

**THE UNIVERSITY OF ZAMBIA**  
**SCHOOL OF VETERINARY MEDICINE**  
**END OF YEAR EXAMS 2018**

VMB 2100	VETERINARY GROSS ANATOMY PAPER I
VMB 2100	VETERINARY GROSS ANATOMY PAPER II
VMB 2110	VETERINARY HISTOLOGY AND EMBRYOLOGY PAPER I
VMB 2110	VETERINARY HISTOLOGY AND EMBRYOLOGY PAPER II
VMB 2200	VETERINARY BIOCHEMISTRY
VMB 2302	INTRODUCTORY VETERINARY PHYSIOLOGY
VMB 2409	BIostatISTICS, GENETICS AND ANIMAL BREEDING
VMB 2500	ANIMAL PRODUCTION AND NUTRITION
VMB 3600	VETERINARY PHARMACOLOGY
VMP 3100	VETERINARY PATHOLOGY EXAMINATION
VMP 3300	VETERINARY MICROBIOLOGY AND IMMUNOLOGY
VMP 3400	VETERINARY PARASITOLOGY
VMC 4112	PRINCIPLES OF COMPANION ANIMAL MEDICINE
VMC 4122	PRINCIPLES OF FOOD ANIMAL MEDICINE
VMC 4200	PRINCIPLES AND INTRODUCTION TO VETERINARY SURGERY AND DIAGNOSTIC IMAGING.
VMC 4309	INTRODUCTION TO VETERINARY REPRODUCTION AND OBSTETRICS
VMD 4102	VETERINARY CLINICAL PATHOLOGY
VMC 5130	APPLIED FOOD ANIMAL MEDICINE
VMC 5149	COMPANION ANIMAL MEDICINE
VMC 5210/6210	VETERINARY OPERATIVE SURGERY
VMC 5319	VETERINARY REPRODUCTION AND GYNAECOLOGY
VMD 5100	VETERINARY CLINICAL PATHOLOGY
VMD 5302	DISEASES OF WILDLIFE, FISH AND AQUACULTURE
VMD 5400/6800	VETERINARY PUBLIC HEALTH
VMC 6110	VETERINARY CLINICAL MEDICINE
VMC 6319	VETERINARY REPRODUCTION AND GYNAECOLOGY
VMD 6609	PREVENTIVE VETERINARY MEDICINE

**THE UNIVERSITY OF ZAMBIA  
SCHOOL OF VETERINARY MEDICINE**

**END OF YEAR NOVEMBER/DECEMBER EXAMINATIONS-2017/18 ACADEMIC  
YEAR**

**VETERINARY GROSS ANATOMY (VMB 2100)**

**PAPER I**

TIME: THREE (3) HOURS

INSTRUCTIONS:

1. Answer **Five** questions only
  2. Write as clearly as possible as poor handwriting cannot be marked
  3. Answer each question in a separate answer book
- 

**QUESTION 1**

- (i) Name the two subdivisions of the oral cavity and state the boundary between the two. (1.5 marks)
- (ii) Name the salivary glands opening into each subdivision and the precise location of these openings. (4marks)
- (iii) Write down the dental formula for permanent teeth of a typical mammal. How do the teeth of the domestic carnivores compare to the above formula? (4marks)
- (iv) What are the most important characteristic features of the following teeth of the dog? (8marks)
  - a. incisor teeth
  - b. canine teeth
  - c. <sup>Fourth</sup>forth upper premolar
  - d. first lower molar
- (v) List in sequence the various parts of the small intestine in the dog. (2.5marks)

## **QUESTION 2**

- (i) In one sentence define the following (4marks)
  - a. Urachus
  - b. Vaginal ring
  - c. Plica venae cavae
  - d. Lobe
- (ii) Differentiate between the following (4marks)
  - a. Synovial bursa and Synovial sheath
  - b. Central nervous system and peripheral nervous system
  - c. Supination and pronation
  - d. Greater and lesser omentum
- (iii) List down the osteological elements constituting the forelimb in the dog. (from proximal to distal). (2marks)
- (iv) Draw a simple but well labelled diagram showing a longitudinal section through a long bone. (7marks)
- (v) Comment on the statement: "Bone is a living tissue. (3marks)

## **QUESTION 3**

- (i) What is the macroscopic unit of the kidney? (1mark)
- (ii) Draw a simple but well labelled diagram showing a section through the canine kidney. (6marks)
- (iii) Trace the path taken by urine from the kidney to the outside in both a male and female dog. (3marks)
- (iv) Give a brief description of the structure the urinary bladder. (6marks)
- (v) Comment on the topography of the urinary bladder. (4marks)

#### QUESTION 4

Using the terms listed in the table below, draw a concept map to show the hierarchical relationships of the anatomical parts of eye and ear of the dog. (20 marks)

Transparent cornea	Ear
The choroid	The iris
Eye	Middle ear ✓
Middle vascular tunic	Tapetum lucidum
Dilator muscle	Meridional fibres
Horizontal canal	Ciliary body
Fibrous tunic	<del>Middle ear</del> ✓
Inner nervous tunic	Vertical canal
Opaque sclera	Anterior epithelium
Circumferential fibres	Pinna
Incus	Substantia propria
Area cribrosa	The posterior limiting lamina
Sphincter muscles	Inner ear ✓
Inner canal	Semi-circular canal
Malleus	Anterior limiting lamina
Outer ear ✓	Sense organs
Eustachian tube	Vestibule
The eyeball	Cochlea

#### QUESTION 5

- (i) What is the epidural space? (1mark)
- (ii) Of what significance is the epidural space to the clinician? (1mark)
- (iii) List the cranial nerves I-XII. (3marks)
- (iv) Name cranial nerve V. Which of its divisions is; (5marks)
  - a. sensory to the upper molars
  - b. the source of the lingual nerve
  - c. innervates the temporalis muscle
  - d. sensory to the muzzle
- (v) Briefly describe the autonomic nervous system. Comment on the sympathetic nerve supply to heart. (10marks)

## **QUESTION 6**

Below is a list of muscles. Answer the questions that follow thereafter.

External abdominal oblique	Anconeus
Gastrocnemius	Coracobrachialis
Quadriceps femoris	Tensor fasciae antebrachii
Brachialis	Internal abdominal oblique
Semitendinosus	Flexor carpi ulnaris
Trapezius	Deep digital flexor
Rhomboideus	Pronator teres
Brachiocephalicus	Common digital extensor
Transverse abdominis	Sartorius
Teres major	Biceps femoris
Deltoides	Rectus abdominis.

