QUESTIONS

Question 1

Discuss the role of the free-living African buffalo in the epidemiology of Foot and Mouth Disease (FMD) in Zambia. What is the best approach that Zambia should adopt so as to control the disease. **(20 marks)**

Question 2

Highly pathogenic avian influenza (HPAI) is caused by the H5N1 subtype of influenza virus. It has potential to cause high mortalities in chicken populations and can infect humans in which it can be fatal. Describe the risk that Zambia has for the incursion of the virus and discuss the measures that Zambia should undertake in order to prepare for the potential outbreak of the disease. **(20 marks)**

Question 3

An emerging livestock farmer 100 kilometers south of Katima mulilo in Namibia, reports sudden death in cattle grazing along a major highway recently constructed. Following the death of the animals, there is sudden bloating immediately after death.

- a) What would be the candidate disease and causative agent? **(5 Marks)**
- b) Discuss the epidemiology and pathogenesis of the disease with the current changes in the area environment. **(5 Marks)**
- c) What will be your diagnostic approach to determine the exact cause of the disease? **(5 Marks)**
- d) How will you control the disease? **(5 Marks)**

Question 4

Write short notes on the following:

- a) Define tuberculosis, giving its familiar manifestation. **(5 Marks)**
- b) Explain why vaccination for contagious bovine pleuropneumonia (CBPP) is usually considered a controversial measure. **(5 marks)**
- c) What is the causative agent of black quarter and list the control measures you can put in place to control the disease. **(5 Marks)**
- d. Explain the best way of handling the treatment of mastitis, when you have a fully equipped diagnostic laboratory. **(5 Marks)**

Question 5

- a.) With necessary detail, describe the epidemiology of Theileriosis in Zambia (give also the three forms of the disease in Zambia by their causative agents, synonyms, distribution and endemicity according to provinces). **(10 Marks)**
- b.) In an unlikely event that an outbreak of Theileriosis (ECF/Corridor) breaks out at the Veterinary School paddocks, describe in detail how you will go about diagnosing the diseases (include in your answer, the diagnostic techniques and why you have chosen them), handling the sick animals and putting preventive measures to avoid a recurrence. In your answer include the clinical signs and a logical step by step approach to handling of this outbreak. **(10 Marks)**

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY FIRST SEMESTER EXAMINATIONS - NOV/DEC 2011

VMD 521

VETERINARY INFECTIOUS DISEASES

INSTRUCTIONS

Attempt All Questions. Answer each question on separate answer sheet
Duration: 3 Hours

Question 1

Describe the etiology, epidemiology including distribution in Zambia, pathogenesis, clinical signs, pathology, diagnosis, control and prevention of Contagious Bovine Pleuro-Pneumonia. (20 marks)

Question 2

(A) A farmer has brought to your attention cases of diarrhea in cattle of about two years of age at his farm. The prognosis of these cases is very bad as all cattle that develop this explosive diarrhea end up dying. As the veterinarian responsible for animal health in the farm block, one of diseases you may have in mind is mucosal disease. Describe briefly the development of mucosal disease in cattle.(10 marks)

(B) African swine fever is a highly contagious disease of pigs. Making reference to the endemic as well as areas outside the endemic zone, discuss the epidemiology and available control measures of this disease in Zambia.(10 marks)

Question 3

Rabies is one of the diseases that mankind has known for a very long time now. Accordingly, it is one of the diseases with available potent vaccines. Describe the factors that lead to re-emergency of this disease in our communities and how prevention in dogs? (20 marks)

Question 4

a) Give an overview of Rift Valley Fever and its distribution in Zambia. How would

- you recognize an outbreak of Rift Valley Fever ? (5 marks)
- b) Explain the economic importance of Lumpy Skin Disease (LSD). Does this disease cause illness in human? (5 marks)
 - c) Describe the clinical manifestation of LSD. How can you differentiate LSD from Bovine dermatophilosis? (5 marks)
 - d) Compare and contrast between RVF, LSD and African Horse Sickness (AHS) (5 marks)

Question 5

You are presented with a cow at the University of Zambia (UNZA) paddocks with the following clinical picture:

The cow is characterised by a high fever in its prodromal phase followed by incoordination, circling, blind charging, empty chewing, extreme lassitude, marked inappetence, convulsions and you hurriedly administer 15 ml Doxymycin® intramuscularly. Within minutes the animal dies. A postmortem examination reveals that the animal had died from severe encephalitis although the microscopic picture did not show any haemoparasites.

- a) What is the likely cause of the disease? (2 marks)
- b) What are the possible differential diagnosis? (3 marks)
- c) What could be the reservoir host of the disease you suspect and how is the disease transmitted? (5 marks)
- d) Describe in detail how you would go about diagnosing the suspected disease and treatment or preventive measures that you can put in place (10 marks)