- (i) Pick from the list two muscles that flex the elbow and another two muscles that extends the carpus. (4marks)
- (ii) List three muscles from the list that are likely to be affected following a fracture of the calcaneus. (3marks)
- (iii) List four muscles innervated by thoracic and lumbar spinal nerves. (4marks)
- (iv) List four muscles that are likely to be involved in urinating. (4marks)
- (v) List five muscles likely to be affected following sciatic nerve trunk damage. (4marks)

END OF EXAMINATION

**THE UNIVERSITY OF ZAMBIA  
SCHOOL OF VETERINARY MEDICINE**

END OF YEAR NOVEMBER/DECEMBER EXAMINATIONS-2017/18 ACADEMIC  
YEAR

VETERINARY GROSS ANATOMY (VMB 2100)

**PAPER II**

TIME: THREE (3) HOURS

INSTRUCTIONS:

1. Answer **ALL** questions
  2. Write as clearly as possible as poor handwriting cannot be marked
  3. Answer each question in a separate answer book
- 

**QUESTION 1**

- (i) Draw a well-labelled diagram of a typical spinal nerve of the abdominal region. (10 marks)
- (ii) What is Abomasal displacement? Explain how you would go about correcting Abomasal displacement in a cow. (10 marks)

**QUESTION 2**

- (i) Name **FIVE** joints of the hind limb of the bovine and state the structures involved in the formation of those joints. (10 marks)
- (ii) Name any FIVE (5) muscles of the hind limb and indicate the origin, insertion, action and innervation. (10 marks)

**QUESTION 3**

- (i) Describe the trachea and the oesophagus in ruminants. Outline their relation to each other in the neck and thoracic regions. (10 marks)
- (ii) Discuss oesophageal obstruction in cattle from the anatomical point of view. (10 marks)

**QUESTION 4**

- (i) Describe the lymphatics of the thorax in ruminants. (10 marks)
- (ii) List **FIVE** (5) lymph nodes outside the thorax and their locations that may be of interest at meat inspection. (10 marks)

**QUESTION 5**

- (i) Discuss rectal palpation in the cow. How can this method be used to detect pregnancy? **(15 marks)**
- (ii) Outline blood supply of the udder in the cow. **(5 marks)**

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END OF EXAMINATION

**THE UNIVERSITY OF ZAMBIA  
SCHOOL OF VETERINARY MEDICINE**

**END OF YEAR NOVEMBER/DECEMBER FINAL EXAMINATIONS – 2017/18  
ACADEMIC YEAR**

**VETETRINARY HISTOLOGY AND EMBRYOLOGY (VMB 2110) - PAPER I**

**DURATION: 3 HOURS**

**INSTRUCTIONS:**

1. Answer **ALL** questions in section A, and any other 2 in section B
2. Each question should be answered in a separate answer Booklets
3. ALL questions carry equal marks
4. Write in legible handwriting

.....**SECTION A**.....

**QUESTION 1**

Write short notes on:

- |   |            |
|---|------------|
| a) Stratified squamous epithelium.                              | (5 marks)  |
| b) The microscopic structures of a cross section of a long bone | (5 marks)  |
| c) Characteristic of types of cells found in the nervous tissue | (10 marks) |

**QUESTION 2**

Describe the histological features of the following organs when viewed under a light microscope:-

- |                           |           |
|---------------------------|-----------|
| a) Spinal Cord of a dog   | (4 marks) |
| b) Tongue of sheep        | (4 marks) |
| c) Salivary Glands        | (4 marks) |
| d) Nasal cavity of a goat | (4 marks) |
| e) Kidney of goat         | (4 marks) |

**QUESTION 3**

In detail discuss the following:

- |                         |            |
|-------------------------|------------|
| a) The Brachydont teeth | (10 marks) |
| b) The Endocardium      | (5 marks)  |
| c) The Elastic arteries | (5 marks)  |



.....SECTION B.....

**QUESTION 4**

List down:

- a) The main types of exocrine glands (4 marks)
- b) The major tissues of the mammalian body (4 marks)
- c) Microscopic structure of the smooth endoplasmic reticulum (5 marks)
- d) Names of lymphocytes and monocytes found in connective tissue (2 marks)
- e) Types of cell inclusion bodies (5 marks)

**QUESTION 5**

Discuss in detail the histological characteristics of the respiratory system's adaptation to respiration. (20 marks)

**QUESTION 6**

Discuss in detail the microscopic structure of elastic and hyaline cartilage. (20 marks)

**QUESTION 7**

Describe the main histological features that are visible with a light microscope used to identify:

- a) Cells found in blood (10 marks)
- b) Cardiac and skeletal muscle fibres (10 marks)

**QUESTION 8**

Discuss the following:

- a) Types of capillaries (10 marks)
- b) Histology of the liver (5 marks)
- c) The Nephron (5 marks)

.....END OF EXAMINATION.....

**THE UNIVERSITY OF ZAMBIA  
SCHOOL OF VETERINARY MEDICINE**

**END OF YEAR NOVEMBER/DECEMBER FINAL EXAMINATIONS– 2018 ACADEMIC  
YEAR**

**VETETRINARY HISTOLOGY AND EMBRYOLOGY (VMB 2110) - PAPER II**

**DURATION: 3 HOURS**

**INSTRUCTIONS:**

1. Answer **ALL** questions in section A, and any other 2 in section B
2. Each question should be answered in a separate answer Booklets
3. ALL questions carry equal marks
4. Write in legible handwriting

.....**SECTION A**.....

**QUESTION 1**

- a) Describe in detail the development of the liver and pancreas in the mammalian embryo **(12 marks)**
- b) Mention the structures that develop from the foregut **(2 marks)**
- c) Briefly explain the following terms: **(6 marks)**
  - i. Haematopoietic liver
  - ii. Counter-rotation of the gut
  - iii. Omphalocoele

**QUESTION 2**

Write brief notes on the following:

- a) Gastrulation **(5 marks)**
- b) Structures shed at ovulation **(5 marks)**
- c) Barriers to fertilization **(5 marks)**
- d) Intersex conditions **(5 marks)**

**QUESTION 3**

Discuss the following:

- a) Barriers to fertilization **(5 marks)**

- b) Cleavage in domestic animals (5 marks)
- c) Functions of the placenta (5 marks)
- d) Atrial septation (5 marks)

.....SECTION B.....

**QUESTION 4**

- a) The respiratory system is an important system in mammals. In detail, describe the development of the bronchi and lungs in the mammalian embryo. (14 marks)
- b) Briefly explain the changes that occur in the respiratory system of mammals after birth. (6 marks)

**QUESTION 5**

Congenital anomalies (malformations) such as Arthrogryposis Multiplex Congenita, Schistosomus reflexus and dicephalus dipus dibrachius are reported in cattle and other domestic animals.