END OF EXAMINATION

University of Zambia

University First Semester Supplementary Examinations

December 2010

Veterinary Epidemiology VMD 531

Time: 3 hours

Total Marks: 100

Instructions: Answer ALL questions

Answer EACH question on separate answer booklet

1. Describe in detail the various strategies used by infectious agents for their maintenance. **(20 marks)**
2.
 - a) Define the term 'Determinant' as applied to disease causation. **(2 marks)**
 - b) List the various classifications of disease determinants. **(5 marks)**
 - c) With the aid of a diagram, describe an epidemiological triad. **(3 marks)**
 - d) In terms of infectious diseases, define the term 'carrier', and briefly describe the types of carrier states. **(5 marks)**
 - e) Outline the various methods of disease transmission. **(5 marks)**
3. You are an employ of a NORAD Project in Southern Province of Zambia. Your task is to eradicate Brucellosis in traditionally managed cattle in the Province. In the area where you are, the eradication programme has been going on for several years. The diagnostic test you have available has a sensitivity of 95% (0.95) and specificity of 90% (0.9).
 - a. In order to get an updated estimate of the prevalence of the disease, you test a random sample of 1000 animals, and you find that 13% of the animals are test positive. What estimate can you then give for the true prevalence (P) in the population? **(5 marks)**
 - b. The predictive value of a test will change as the prevalence of the disease in the population changes. What will be the predictive value of a positive test be if the true prevalence in the population is 10%? **(5 marks)**

In order to eradicate brucellosis you will have to come back and test the same farm several times during the control programme. Given that we have a herd of 1000 animals of which 100 have brucellosis. Given also that you have a test with sensitivity of 90% and specificity of 90%, and that the sensitivity and specificity remain constant from testing to testing. Given further that the test positive animals are slaughtered, and that they are replaced with non-infected cattle that are kept separately and thus neither infected nor tested

- c. How many rounds of testing (i.e. visits to the farm) are likely to be made before all brucella-infected cattle have been slaughtered? **(5 marks)**
- d. How many healthy, i.e. not brucella-infected animals are likely to be slaughtered during each of these testings. **(5 marks)**

4. You wish to estimate the prevalence of bovine TB in a population of 5 000 cattle. You have preliminary data suggesting a prevalence of 10%.
- Determine the sample size required to estimate the true prevalence with about 5% bound on the error of estimation. **(5 marks)**
 - What will be the sample size required to detect at least 1 animal with TB in the herd. **(5 marks)**
 - Suppose after testing, all cattle in (b) above are declared TB free, but you still think that there is TB in the herd. What would be the maximum number of infected cattle in the population? **(5 marks)**
 - What is the validity of sampling theory based on? **(2 marks)**
 - Define the following terms:
 Target population **(1 mark)**
 Sampling frame **(1 mark)**
 Sampling fraction **(1 mark)**
5. You wish to investigate the importance of protein and carbohydrate contents in two types concentrates for feeding calves. There are 20 calves (borne on the same day) to be randomly allocated to the two types of feeds, but such that 10 receive feed type A and 10 receive type B. After 1 month you measure the body weights of the calves. The results are indicated in the table below.

Table: Body weights of calves in the two groups (kg)

| | | | | | | | | | | |
|--------|------|------|------|------|------|------|------|------|------|------|
| Feed A | 65.1 | 70 | 66.2 | 71.3 | 66.4 | 77.1 | 74.6 | 68.0 | 63.8 | 69.7 |
| Feed B | 64.9 | 59.9 | 60.0 | 58.7 | 65.1 | 62.6 | 67.1 | 59.0 | 61.2 | 64.0 |

- From the above information, calculate the mean, standard deviation and the 95% confidence interval for each group. **(15 marks)**
- From the information in (a) above, would you say that there is a significant different in weight gain between the calves in Group A and B? Give reasons for your answer. **(5 marks)**.

**END OF EXAMINATION.
COMPLIMENTS OF THE SEASON**

University of Zambia

University First Semester Examinations

November 2010

Veterinary Epidemiology VMD 531

Time: 3 hours

Total Marks: 100

Instructions: Answer ALL questions

Answer EACH question on separate answer booklet

1. a) Write short notes on any two (2) of the following:
 - i) Classification of data (5 marks).
 - ii) Probability sampling methods (5 marks).
 - iii) Multiple testing and how these affect the sensitivity and specificity of a test (5 marks).
 - vi) The four types of epidemiological studies (5 marks).
- b) Bovine brucellosis is one of the main causes of abortions in cattle. The disease is caused by the bacteria *Brucella abortus*. Usually, in eradication programs, the cattle are screened using the Rose Bengal test (RBT) and later those cattle that test positive on RBT are confirmed using the Competitive ELISA (C-ELISA). The sensitivity (Se) and specificity (Sp) of the RBT are 90.00% and 75.00%, respectively. The Se and Sp of the C-ELISA are 98.00% and 99.00%, respectively. Calculate the Se and Sp of these two diagnostic tests when used:
 - i) in parallel (5 Marks).
 - ii) in serial (5 Marks).
2. Assume that a group of goats is followed for a period of six (6) months. At the start of the observation period, there were 60 goats in the flock and all were disease free. During the course of this period, 7 goats got sick from heartwater out of which 3 died. One more goat fractured its leg and was culled. No goats were added to the flock during the observation period. For the given period, calculate:
 - i) The period at risk of contracting heartwater (6 Marks).
 - ii) The incidence risk of heartwater in the flock (6 Marks).
 - iii) The case fatality of heartwater (4 Marks).
 - iv) Interpret the meaning of the answers you obtained in (ii) and (iii) above (4 marks).
3. Assuming you wanted to study the relation between castration in dogs and weight gain.
 - a) Describe the possible ways of conducting such a study and in each case state the appropriate test statistic(s) that you would determine. (12 Marks).