- a) Briefly describe the critical periods of susceptibility to abnormal development in the developing embryo. (4marks)
- b) Discuss in detail the causes of developmental anomalies in domestic animals. (10 marks)
- c) Outline the classification of the malformations. (6 marks)

**QUESTION 6**

With the aid of a diagram describe the relationship in blood circulation between the heart, dorsal aorta, umbilical veins, umbilical arteries and vitelline arteries in a developing embryo/fetus. (20 marks)

**QUESTION 7**

In detail, discuss ventricular septation and the related septal defects associated in a developing embryo/fetus (20 marks)

**QUESTION 8**

Outline and discuss the fetal membranes in domestic animals. (20 marks)

.....END OF EXAMINATION.....

**THE UNIVERSITY OF ZAMBIA  
SCHOOL OF VETERINARY MEDICINE  
DEPARTMENT OF BIOMEDICAL SCIENCES**

**END OF YEAR NOVEMBER/DECEMBER UNIVERSITY EXAMINATIONS  
2017/18 ACADEMIC YEAR**

**VETERINARY BIOCHEMISTRY (VMB 2200)**

**DURATION:** Three (3) Hours.

**INSTRUCTIONS:**

1. Please read instructions and each question carefully
  2. Answer **ANY** five (5) questions only
  3. All questions carry equal marks
  4. Write the answer(s) to each question in a separate answer booklet
  4. Write in a legible handwriting
- 

**QUESTION 1**

As a veterinarian, you are presented with a herd of cows exhibiting the following clinical signs; head pressing, blindness, ataxia, spastic twitching of the eye lids, muscle tremors, salivation, convulsions, colic and rumen stasis. Inspection of the environment reveals a dump site of old batteries as well as oil paint.

- a) What is your diagnosis. **(2 marks)**
- b) Describe the pathogenesis (way of development) of this condition from a biochemistry point of view in detail. **(9 marks)**
- c) Describe the important findings that a blood sample would review. **(4 marks)**
- d) Describe the treatment/management of the condition in (a). **(5 marks)**

**QUESTION 2**

Write short notes on:-

- a) Covalent bonds found in proteins **(5 marks)**
- b) Nitric oxide (NO) **(5 marks)**
- c) Sequential feedback mechanism in amino acid biosynthesis **(5 marks)**
- d) Four main differences between Glycolysis and Gluconeogenesis **(5 marks)**

### **QUESTION 3**

The liver plays a very important role in the metabolism of an animal. In detail describe carbohydrate and lipid metabolism in the liver under different conditions, and state how the liver's energy demands are met. **(20 marks)**

### **QUESTION 4**

Glycogen degradation is NOT the same as glycogen synthesis because the two processes proceed through two distinct pathways.

- a) Give a three (3) point explanation of why glycogen synthesis and breakdown proceed through two distinct pathways. **(3 marks)**
- b) Describe the step by step enzymatic degradation of glycogen. **(17 marks)**

### **QUESTION 5**

Lipids are very useful macromolecules in life's processes and provide an energy source that can sustain an organism for prolonged periods of time. Keeping this in mind, using correct chemical structures and a suitable fatty acid and pathways, describe the relationship between fatty acid oxidation, energy transfer and utilization in tissues such as muscles. **(20 marks)**

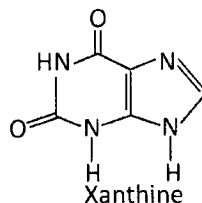
### **QUESTION 6**

Describe the replication of DNA with special focus on the functions of the various enzymes involved. **(20 Marks)**

### **QUESTION 7**

Purines and pyrimidines are important nitrogenous bases that are components of various important nucleotide containing biomolecules. The degradation of purine based nucleotides lead to a common end product which is excreted in different forms in different organisms.

- a) Showing all details including structures, sketch the degradation starting with xanthine, the common convergence of all purine degradation pathways before excretion, in different organisms up to the Marine invertebrates. **(15 marks)**



- b) Give a possible explanations why purebred Dalmatian dogs differ from all other dogs in terms of processing purine degradation product(s). **(5 marks)**

### **QUESTION 8**

Amino acids are classified into two main groups depending on the carbon skeleton of the amino acid obtained following their degradation.

- a) Name the two groups of amino acids mentioned above. **(1 marks)**
- b) To which of the two groups named in (a) above does Ser belong and hence show by way of a reaction equation the degradation of Ser, giving all the details including structures. **(4 marks)**
- c) State how the carbon skeleton obtained in (b) can be utilised during starvation. **(1 mark)**
- d) Using as much detail as possible, explain how the other or non-carbon skeleton product obtained in (b) is transported to its site of conversion to an excretal product and name the site of this conversion under aerobic conditions. **(14 marks)**

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



THE UNIVERSITY OF ZAMBIA  
SCHOOL OF VETERINARY MEDICINE  
END OF YEAR DECEMBER EXAMINATIONS-2017/18 ACADEMIC YEAR

**INTRODUCTORY VETERINARY PHYSIOLOGY (VMB 2302)**

**Duration:** 3 hours

**INSTRUCTIONS:**

1. Please read the instructions and each question carefully
  2. Answer **FIVE (5)** questions only
  3. **ALL** questions carry equal marks
  4. Write in a legible handwriting
  5. Answer each question in a **separate** booklet
- 

**QUESTION 1**

Muscle fibres are excitable cells. The cell membrane (sarcolemma) contains the ion channels and pumps necessary to maintain a very negative resting membrane potential and the voltage gated ion channels necessary for generation of an action potential. As with all excitable cells, the membrane potential of muscle cells at any time is a function of the net electrochemical gradients of ions that the membrane is permeable to at that time.

- a) Define resting membrane potential (1 mark)
- b) Outline the three (3) classification of muscle tissue (4 marks)
- c) **List** three (3) differences in the sequence of events between cardiac and skeletal muscle contraction (3 marks)
- d) With the aid of a well labelled diagram describe in detail the generation and propagation of cardiac muscle action potential (8 marks)
- e) State the All or None principle (2 marks)
- f) State the significance of the plateau phase in cardiac muscle action potential (2 marks)

**QUESTION 2**

- a) Briefly describe the functions of the cell membrane (5 marks)
- b) Describe the mitochondrial pathway for apoptosis (4 marks)
- c) Outline the three (3) important reasons why cells divide (3 marks)
- d) Describe in detail the process of endocytosis (8 marks)

### **QUESTION 3**

- a) Using sketch diagrams, outline the classification of neurons based on the number of processes that emanate from the cell body (4 marks)
- b) Define synapse, and compare and contrast electrical synapse and chemical synapse (5 marks)
- c) Describe in detail the process of excitation contraction coupling of skeletal muscle (11 marks)

### **QUESTION 4**

Receptors in the somatosensory system detect specific types of physical stimuli either in the viscera or the cutaneous areas, muscles and joints.

- a) Based on the type of stimulus they can detect, somatosensory receptors of the skin fall into five (5) broad categories. **List** the five categories of somatosensory receptors (5 marks)
- b) Describe the physiological features of any three (3) types of somatosensory receptors and the two (2) types of viscerosensory receptors (15 marks)

### **QUESTION 5**

- a) The heart is able to undergo self-stimulation. Explain how this occurs and how the stimulation is conducted to all parts of the heart to ensure efficient function in an animal. (10 marks)
- b) What is an electrocardiogram (ECG)? Why is this important? (4 marks)
- c) What would you expect to see on an ECG in the following: (6 marks)
  - i. Respiratory Sinus Arrhythmia
  - ii. Wandering pacemaker
  - iii. Ventricular Tachycardia

### **QUESTION 6**

- a) An animal has to adjust its blood flow to various organs under different conditions to meet the changes in demand. In an exercising horse, explain what changes occur in the cardiovascular system and what role control mechanisms play to achieve this (14 marks)
- b) Explain Fick's law of diffusion that determines the rate of diffusion of solutes across a capillary wall. (6 marks)

.....END OF EXAMINATION.....



**THE UNIVERSITY OF ZAMBIA  
SCHOOL OF VETERINARY MEDICINE  
END OF YEAR NOVEMBER/DECEMBER EXAMINATIONS-2017/18 ACADEMIC  
YEAR**

**BIOSTATISTIC, GENETICS AND ANIMAL BREEDING (VMB 2409)**

**Duration:** 3 hours

**INSTRUCTIONS:**

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

.....**SECTION A**.....

**QUESTION 1**

A livestock movement ban was instituted in Chisamba during a Foot and Mouth Disease (FMD) outbreak. A truck carrying 25 steers suspected to be from Chisamba has been captured around Lusaka central business town. The owner claims that the truck is transporting his animals from Mumbwa to an abattoir in Chongwe. The police have decided to consult you as a statistician to help with the case. As a statistician, you established the following facts;

- Mean weight of steers in Chisamba District is 400kg
- Mean weight of the 25 steers in the truck is 350kg
- Standard deviation is 45

What would be your expert advice? Remember that you carried all statistics at a 95% confidence interval. **(20 marks)**

**QUESTION 2**

- a) What is a gene and hence using an illustration describe the general features of a eukaryotic protein coding gene? **(10 marks)**
- b) Explain the law of Independent segregation of genes and Independent assortment of genes. **(3 Marks)**
- c) What is Epistasis and how does it deviate from the Mendelian law of independent Assortment of genes? **(3 MARKS)**
- d) What is Mutation and what are the several forms in which the chromosomal structure can be affected? **(4 MARKS)**

### **QUESTION 3**

Write short notes on the following:-

- a) Inbreeding and Inbreeding depression. (5 MARKS)
- b) What are the uses of crossbreeding in livestock improvement? (5 MARKS)
- c) Describe the three aids to selection? (5 MARKS)
- d) Contrast Tandem, Independent Culling levels and Selection index in selecting for several traits. (5 MARKS)

### **.....SECTION B.....**

### **QUESTION 4**

The following are the test grades in biostatistics of 50 second-year students in Veterinary Medicine at The University of Zambia:

75	89	66	52	92	68	83	94	77	60
38	47	87	65	97	49	65	70	73	81
85	77	84	56	63	79	69	82	84	70
62	75	29	88	74	37	81	76	74	63
69	73	90	87	76	58	63	60	71	84

- a) What type of data is shown above? (2 Marks)
- b) Calculate the mean, median and the mode? (5 Marks)
- c) Calculate the standard deviation and determine the range? (5 marks)
- d) Draw a histogram. (4 Marks)
- e) If the lecturer wanted at least 50 percent of the class to pass, what should be the cutoff point? (2 Marks)

### **QUESTION 5**

- a) Describe in detail the two major tools available to an animal breeder for livestock improvement. (10 marks)
- b) Describe a breeding improvement programme for indigenous Zambia goat population for body weight and prolificacy. (10 marks)

### **QUESTION 6**

- a) Differentiate Mitosis and Meiosis and hence using a seven (7) and three (3) points statements respectively, state the significance of each of the two terms. **(15 marks)**
- b) State the artificial gene transfer method which uses an organism's entire genetic makeup and briefly describe how it is done giving an example of its practical use. **(5 marks)**

### **QUESTION 7**

Whilst carrying out a population genetics study on acaricide (chemical used to control ticks on livestock) resistant genes in a population of ticks, you obtain frequencies of the three genotypes under study as follows: AA = 34%, Aa = 46% and aa = 20%. Using appropriate calculations and assumptions, determine whether this population of ticks is at Hardy-Weinberg equilibrium.

**(20 marks)**

### **QUESTION 8**

A fire insurance company wants to relate the amount of fire damage (y) on dairy farms to the distance (km) between the farm and the nearest fire station (x). The study is to be conducted in a farming community with large dairy farms. A sample of 15 recent fires in this farming community is selected. The 15 values are in the table follow:-

Farm	X	Y	Farm	X	Y
1	3.4	26.2	9	2.6	19.6
2	1.8	17.8	10	4.3	31.3
3	4.6	31.3	11	2.1	24.0
4	2.3	23.1	12	1.1	17.3
5	3.1	27.5	13	6.1	43.2
6	5.5	36.0	14	4.8	36.4
7	0.7	14.1	15	3.8	26.1
8	3.0	22.3			

- a) Determine the regression equation that explain the relationship between X and Y. **(15 marks)**
- b) What would be the fire damage when the distance from the farm to the fire station is:- **(5 marks)**
- i) 7 km?
- ii) 20 km?

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

**THE UNIVERSITY OF ZAMBIA  
SCHOOL OF VETERINARY MEDICINE**

**FINAL-YEAR NOVEMBER/DECEMBER EXAMINATIONS - 2017/18 ACADEMIC YEAR**

**ANIMAL PRODUCTION AND NUTRITION (VMB 2500)**

**Duration:** 3 hours

**INSTRUCTIONS:**

1. Answer a total of **five (5)** questions only.
2. ALL questions carry equal marks of 20 each
3. Write in legible handwriting

<b>SECTION A: [Answer QUESTION 1 and ANY OTHER 2 questions from this section]</b>
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**QUESTION 1.** Mention and discuss in detail all the direct effects of climate on livestock production.  
[20 Marks]

**QUESTION 2.**

- a) Draw a sketch cross section of a dip tank, showing movement of cattle in and out of the dip tank.
- b) Discuss the need of keeping records of the dip tank.

**QUESTION 3.** Discuss origin, characteristic and function of the following breeds of cattle:

- a) Afrikander
- b) Brown Swiss
- c) Charolais
- d) Friesian
- e) Simmentaler

**QUESTION 4.** Answer the following:-

- a) Draw and label a digestive system of a ruminant.
- b) Discuss sources of colostrum for newly born calves.