- b) What are some of the advantages and disadvantages of an experimental study design? (4 Marks).
- c) What is an essential feature of a well controlled clinical trial (CT)? (2 Marks).
4. a) Define and briefly describe the status of Surveillance/ Monitoring in the whole field of Epidemiology.
- b) At any level of livestock production (whether macro or micro) effective surveillance will depend on a number of considerations. Briefly describe these considerations.
- c) Briefly explain how you would investigate an outbreak of :
- i) Foot and mouth disease.
 - ii) Contagious bovine pleuropneumonia.
- d) What do you understand by the following terms
- i) Outbreak
 - ii) Outbreak investigation

(whole question carries 20 marks)

5. Write concise notes on any five (5) of the following (4 Marks each):
- a) Classification of disease determinants.
 - b) Carrier state.
 - c) Methods of vertical transmission.
 - d) Shortcomings of Koch's postulates.
 - e) Temporal patterns of disease occurrence.
 - f) Types of association between disease and causal factors.
 - g) Methods of arriving at a causal hypothesis.

END OF THE EXAMINATION

THE UNIVERSITY OF ZAMBIA
UNIVERSITY SECOND SEMESTER EXAMINATION
APRIL, 2010
VETERINARY ECONOMICS
(VMD 532)

Total marks: 100

Time: Three (3) Hours

Instructions: Answer All questions in section A and any two in section B

SECTION A

- 1) Economics, both macro and micro is about the satisfaction of wants and how society responds to different situations. Describe the relevancy of animal health economics to the agriculture sector and the economy as whole. And as an adviser to the President of the Republic of Zambia on the eradication of Contagious Bovine Pleura Pneumonia in Zambia explain the three fundamental economic questions that you are going to face? **(20 marks)**
- 2) Zambia consumes 80% of the beef it produces and it has been agreed that the disease free zone approach should target animal health and production as well as marketing. Assuming you have been contracted as a livestock consultant by the Government to design the production strategies for improving livestock production, explain how you would approach the issue and justifying your explanation with examples. The approach should include both technical and economic efficiency. **(20 marks)**

- 3) Zambia and Kenya have started the process of creating disease free zones that will target mainly the control of trans-boundary animal diseases. This is a costly and challenging task that requires all stakeholders, especially the farmers to buy into this programme. **(4 Marks)**
- a) Explain why control of trans-boundary animal diseases may be considered a public good.
 - b) Why are public goods generally provided by governments rather than the private sector? **(4 Marks)**
 - c) Imagine you have been contracted by the Government of the Republic of Zambia to carry out a cost benefit analysis on the creation of a disease free zone, explain how you would approach this assignment. **(4 Marks)**
 - d) If the cost-benefit analysis of the above programme was carried out over 20 years, with estimated total discounted benefits of the programme of 855 billion Kwacha and the total discounted costs of 840 billion kwacha at discount rate of 10%;
 - i. Define and calculate two economic performance criteria for the proposed programme.
 - ii. Is the programme economically viable? Why?
 - iii. When published, the cost-benefit analysis was criticised by the “Agricultural Consultative Forum” for its short time horizon (20 years). The Government, who commissioned the report, disagreed. Briefly outline the argument that each group might have used to support its case.
 - e) Discuss why it may not be appropriate to use market prices in cost-benefit analysis of a public sector programme. **(4 Marks)**

SECTION B

- 4) Explain the basis for the invisible hand assertion that individuals' pursuit of self interest within free markets may allocate resources efficiently from society's viewpoint. Explain the various circumstances when this may not be so and why the concept "other things remain equal" is important in economics as well as its limitation. **(20 marks)**
- 5) There has been food riots in some countries of the world over the rising prices of rice, bread, meat, milk and cheese. Explain the supply and demand elasticity's of these products and the factors that will influence them? **(20 marks)**
- 6) Veterinary Officers of Southern Province and some of their Members of Parliament have argued that creating a disease free Zone in Central Province would not benefit them. As a student of animal health economics briefly discuss what their argument may be and explain with the aid of diagrams who benefits in a disease control programme. **(20 marks)**

END OF EXAMINATION

VETERINARY PREVENTIVE MEDICINE

TIME: THREE HOURS

ANSWER : ALL QUESTIONS

- Q.1. a) Define Veterinary Preventive Medicine (VPM). Which other subject shares this definition and why?
b) Name and briefly describe the evolutionary phases of Livestock Production Systems;
c) How do the individual systems relate to livestock disease occurrence?
d) How is the livestock movement control enforced generally and in Zambia particularly? **12 points**
- Q.2. a) Define vaccine and vaccination. Briefly discuss the factors to consider when choosing an appropriate vaccine.
b) Briefly discuss factors influencing the animals' response to vaccination;
c) Define and classify Environmental Hygiene. What is Environmental Control and how is it executed?
d) What is disinfection? Briefly describe disinfection methods; **10 points**
- Q.3. a) Briefly define and discuss applicability of the Test and Slaughter Method;
b) What is Depopulation and under what circumstances is it put into use
c) Briefly describe Strategic Treatment as a disease management strategy;
d) List the issues involved in planning disease control programmes **12 points**
- Q.4. a) State in general terms the primary objectives and goals of a herd health programme.
b) One of the fundamental requirements of a successful herd health programme is a **simple, reliable system of recording** animal health events and production performance. What are the fundamental requirements of such a system?
c) What is the main objective of a herd health programme in the dairy and how can it be achieved? What are the methods for achieving optimum reproductive efficiency in the dairy and what reasons can you provide for such methods?
d) Briefly how would you assess the mastitis status of the dairy herd? **11 points**
- Q.5. a) What is the major objective of a beef cattle herd health programme? Name the parameters that determine the profitability of beef cattle production scheme
b) List the type of farm records you would require for an assessment of the annual performance of the beef herd.
c) What is the primary objective of a herd health programme in the feedlot?
d) What are the major causes of production and reproductive inefficiency in the swineherd? **12 points**

- Q.6. a) What are the objectives of studying fish diseases?
b) Discuss the different treatment methods in fish management. What are the factors that may affect the efficacy of fish vaccines?
c) Give a brief description of any fish disease you have learnt about. How would you treat or prevent this disease?
d) Briefly discuss how you would investigate a disease outbreak in a fish pond. **12 points**
- Q.7. Outline the criteria of disease management in a hatchery. Listing the diseases transmitted at every stage and how to control them. **17 points**
- Q.8. a) Discuss the role that wildlife plays in the epidemiology of the following diseases:
(i) African swine fever
(ii) Anthrax
(iii) Foot and Mouth disease
b) Briefly discuss factors that contribute to heavy worm infestations in game animals.
c) Discuss the main causes for neonatal mortalities on crocodile farms in Zambia
d) Name any two diseases of ostriches and briefly discuss their control. **14 points**
-

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA FIRST SEMESTER EXAMINATIONS

VETERINARY PREVENTIVE MEDICINE (VMD 641)

2011 SUPPLEMENTARY EXAMINATION

TIME: THREE HOURS

ANSWER : ALL QUESTIONS

- Q.1. a) Define Veterinary Preventive Medicine (VPM). Which other subject shares this definition and why?
b) Name and briefly describe the evolutionary phases of Livestock Production Systems;
c) How do the individual systems relate to livestock disease occurrence?
d) How is the livestock movement control enforced generally and in Zambia particularly? **12 points**
- Q.2. a) Define vaccine and vaccination. Briefly discuss the factors to consider when choosing an appropriate vaccine.
b) Briefly discuss factors influencing the animals' response to vaccination;
c) Define and classify Environmental Hygiene. What is Environmental Control and how is it executed?
d) What is disinfection? Briefly describe disinfection methods; **10 points**
- Q.3. a) Briefly define and discuss applicability of the Test and Slaughter Method;
b) What is Depopulation and under what circumstances is it put into use
c) Briefly describe Strategic Treatment as a disease management strategy;
d) List the issues involved in planning disease control programmes **12 points**
- Q.4. a) State in general terms the primary objectives and goals of a herd health programme.
b) One of the fundamental requirements of a successful herd health programme is a **simple, reliable system of recording** animal health events and production performance. What are the fundamental requirements of such a system?
c) What is the main objective of a herd health programme in the dairy and how can it be achieved? What are the methods for achieving optimum reproductive efficiency in the dairy and what reasons can you provide for such methods?
d) Briefly how would you assess the mastitis status of the dairy herd? **11 points**
- Q.5. a) What is the major objective of a beef cattle herd health programme? Name the parameters that determine the profitability of a beef cattle production scheme
b) List the type of farm records you would require for an assessment of the annual performance of the beef herd.
c) What is the primary objective of a herd health programme in the feedlot?
d) What are the major causes of production and reproductive inefficiency in the swineherd? **12 points**

- Q.6. a) What are the objectives of studying fish diseases?
b) Discuss the different treatment methods in fish management. What are the factors that may affect the efficacy of fish vaccines?
c) Give a brief description of any fish disease you have learnt about. How would you treat or prevent this disease?
d) Briefly discuss how you would investigate a disease outbreak in a fish pond. **12 points**
- Q.7. Outline the criteria of disease management in a hatchery, listing the diseases transmitted at every stage and how to control them. **17 points**
- Q.8. a) Discuss the role that wildlife plays in the epidemiology of the following diseases:
(i) African swine fever
(ii) Anthrax
(iii) Foot and Mouth disease
b) Briefly discuss factors that contribute to heavy worm infestations in game animals.
c) Discuss the main causes for neonatal mortalities on crocodile farms in Zambia
d) Name any two diseases of ostriches and briefly discuss their control. **14 points**
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END OF EXAMINATION

The University Of Zambia

UNIVERSITY SECOND SEMESTER EXAMINATION

APRIL, 2010

Veterinary Jurisprudence and Extension

VMD642

Time: 3 hours

Total Marks: 50

Instructions: Answer All questions

1. a) What are the different principles of a good veterinarian which you would like to follow and advise to your fellow colleagues? **(8 marks)**

b) Write the different laws of Zambia affecting veterinary surgeons **(2 marks)**
2. a) Describe the procedure for vetero-legal post-mortem examination in bovines and equines. Describe the autopsy findings and cause of death in case of drowning and electrocution **(8 marks)**

b) Write the signs of death **(2 marks)**
3. What do you understand by agriculture extension? Discuss why participatory extension is nowadays being considered to be the best approach for sustainable agriculture in rural Zambia? Who are the key informants in the livestock sector? **(10 marks)**
4. What do you understand by 'Self – help' principle of agricultural development. As a government extension worker in the department of Livestock Development how will you approach and implement a self help principle towards animal disease control and income generation in a traditional live stock keeping area of Zambia? **(10 marks).**
5. Write detailed notes on each of the following: **(10 marks)**
 - a) Expert witness and Rules for giving evidence in court of law
 - c) Qualities of an extension worker and Field day
 - e) Euthanasia and Communication
 - f) Extension Education and Stock Movement Permit

g) Health Certificate and Soundness Certificate

-----END OF EXAMINATION-----

University of Zambia

University First Semester Examinations
November 2010

Veterinary Public Health VMD 651

Time: 3 hours

Total Marks: 100

Instructions: Answer **ALL** questions in **Section A** and any **TWO** questions in **Section B**