<b>SECTION B: [Answer the one question in this section]</b>
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**QUESTION 5.** Answer the following questions on carbohydrate digestion and absorption:

- a) Describe the digestion of starch in the different segments of the digestive tract.  
[10 marks]
- b) Explain the process of glucose absorption.  
[5 marks]
- c) What are the functions of carbohydrates in the body?  
[5 marks]

**SECTION C: [Answer ONLY ONE question in this section]**

**QUESTION 6.**

a) The proximate analysis of a sample of maize (corn) indicates the following figures (in % of FM):

- moisture	14%
- ashes	1%
- crude protein	9%
- ether extract	4%
- crude fibre	2%
- nitrogen-free-extract	70%

- i). What is the percentage of DM of this maize?
- ii) What is the percentage of OM?
- iii) What is the percentage of carbohydrates?
- iv) How many grammes of crude protein (CP) are there in 1 kg of maize?
- v) How many grammes of DM are there in 1kg of maize?

[10 marks]

b) Why are the following feedstuffs restricted when formulating rations for poultry?

- i). cottonseed cake   ii) sunflower cake   iii) red sorghum   iv) fish meal   v) Cassava

[5 marks]

c) Two small scale poultry farmers formulated their own layers mash for feeding layers. Samples of their feed were brought to UNZA laboratory for analysis. The analysis revealed the following information:

Feed Source	ME (Mcal/kg)	CP %	Ca %	P %
Farmer A	2.8	17	3.6	0.5
Farmer B	3.4	8	1.0	0.6

- i) What would be your comment on the feeds formulated by the two farmers?
- ii) What would be your advice to each farmers?

[5 marks]

**QUESTION 7.**

Formulate 100 kg of Broiler Finisher using the following feedstuffs: Maize, Soyabean meal (Low fat), Dicalcium phosphate, Limestone flour, Salt and Premix. The ration should be balanced in terms of calcium, phosphorus and crude protein. Please use the following restrictions: Salt 0.5%, premix 0.3%.

[10 marks]

**Table 1: Nutritional Requirements of Poultry (Expressed per kg of diet) – Standard**

FEED	ME (Mcal/kg)	CP%	MAXIMUM		Lys %	Meth%	M+C%	Ca%	P%
			EE%	CF%					
Chick Mash	2.8	20	5	5	1.0	0.45	0.8	1.0	0.7
Growers Mash	2.8	16	5	5	0.80	0.32	0.7	1.0	0.6
<b>LAYERS</b>									
Complete	2.8	16.5	6	5	0.70	0.28	0.6	3.5	0.6
High Energy	2.85	17	5	5	0.75	0.30	0.65	3.5	0.6
<b>BROILERS</b>									
Starter	3.1	22	9	3.5	1.2	0.50	0.9	1.0	0.8
Grower	3.1	21	9	3.5	1.1	0.5	0.8	1.0	0.7
Finisher	3.2	20	10	3.5	1.0	0.45	0.8	1.0	0.7
Parent Stock	2.7	16	5	6	0.7	0.28	0.6	3.0	0.7

**Table 2. Common Feed Ingredients Available in Zambia and their Nutrient Levels**

FEED STUFF	ME (Mcal/kg)	CP %	LYS %	M+C %	MET %	Ca %	P %	Moist %
Maize	3.34	8.7	0.22	0.35	0.2	0.04	0.30	13.1
Sorghum	3.26	10.0	0.23	0.35	0.16	0.03	0.30	12.6
Cassava	3.09	2.0	0.07	0.05	0.03	0.15	0.10	12.5
Maize bran	2.74	11.0	0.36	0.36	0.17	0.10	0.50	12.5
Soyabean meal (full fat)	4.00	40.0	2.27	1.03	0.51	0.23	0.52	11.5
Soya bean meal (low fat)	2.18	43.5	2.65	1.26	0.61	0.31	0.65	12.0
Sunflower seed meal	1.37	28.5	0.97	1.11	0.63	0.33	1.08	11.7
Sunflower seed cake	1.51	29.1	0.99	1.13	0.64	0.36	1.16	9.5
Cotton seed meal	1.51	36.6	1.39	1.21	0.59	0.20	1.03	10.1
Cottonseed cake	1.84	37.1	1.41	1.22	0.59	0.24	1.09	8.0
Blood meal	3.02	87.5	8.4	2.27	1.14	0.17	0.17	9.4
Bone meal	1.5	40.7	1.83	0.77	0.45	16.04	7.42	9.5
Meat meal	3.09	58.2	3.26	1.4	0.87	6.0	2.9	5.2
Fish meal	3.32	65.9	5.07	2.44	1.85	3.5	2.6	8.3
Soya oil	9.3	-	-	-	-	-	-	0.5
Animal fat	8.5	-	-	-	-	-	-	0.5
Dicalcium Phosphate	-	-	-	-	-	24.0	18.0	1.0
Limestone	-	-	-	-	-	38.0	-	1.0
Salt (NaCL)	-	-	-	-	-	-	-	-

**END OF EXAMINATION**

**THE UNIVERSITY OF ZAMBIA  
SCHOOL OF VETERINARY MEDICINE**

**FINAL-YEAR NOVEMBER EXAMINATIONS-2017/18 ACADEMIC YEAR**

**VETERINARY PHARMACOLOGY - VMB 3600**

**INSTRUCTIONS:**

1. **Duration:** 3 hours
2. Answer ALL questions from Section A and two (2) questions from Section B.
3. ALL questions are 20 marks each
4. Write in LEGIBLE handwriting

<b>SECTION A: [Answer ALL questions in this section]</b>
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**QUESTION 1.**

Write short descriptive or explanatory notes on the following:-

- |                            |   |
|----------------------------|---|
| a) Ion trapping            | e) Biological half-life                               |
| b) Presystemic elimination | f) Physiological antagonism (Give a specific example) |
| c) Zero order kinetics     | g) Effective Dose 50 (ED <sub>50</sub> )              |
| d) The GABA receptor       | h) Minimum alveolar concentration (MAC)               |

**QUESTION 2.** Discuss the genomic mechanism of action, pharmacological effects, and uses of dexamethasone.

**QUESTION 3.** Discuss in detail, the recommended guidelines for controlling trypanosomiasis in cattle under different tsetse fly challenges.

**QUESTION 4.** Discuss the general properties, of two (2) specific drugs belonging to different chemical classes that can be used to treat systemic fungal infections in dogs:

<b>SECTION B: [Answer TWO (2) questions in this section]</b>
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**QUESTION 5.** Compare and contrast the mechanisms of action, side effects and treatment from overdose of depolarizing (non-competitive) muscle relaxants and non-depolarizing (competitive) muscle relaxants. Give two examples of each type.

**QUESTION 6.**

Inflammation and pyrexia are normal physiological responses to injury. Excessive inflammatory reactions can be harmful and need to be controlled.