SECTION A (60 MARKS)

Answer all questions in this section

QUESTION 1

Precisely and concisely define eight (8) of the following terms:

- a) Clonal expansion **(2.5 Marks)**
- b) Hazard Analysis Critical Control Point (HACCP) System **(2.5 Marks)**
- c) Pasteurisation **(2.5 Marks)**
- d) Risk assessment **(2.5 Marks)**
- e) Sanitation **(2.5 Marks)**
- f) Veterinary Public Health **(2.5 Marks)**
- g) Zoonosis **(2.5 Marks)**
- h) Food safety and hygiene **(2.5 Marks)**
- i) Environment **(2.5 Marks)**

QUESTION 2

Write short notes on any four (4) of the following:

- a) Mechanisms utilised by bacteria in antimicrobial resistance. **(5 Marks)**
- b) Factors that characterise good meat quality. **(5 Marks)**
- c) General approach to inspection of meat or fish. **(5 Marks)**
- d) Factors affecting food spoilage. **(5 Marks)**
- e) Sources of milk contamination. **(5 Marks)**
- f) Causes of rapid deterioration in fish. **(5 Marks)**

QUESTION 3

- a) Give a flow chart of A BEEF slaughter process based on a “farm to fork” concept, clearly indicating points of hazard entry and the critical control points? (10 Marks)
- b) In tabular form, describe the meat grading process and characteristics and suggested use of each grade as considered during the grading process. (10 Marks)

20 Marks

SECTION B (40 MARKS)

Answer only **TWO (2)** questions in this section

QUESTION 4

- a) The use of antimicrobial agents in animal products poses a significant public health risk. This has lead to some countries abolishing the use of growth promoter to boost livestock production. Discuss how the use of antimicrobial agents would negatively affect human health. (10 Marks)
- b) HACCP is an important management tool in quality assurance and can be applied at any stage of the food chain. Describe two ways in which HACCP principals can be used at farm level to ensure production of healthy animals. (10 Marks)

20 Marks

QUESTION 5

- c) Briefly, describe the **FOUR** main groups of detergents (surface –active agents).
(5 Marks)
- d) To be efficient, a detergent or a cleansing detergent must possess what properties? (5 Marks)
- e) Briefly describe the importance of using appropriate disinfecting chemicals (name at least three) in an abattoir and meat processing plant, indicating reasons for the chosen chemicals. (5 Marks)
- f) Briefly describe the steps in cleaning and disinfection of a large red meat slaughterhouse in Lusaka. (5 Marks)

20 Marks

QUESTION 6

Compare and contrast the following:

- a) Point outbreak and slow spreading outbreak. (4 Marks)
- b) Food infections and food intoxication. (4 Marks)
- c) Food spoilage and food deterioration. (4 Marks)
- d) Female and male characteristics used in sex determination at post-mortem inspection. (4 Marks)
- e) Inspection of poultry and inspection of fish. (4 Marks)

20 Marks

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA
UNIVERSITY SECOND SEMESTER EXAMINATIONS
MAY, 2010
VETERINARY PUBLIC HEALTH
VMD 652

Total marks: 100

Time: 3 hours

Instructions: Answer all questions in Section A and any two (2) in Section B. All questions carry equal marks. Total questions to be answered: 5 (five). Each question must be answered on a separate booklet.

SECTION A

QUESTION 1

Vector-borne zoonoses have serious public health and socio-economic implications, mainly in tropical and subtropical regions.

- a) List four (4) vector-borne protozoan parasitic zoonoses.
- b) Discuss one (1) such vector-borne protozoan parasitic zoonosis transmitted under the following headings:
 - i). Causative agent and transmission
 - ii). Disease in animals
 - iii). Disease in humans
 - iv). Prevention and control

20 marks

QUESTION 2

Briefly describe the following:

- a) The role of a Veterinarian in environmental health management.
- b) Classification of domestic dogs based on dependency and restriction.
- c) Classification of zoonotic diseases based on the mode of transmission.
- d) Reasons behind sanitary disposal of dogs that have drowned after a heavy rainy thunder storm.
- e) Means of monitoring efficient processing of sewage at Manchinchhi Treatment Plant.

20 marks

QUESTION 3

a). Define the following:

- i. Environmental Health
- ii. Nutritive Energy
- iii. Non-Nutritive Energy
- iv. Life Support systems
- v. Bare survival *in relation to environmental health*
- vi. Comfort *in relation to environmental health*

b). In as brief as possible terms, describe the following the best you understand them:

- i. How environmental hazards are characterised
- ii. What do you understand by environmental quality assurance?

20 marks

Continue to section B

SECTION B

QUESTION 4

- a) A student from the School of Agriculture in the Department of Animal Science wishes to conduct an experiment on the effect of some toxins found in Soya beans. He plans to use rabbits in his experiment which would be fed on Soya beans and then the student intends to monitor changes in physiological and biochemical changes parameters. Assuming that the student comes to you for consultations answer the following:
- Give your overall comment on this research plan.
 - How would the student minimize bias to obtain accurate results?
 - If the student wishes to keep the rabbits in the animals' quotas, what considerations does he need to take into account both during the experiment and at completion?
- b) Give a systematic and detailed description of the water treatment process at Iolanda water works in Kafue.

20 marks

QUESTION 5

Following floods in the Namwala District of Zambia, a lot of local people had noticed an increased activity of rats in their surroundings. Unsurprisingly, this was followed by a lot of complaints of people going down with fever and swollen, tender lymph nodes. Within a week a few mortalities were being reported.

- What is the likely cause of this condition, and what is it called scientifically and what its synonyms are?
- How can you go about diagnosing this disease?
- How do you think the disease was transmitted to humans?
- How would the disease present itself in animals?

As a Public Health official, what advice and preventive actions can you put in place?

20 marks

QUESTION 6

You are invited by the Environmental Council of Zambia to give a talk to second year students on the effects of man's activities on the environment. Using as much as possible simple terminology, what would you include in this talk.

20 marks

END OF EXAMINATION

UNIVERSITY OF ZAMBIA

UNIVERSITY SECOND SEMISTER EXAMINATIONS – APRIL 2010

VMP412

SYSTEMIC VETERINARY PATHOLOGY

TIME : THREE HOURS

SECTION A: ANSWER ALL QUESTIONS IN THIS SECTION

1. (a) Describe the pathological lesions observed in renal hyperemia (2)
(b) What causes renal infarction (5)
(c) What is hydronephrosis? And how does it arise?(5)
(d) Give at least three clinical signs of glomerulonephritis (3)
2. (a) Define balanoposthitis (5)
(b) Briefly describe the lesions due to Bovine Herpes Virus 1 infection in the bull and the characteristics of the lesions (effect on reproductive organs) (5)
(c) Describe the lesions caused by Equine Herpes Virus type 3 in horses and state the location of the lesions in the stallion. (5)
3. (a) Describe the **pathogenesis** and **important gross features** of interstitial pneumonia. (8)
(b) (i) Define atelectasis (1)
(ii) Describe congenital atelectasis in detail (6)

SECTION B: ANSWER QUESTION ONE AND ANY OTHER TWO QUESTIONS IN THIS SECTION

1. Write short notes on any five of the following

(a) Dissecting aneurysm (5)

(b) Hepatic-encephalopathy (5)

(c) Polycystic Kidney disease (PKD)(5)

(d) Hypoadrenocorticism (Addison's disease) (5)

(e) Macroscopic and microscopic pathology of Transmissible Venereal Tumour (TVT) in the male dog (5).

(f) Myeloid hyperplasia (5)

(g) Equine serum hepatitis(5)

2. Outline the congenital anomalies that can occur in the central nervous system(15)

3. Discuss biliary cirrhosis(15)

4. Describe photosensitization in detail and list the different types (15)

5. Discuss some of the infectious causes of vulvovaginitis in the bovine and what is dourine? (15)

6. Discuss hyperplasia of the thyroid gland (goiter) (15)

THE UNIVERSITY OF ZAMBIA
UNIVERSITY FIRST SEMESTER EXAMINATION NOVEMBER 2010
VETERINARY BACTERIOLOGY AND IMMUNOLOGY (VMP 431)

ANSWER ALL QUESTIONS

TIME: 3 HOURS

SECTION I: IMMUNOLOGY

Q1. Using examples, discuss in detail the process that leads to the activation of T cells, including the cell types and molecules that are involved and the significance, consequences and implications of that process. **(20 marks)**

Q2. Write informative notes on **any five (5)** of the following:

- a) Possible reasons for vaccination failure **(4 marks)**
- b) Type 1 hypersensitivity **(4 marks)**
- c) Activation of classical complement pathway **(4 marks)**
- d) Immunoglobulin mu (μ) **(4 marks)**
- e) Malnutrition-induced immunosuppression **(4 marks)**
- f) Eosinophils **(4 marks)**
- g) Haematopoietic stem cell **(4 marks)**

SECTION II: BACTERIOLOGY

Q3. Mycolic acid is an important virulent factor in a number of bacteria that cause livestock and human diseases in Southern Africa.

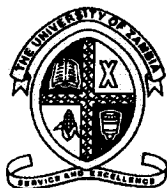
- a) List **four (4)** bacterial genera that possess mycolic acid in their cell wall. **(6 marks)**
- b) Discuss in detail the characteristic features, laboratory diagnosis, natural habitat, and pathogenicity of a **named bacterial species** belonging to **one (1)** such bacterial genus possessing mycolic acid in the cell wall. **(14 marks)**

Q4. Briefly:

- a) Discuss bacteria reproduction and growth in a liquid medium. **(8 marks)**
- b) Name the **10 different genera** that come under Enterobacteriaceae family. **(5 marks)**
- c) Outline the isolation and identification of *Salmonella enteritidis* from an infected poultry flock. **(7 marks)**

Q5. Discuss the anatomy of the bacterial cell wall, with emphasis on the structure and principal components of the gram positive and gram negative bacteria. **(20 marks)**

Q6. Mention the 3 protein factors that make up the *Bacillus anthracis* holotoxin and outline how these factors develop a toxin complex capable of destroying target host cells. **(20 marks)**



THE UNIVERSITY OF ZAMBIA
UNIVERSITY SECOND SEMESTER EXAMINATION – APRIL 2010
VETERINARY VIROLOGY AND MYCOLOGY (VMP 432)