- a) List four (4) anti-inflammatory pyrazolone derivatives, their mode of action, pharmacological effects and specific clinical indications. [10 marks]
- b) Summarise the arachidonic acid cascade indicating sites of action of anti-inflammatory agents. [10 marks]

**QUESTION 7.**

Mention the <u>mode of action</u> and <u>one indication</u> for each of the following drugs or chemicals [1 mark each]:	iv. Monensin	xiii. Levamisole
	v. Decoquinate	xiv. Rafoxanide
i. Parvaquone	vi. Alpha cypermethrin	xv. Quinapyramine
ii. Cymiazole	vii. Cephalixin	xvi. Amitraz
iii. Amprolium	viii. Vincristine	xvii. Clorsulon
	ix. Praziquantel	xviii. Albendazole
	x. Lasalocid	xix. Chlorfenviphos
	xi. Imidocarb	xx. Ivermectin
	xii. Diminazene	

**QUESTION 8.** Discuss the general properties, mode of action, clinical uses and side effects of the following classes of drugs:

- a) Aminoglycosides [10 marks]
- b) Fluoroquinolones [10 marks]

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**END OF EXAMINATION**



# **UNIVERSITY OF ZAMBIA**

## **SCHOOL OF VETERINARY MEDICINE**

### **VMP 3100 VETERINARY PATHOLOGY EXAMINATION – December 2018**

**TIME:**                      **Three (3) hours**

**INSTRUCTIONS:**    **(i) Answer all questions in this paper**  
                              **(ii) Answer each question in a separate answer book let**

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#### **QUESTION 1**

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

- (a) Define degeneration and necrosis **(5 marks)**
- (b) Write short notes atrophy **(5 marks)**
- (c) Outline the methods of spread of malignant neoplasms **(5 marks)**
- (d) Describe metastatic calcification **(5 marks)**
- (e) Discuss the Intrinsic causes of neoplasia **(5 marks)**
- (f) Define and briefly discuss hypertrophy **(5 marks)**

#### **QUESTION 2**

- (a) Choose any **two (2)** of the following
  - (i) Compare and contrast embolic vs granulomatous pneumonia **(5 marks)**
  - (ii) Outline and describe the causes of pulmonary oedema in domestic animals **(5 marks)**
  - (iii) Briefly describe the pathology of Jaagsiekte disease in sheep **(5 marks)**
- (b) Choose any **two (2)** of the following questions
  - (i) Describe the pathology of hepatic focal bacterial necrosis and its causes **(5 marks)**
  - (ii) Describe the necropsy and histological findings of hepatic portal systemic shunts **(5 marks)**
  - (iii) Write down the major hepatic pathology in Listeriosis **(5 marks)**

### **QUESTION 3**

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

- (a) Compare & contrast purulent vs granulomatous inflammatory features (**5 marks**)
- (b) Briefly describe the pathophysiology of inflammation (**5 marks**)
- (c) Briefly describe cryptorchidism in animals (**5 marks**)
- (d) Briefly compare and contrast seminoma vs sertoli cell tumour (**5 marks**)
- (e) Name & briefly describe **five (5)** non-inflammatory conditions of the uterus (**5 marks**)
- (f) Briefly describe the pathological features of cystic graafian follicle (**5 marks**)

### **QUESTION 4**

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

- (a) Briefly describe the pathogenesis and microscopic features of rabies (**5 marks**)
- (b) Briefly describe salt poisoning in animals (**5 marks**)
- (c) Briefly describe the causes and pathological features of hydronephrosis (**5 marks**)
- (d) Briefly describe acute pyelonephritis (**5 marks**)
- (e) Briefly describe the features to consider during gross examination of the kidney (**5 marks**)
- (f) Briefly describe granulosa cell neoplasms in large animals (**5 marks**)

### **QUESTION 5**

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

- (a) Briefly describe heart failure cells and how they come about (**5 marks**)
- (b) Briefly describe disseminated intravascular coagulation (DIC) (**5 marks**)
- (c) Describe the pathogenesis of thrombosis (**5 marks**)
- (d) List the mechanisms of immune evasion by microbes, giving **one (1)** example for each mechanism (**5 marks**)
- (e) Briefly discuss intussusception (**5 marks**)
- (f) Briefly discuss maldigestion and malabsorption (**5 marks**)

### **QUESTION 6**

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

- (a) Briefly discuss orthokeratosis **(5 marks)**
- (b) Briefly discuss contact irritant dermatosis **(5 marks)**
- (c) Briefly discuss suppurative pericarditis in cattle **(5 marks)**
- (d) Briefly discuss congestive heart failure **(5 marks)**
- (e) Briefly discuss hyperparathyroidism of malignancy **(5 marks)**
- (f) Briefly discuss the effect of an iodine deficient diet on an animal **(5 marks)**

**END OF EXAMINATION**

**THE UNIVERSITY OF ZAMBIA**  
**UNIVERSITY FIRST SEMESTER EXAMINATION 2017-2018**  
**VETERINARY MICROBIOLOGY AND IMMUNOLOGY (VMP 3300)**

**TIME: 3 HOURS**

**ANSWER ALL THE QUESTIONS**

**EACH QUESTION MUST BE ANSWERED IN A SEPARATE ANSWER BOOKLET**

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**SECTION I: IMMUNOLOGY**

Q1. Write brief and informative comments on **ANY FOUR (4)** of the following:

- a) Type I hypersensitivity (5)
- b) Immunoglobulin Alpha ( $\alpha$ ) (5)
- c) Fab region of an antibody (5)
- d) Hematopoietic stem cells (5)
- e) CD4<sup>+</sup> T cells (5)
- f) Inactivation of organisms used in vaccines (5)

**SECTION II: BACTERIOLOGY**

Q2.

Bacteria are prokaryotic cells of microscopic size which are normally capable of independent life. With the aid of a diagram, list the important structures of a bacteria cell and discuss the principal components of the gram positive and gram negative bacteria cell wall (20)

Q3. Write brief and informative comments on **ANY FOUR (4)** of the following:

- a) Significance of plasmids in Veterinary science (5)
- b) Simple and differential stains (5)
- c) Types of infections caused by bacteria (5)
- d) Ziehl Neelsen staining (5)
- e) Pathogenic factors of members of the genus *Streptococcus* (5)

### SECTION III: VIROLOGY

Q4. Select **ANY FOUR (4)** of the following questions:

- a) Briefly describe the following processes involved in virus replication: (5)
  - a) Translation
  - b) Transcription
- b) How would you perform the One Step Growth experiment? (5)
- c) Briefly explain the effect of virus replication on the host cell. (5)
- d) With examples, what is the veterinary importance of members of the *Poxviridae* family. (5)
- e) Describe the virion properties of the *Parvoviridae* family. (5)

### SECTION IV: MYCOLOGY

Q5. Briefly and concisely comment on **ANY FOUR (4)** of the following:

- a) Vegetative spore (5)
- b) Germ tube test (5)
- c) Dimorphic fungi (5)
- d) *Candida albicans* mechanism of virulence (5)
- e) Invasive pattern mechanisms observed in a *Saprolegnia* and *Aphanomyces invadans* infections in fish (5)
- f) Rough classification of fungal toxins (5)

**THE UNIVERSITY OF ZAMBIA**  
**SCHOOL OF VETERINARY MEDICINE**  
**END OF YEAR AUGUST/SEPTEMBER EXAMINATIONS-2017/18 ACADEMIC YEAR**  
**VETERINARY PARASITOLOGY (VMP 3400)**

**Duration:** 3 hours

**INSTRUCTIONS:**

1. Please read the instructions and each question carefully
  2. Answer **ALL** questions
  3. **EACH** question must be answered in a separate answer booklet
  4. **ALL** questions carry equal marks
  5. Write in a legible handwriting
- 

**SECTION A: PROTOZOOLOGY**

**QUESTION 1**

As a District Veterinary Officer in Chisamba soon after you graduate from UNZA, in the first management meeting you are told that there has been recurring cases of abortions in traditional reared cattle, and the herd is suffering from lowered conception rate even in well serviced cows.

- a) What would be your tentative diagnosis? **(2 Marks)**
- b) What steps would you take to confirm your tentative diagnosis? **(6 Marks)**
- c) What control measures would you recommend against this problem. **(12 Marks)**

**QUESTION 2**

Write **SHORT NOTES** on **ANY FOUR (4)** of the following topics:

- a) Sporogony **(5 Marks)**
- b) Reproductive cycle of protozoan parasites belonging to the Genus *Trypanosoma* **(5 Marks)**
- c) Modes of transmission of protozoan parasites belonging to the Order Eucoccidida **(5 Marks)**
- d) Modes of nutrition and locomotion in protozoan parasite **(5 Marks)**
- e) Oocyst and none-oocyst producing protozoa **(5 Marks)**
- f) Enzootic stability in a named protozoan parasite **(5 Marks)**

**PLEASE TURN OVER**

## **SECTION B: HELMINTHOLOGY**

### **QUESTION 3**

Digenic trematodes compromise parasites of veterinary importance.

- a) Compare and contrast the life cycle of *Fasciola hepatica* and *Schistosoma matheei* (10 marks)
- b) Outline the factors that influence production of metacercarie in the life cycle of *Fasciola* (5 marks)
- c) Compare and contrast the structure of *Fasciola hepatica* and *Dicrocoelium dendriticum* (5 marks)

### **QUESTION 4**

Write **SHORT NOTES** on **ANY FOUR (4)** of the following topics:

- a) *Echinococcus granulosus* (5 marks)
- b) The “cucumber worm” (5 marks)
- c) The heartworm of dogs and cats (5 marks)
- d) Toxocariasis in cattle (5 marks)
- e) The whipworm of dogs (5 marks)
- f) The eyeworm of poultry (5 Marks).

**PLEASE MOVE TO NEXT PAGE**

## SECTION C: ENTOMOLOGY

### QUESTION 5

Describe the life cycle, geographical distribution, medical and veterinary significance of the tick *Hyalomma truncatum* (20 marks).

### QUESTION 6

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

- a) Two current control methods of the biological vector of trypanosomiasis practiced in Zambia **(5 marks)**
- b) Sample collection and laboratory diagnosis of mange in goats **(5 marks)**
- c) Biological transmission of disease pathogens **(5 marks)**
- d) Veterinary importance and life cycle of short-horn flies **(5 marks)**
- e) Life cycle and veterinary significance of *Melophagus ovinus* **(5 marks)**.
- f) The **classification** at **Class**, **Order** and **Suborder** levels and **the life cycle** of the vector of lymphatic filariasis **(5 marks)**.

**END OF EXAMINATION**



**THE UNIVERSITY OF ZAMBIA  
SCHOOL OF VETERINARY MEDICINE  
END OF YEAR NOVEMBER/DECEMBER EXAMINATIONS  
2017/18 ACADEMIC YEAR**

**PRINCIPLES OF COMPANION ANIMAL MEDICINE (VMC 4112)**

**Duration:** 3 hours

**INSTRUCTIONS:**

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

.....**SECTION A**.....

**QUESTION 1**

You are presented with a 4-month-old unvaccinated cat with naso-ocular mucopurulent discharge, sneezing and anorexia. The cat is from a four cat household with a past history of similar clinical signs.

- a) What is your tentative diagnosis? **(2 marks)**
- b) List the pathogens commonly associated with the condition in (a) above. **(4 marks)**
- c) Outline the ancillary tests that should be carried out to confirm the tentative diagnosis in (a) above. **(4 marks)**
- d) Outline the management options for the cat. **(5 marks)**
- e) Outline your client education for the prevention of the disease in (a). **(5 marks)**

**QUESTION 2**

Zambia does not have many horses but has a growing donkey population. Nonetheless, cardiovascular disorders can affect both equine species.

- a) List common equine cardiovascular disorders. **(3 marks)**
- b) List the most common clinical manifestations of equine cardiovascular disease. **(3 marks)**
- c) Discuss the clinical and diagnostic approach to a case of an equine patient suspected to have cardiovascular disease. **(10 marks)**
- d) Write short notes on equine arrhythmias due to second degree AV Block. **(4 marks)**

### **QUESTION 3**

A 6-year-old female Daschund is presented with inappetence and dysphagia of a month's duration. Clinical examination reveals halitosis, drooling, severe tartar formation and gingivitis. The dog is fully vaccinated and dewormed every three months.

- a) What is your tentative diagnosis? (2 marks)
- b) List two (2) differential diagnoses. (2 marks)
- c) Outline the stages of clinical progression seen in the condition in (a) above. (5 marks)
- d) Briefly describe the ancillary tests you would carry out to give you a definitive diagnosis. (5 marks)
- e) Describe in detail the management options of condition in (a) above. (6 marks)

### **.....SECTION B.....**

### **QUESTION 4**

Equine colic is one of the most dangerous and costly medical problems. It is estimated to occur in one of every ten horses each year and is the number one killer of horses. Most colic cases are however, often successfully managed medically.

- a) Briefly outline the diagnostic aids you would utilize in the field to investigate a colic case. (5 marks)
- b) For **each** of the following colic conditions, discuss the medical treatment option you would use, stating your reasoning for selecting your preferred treatment option:
  - i. Pelvic flexure impaction that is moderately large and indentable on rectal palpation. (4 marks)
  - ii. Gastric dilatation due to grain overload. (3 marks)
- c) Outline the situations where surgical intervention is indicated in the management of a colic case. (3 marks)
- d) Discuss the criteria most useful in identifying an acute surgical colic case. (5 marks)

### **QUESTION 5**

During a visit to the Zambia Police stables, you are presented with a 14-year-old gelding that has bilateral swollen lower hindlimbs and is lame on these limbs. You are informed that the problem has been there for over three months and that it started off as a nodule on one of the hind limbs. Your physical examination reveals a normal temperature but reactive local lymph nodes. A closer examination of the hind limbs reveals lesions showing cycles of ulceration, granulation, partial healing and renewed eruptions. The skin surrounding the lesions is hardened, variably painful and swollen. Some scars can also be observed in the affected area.