Time : Three (3) hours

Answer : All the questions

The marks are indicated in parenthesis

SECTION I: VIROLOGY

- Q1. Approximately every 10 years, completely new strains of influenza A viruses emerge, often in south-east Asia, and sweep around the world in a pandemic. Give a detailed description of the events that may be involved in the emergence of these new strains of influenza A viruses. (20 Marks)
- Q2. Discuss the factors responsible for the introduction of new viruses in the human population. In your answer, also discuss prions and how they differ from viruses. (20 Marks)
- Q3. Viral hemorrhagic fevers are a diverse group of human and animal diseases that are due to RNA viruses from several different viral families. Give a detailed description of filoviruses as they are among the viruses that cause these diseases. (20 Marks)
- Q4. Write informative notes on **any five (5)** of the following:
- (a) Provirus and its structure (4 Marks)
 - (b) The main classes of viral proteins which are synthesised in infected cell (4 Marks)
 - (c) Biologically important functions of viral structures (4 Marks)
 - (d) Anti-viral effects of Type I interferons (4 Marks)
 - (e) Immunization against viral diseases (4 Marks)
 - (f) Innate mechanisms of anti-viral immunity (4 Marks)

SECTION II: MYCOLOGY

- Q5. Using examples, describe the sampling procedure and common laboratory techniques used for fungal diagnosis. **(20 Marks)**.
- Q6. (a) Describe the entry and haematogenous spread of *Aspergillus fumigatus* to induce Bovine Mycotic abortion. **(10 Marks)**
- (b) Name at least two genera of pathogenic fungi causing skin and hair infections. Discuss the pathogenicity of one of these pathogenic fungi. **(10 Marks)**
-

GOOD LUCK!!!!

UNIVERSITY OF ZAMBIA

FINAL EXAMINATIONS – 4th NOVEMBER 2010

VETERINARY PARASITOLOGY (VMP 441)

TIME: THREE (3) HOURS

ANSWER: ALL QUESTIONS

ALL QUESTIONS: CARRY EQUAL MARKS (25 marks each)

SECTION A: PROTOZOOLOGY

Q1 Write short notes on **ANY FIVE (5)** of the following:

- (a) Sarcomatigophora (5 marks).
- (b) Gametogony (5 marks).
- (c) Biotic potential (5 marks).
- (d) Sporozoite (5 marks).
- (e) Conjugation (5 marks).
- (f) Trans-ovarial and trans-stadial transmissions of known tick borne Protozoa (5 marks).

Q2 Write brief notes on **ANY FIVE (5)** of the following:

- (a) Extrinsic and intrinsic factors in taxonomy (5 marks).
- (b) Enzootic stability in any tick borne disease of economic importance in Zambia (5 marks).
- (c) Transmission in sarcomatigophora protozoa (5 marks).
- (d) Apicomplexan protozoa (5 marks).
- (e) Nutrition and organelles of nutrition in protozoa (5 marks).
- (f) Habitats of protozoa of veterinary importance (5 marks)

PLEASE TURN OVER

SECTION B: HELMINTHOLOGY

Q3. Write brief notes on **ANY FIVE (5)** of the following:

- (a) Differences and similarities between the classes Trematoda and Cestoda **(5 marks)**.
- (b) The cucumber worm **(5 marks)**
- (c) Morphological differences between *T. solium* and *T. saginata* **(5 marks)**
- (d) *Taenia ovis* **(5 marks)**
- (e) The basic life cycle of an aquatic cestode **(5 marks)**
- (f) Larval stages of terrestrial cestodes **(5 marks)**

Q4. Write short notes on **ANY FIVE (5)** of the following:

- (a) Types of hosts in Parasitology **(5 marks)**
- (b) The life cycle of blood flukes **(5 marks)**
- (c) The lancet liver fluke **(5 marks)**
- (d) Veterinary importance of oribatid mites **(5 marks)**
- (e) How cercariae infect host **(5 marks)**
- (f) *Echinostoma caproni* **(5 marks)**

PLEASE TURN OVER

SECTION C: ENTOMOLOGY

Q5. Write brief notes on ANY **FIVE (5)** of the following:

- (a) Veterinary significance of arthropods **(5 marks)**.
- (b) Mechanical transmission of pathogens **(5 marks)**.
- (c) The three hormones responsible for growth and metamorphosis in insects **(5 marks)**.
- (d) The family argasidae **(5 marks)**.
- (e) The cuticle in insects **(5 marks)**.
- (f) The family Ixodidae **(5 marks)**.

Q6. Write short notes on **ANY FIVE (5)** of the following:

- (a) Differences and similarities between chewing mouth parts and cutting and sponging mouth parts in insects **(5 marks)**.
- (b) The three main characteristics that are common to arthropods **(5 marks)**.
- (c) The digestive system of insects **(5 marks)**.
- (d) The Sub-orders Anoplura and Mallophaga **(5 marks)**.
- (e) The Order Siphonaptera **(5 marks)**.
- (f) The adults and larvae of the Sub-orders Cyclorrhapha, Brachycera and Nematocera **(5 marks)**.

END OF EXAMINATION

UNIVERSITY OF ZAMBIA

FIRST SEMESTER EXAMINATIONS – NOVEMBER 2011

VETERINARY PARASITOLOGY (VMP 441)

TIME: THREE (3) HOURS

ANSWER: ALL QUESTIONS

ALL QUESTIONS: CARRY EQUAL MARKS (20 MARKS EACH)

ANSWER EACH QUESTION IN A SEPARATE ANSWER BOOK

SECTION A: PROTOZOOLOGY

Q 1. Clearly **OUT LINE** the basic Classification of Apicomplexan protozoan parasites of veterinary importance **(20 marks)**.

Q 2. Write short notes on **ANY FOUR (4)** of the following:

- (a) Modes of reproduction in protozoan parasites **(5 marks)**.
- (b) Locomotion in protozoan parasites **(5 marks)**.
- (c) Nutrition and organelles of nutrition in protozoa **(5 marks)**.
- (d) Trans - ovarian and Trans -stadial transmissions of known tick borne protozoa **(5 marks)**.
- (e) Sporogony **(5 marks)**.
- (f) Transmission in sarcomatigophora protozoa **(5 marks)**.

PLEASE TURN OVER

SECTION B: HELMINTHOLOGY

- Q 3. (a) Clearly **OUTLINE** the characteristics of flukes belonging to the family Schistosomatidae (**8 marks**).
- (b) With reference to *Schistosoma bovis*, **DISCUSS** in detail the life cycle and pathogenicity of Schistosomes. (**12 marks**).
- Q 4. Write short notes on **ANY FOUR (4)** of the following:
- (a) Veterinary and medical importance of snails (**5 marks**).
 - (b) The basic life cycle of a terrestrial cestode (**5 marks**).
 - (c) The conical fluke (**5 marks**).
 - (d) The morphology of a terrestrial tapeworm (**5 marks**).
 - (e) Types of hosts in Parasitology (**5 marks**).
 - (f) Effects of parasites on hosts (**5 marks**).

SECTION C: ENTOMOLOGY

- Q 5. With the aid of diagrams, describe the male and female reproductive systems in insects. Describe the functions of all the major organs you have shown in the diagrams. (**20 Marks**).
- Q 6. Write short notes on **ANY FOUR (4)** of the following:
- (a) Veterinary significance of arthropods (**5 marks**).
 - (b) Mechanical transmission of pathogens (**5 marks**).
 - (c) Differences and similarities between chewing mouth parts and cutting and sponging mouth parts in insects (**5 marks**).
 - (d) Pheromone system in insects (**5 marks**).
 - (e) The order Siphonaptera (**5 marks**).
 - (f) Two host ticks (**5 marks**).

END OF EXAMINATION

UNIVERSITY OF ZAMBIA
SCHOOL OF VETERINARY MEDICINE
FINAL EXAMINATIONS - 4th MAY 2010

VETERINARY PARASITOLOGY

VMP 442

TIME: THREE (3) HOURS
ANSWER: ALL QUESTIONS
ALL QUESTIONS: CARRY 25 MARKS

SECTION A

PROTOZOOLOGY

- Q1 Write short notes on **ANY FIVE (5)** of the following:
- (a) Mode of reproduction in *Balantidium coli* **(5 marks)**
 - (b) Chagas disease **(5 marks)**
 - (c) Polymorphism and immunity in Africa trypanosomoses **(5 marks)**
 - (d) Life cycle of Histomoniasis **(5 marks)**
 - (e) Trichomoniasis **(5 marks)**
 - (f) Entamoeba **(5 marks)**
- Q2 Write brief notes on **ANY FIVE (5)** of the following:
- (a) Life cycle of *Babesia* parasites **(5 marks)**
 - (b) *Sarcocyst tenella* **(5 marks)**
 - (c) Diagnosis and control of coccidiosis in chicken
 - (d) Schizogony and sporogony **(5 marks)**
 - (e) Kinetoplastida **(5 marks)**
 - (f) Organelles and the modes of nutrition in protozoan parasites **(5 marks)**

SECTION B
HELMINTHOLOGY

- Q3. Write brief notes on **ANY FIVE (5)** of the following:
- (a) Unsheathing fluid and leucine amino peptidase **(5 marks)**
 - (b) Nematode life histories **(5 marks)**
 - (c) The transmission of the cattle eye worm **(5 marks)**
 - (d) Factors initiating arrested development **(5 marks)**
 - (e) The method used to recover larvae from faecal cultures **(5 marks)**
 - (f) The digestive system in nematodes **(5 marks)**
- Q4. Write short notes on **ANY FIVE (5)** of the following:
- (a) Oesophageal worm of dogs **(5 marks)**
 - (b) Factors limiting the accuracy and significance of faecal examination **(5 marks)**
 - (c) The equine pinworm **(5 marks)**
 - (d) Cuticular ornamentations and their significance in nematodes **(5 marks)**
 - (e) Causative agent of ascariasis in pigs **(5 marks)**
 - (f) The tracheal worm **(5 marks)**

PLEASE TURN OVER

SECTION C
ENTOMOLOGY

- Q5. Write brief notes on **ANY FIVE (5)** of the following:
- (a) Life cycle of *Ctenocephalides felis* **(5 marks)**
 - (b) Control of *Glossina* species **(5 marks)**
 - (c) Chemical control of ticks **(5 marks)**
 - (d) Life cycle and control of *Cordylobia anthropophaga* **(5 marks)**
 - (e) The importance of acariasis to humans and animals **(5 marks)**
 - (f) Control of the vectors of American trypanosomoses **(5 marks)**
- Q6. Write short notes on **ANY FIVE (5)** of the following:
- (a) *Triatoma infestans* **(5 marks)**
 - (b) *Sarcoptes scabiei* **(5 marks)**
 - (c) Obligatory myiasis **(5 marks)**
 - (d) Hippoboscidae **(5 marks)**
 - (e) Ticks of the genus *Rhipicephalus* **(5 marks)**
 - (f) *Menacanthus* species **(5 marks)**

END OF EXAMINATION