- a) What is your diagnosis? (2 marks)
- b) List two (2) differential diagnoses. (2 marks)
- c) Briefly outline how you would confirm the diagnosis in (a) above. (4 marks)
- d) Outline how the condition in (a) above is transmitted. (2 marks)
- e) Discuss how you would manage and control the condition in (a) above. (10 marks)

### **QUESTION 6**

A 7-year old female Domestic Short-Haired cat that you have been treating for chronic kidney disease presents with hyphema. Other findings include cardiomegaly, proteinuria and a systolic blood pressure of 180 mm Hg. The cat is fully vaccinated and dewormed every three months.

- a) What is your tentative diagnosis? (2 marks)
- b) List **two (2)** differential diagnoses. (2 marks)
- c) Describe the pathogenesis of the clinical signs seen in the condition in (a) above. (8 marks)
- d) State the prognosis of this case and give reasons for your answer. (2 marks)
- e) Describe in detail the management options for the condition in (a) above. (6 marks)

### **QUESTION 7**

Liver disorders are more common in dogs compared to cats.

- a) Compare and contrast the consistent clinical signs associated with liver conditions in both species. (6 marks)
- b) Discuss the different forms of chronic hepatitis, giving details of the most likely cause(s) for each. (10 marks)
- c) Discuss in detail how you would manage a case of hepatic lipidosis in a cat. (4 marks)

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

**THE UNIVERSITY OF ZAMBIA  
SCHOOL OF VETERINARY MEDICINE  
END OF YEAR NOVEMBER/DECEMBER EXAMINATIONS-2017/18 ACADEMIC YEAR**

**PRINCIPLES OF FOOD ANIMAL MEDICINE (VMC 4122)**

**Duration:** 3 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 booklet
4. **ALL** questions carry equal marks
5. Write in a legible handwriting

.....**SECTION A**.....

**QUESTION 1**

A farmer reports the sudden onset of a harsh cough and bilateral ocular discharge in a group of 18-month-old steers. Clinical examination reveals a rectal temperature of 40°C, a serous nasal discharge, swollen and oedematous conjunctiva, and small necrotic plaques in the nares.

- a) What is your tentative diagnosis? **(2 marks)**
- b) List three (3) differential diagnoses. **(6 marks)**
- c) How would you confirm the condition you have stated in (a) above? **(4 marks)**
- d) Describe how you would manage the condition in (a) above. **(4 marks)**
- e) Explain how you would control and prevent the condition in (a) above. **(4 marks)**

**QUESTION 2**

A farmer in Lusaka West presents to you 10 Brahman calves aged between 5-7 months-old with the history of sudden depression, ataxia, head-pressing and convulsions. A week prior to presentation, the calves were introduced to a molasses-based-urea dry season supplement diet due to poor and reduced grazing pasture at the farm. Clinical examination findings reveals recumbency with paddling limbs, a characteristic star-gazing stance, opisthotonus and apparent blindness in most calves.

- a) What is your tentative diagnosis? **(2 marks)**
- b) List two (2) differential diagnoses for the condition in (a) above. **(4 marks)**
- c) Briefly, describe the possible pathogenesis for the condition in (a) above. **(6 marks)**
- d) Describe your diagnostic approach to the condition in (a) above. **(4 marks)**
- e) Describe how you would manage and prevent the condition you have stated in (a) above. **(4 marks)**

### **QUESTION 3**

You are called to a piggery in Lusaka West. A thorough clinical examination reveals high temperature (40-42°C) of the affected pigs and they tend to separate themselves from the rest of the group, and may appear chilled and cold. The affected pigs are generally found lying down and when encouraged to rise will rapidly lie down again.

- a) What is your tentative diagnosis? (2 marks)
- b) What other clinical signs do you expect to see in the herd? (6 marks)
- c) List two (2) differential diagnoses. (4 marks)
- d) Describe how you would investigate and manage this disease outbreak in (a) above. (8 marks)

### **.....SECTION B.....**

### **QUESTION 4**

You are called to examine a cow that has been down for 36 hours following parturition. Upon arrival, you notice that the cow is in sternal recumbency with her head tucked into her flank. On closer clinical examination, you notice that she has mydriasis, the muzzle is dry and there are obvious signs of tympany.

- a) Which disease condition would you suspect? (2 marks)
- b) List two (2) differential diagnoses and your reasons. (4 marks)
- c) Describe in detail the aetiopathogenesis of this condition. (6 marks)
- d) Discuss the treatment of this condition. (6 marks)
- e) Briefly outline your client education. (2 marks)

### **QUESTION 5**

A farmer who manages a feedlot operation has had a series of calves exhibiting anorexia, fever, and drooling. The examination of affected calves reveals puffy cheeks and a foul breath.

- a) What is your tentative diagnosis? (2 marks)
- b) Outline how you would confirm your diagnosis. (3 marks)
- c) Describe the pathogenesis of this condition. (6 marks)
- d) Describe how you would manage this condition. (6 marks)
- e) How you would prevent further occurrences of this condition. (3 marks)

### **QUESTION 6**

Bacteria-induced vegetative valvular endocarditis has been reported as one of the main cardiac disorders in adult cattle. Often the disease is misdiagnosed and only discovered at slaughter.

- a) Outline **six (6)** clinical features of vegetative valvular endocarditis. (6 Marks)
- b) Describe the pathogenesis of the condition. (6 marks)
- c) Describe how you would diagnose the condition. (4 marks)
- d) How would you treat the condition? (4 marks)

### **QUESTION 7**

You have just discovered that mange, Caseous Lymphadenitis and Contagious Ecthyma are the most common sheep and goat diseases in Gwembe district.

- a) Discuss the clinical picture you would expect to see in two of the three observed diseases. (8 marks)
- b) Discuss the treatment of each of the three conditions. (6 marks)
- c) Describe how you would control and prevent each of the three conditions in the district. (6 marks)

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

**THE UNIVERSITY OF ZAMBIA  
SCHOOL OF VETERINARY MEDICINE  
END OF YEAR NOVEMBER/DECEMBER EXAMINATIONS-2017/18 ACADEMIC YEAR**

**PRINCIPLES AND INTRODUCTION TO VETERINARY SURGERY AND  
DIAGNOSTIC IMAGING (VMC 4200)**

**Duration:** 3 hours

**INSTRUCTIONS:**

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

.....**SECTION A**.....

**QUESTION 1**

Anaesthesia of animals is necessary for performing surgery in a humane and save manner.

- a) Indicate the most appropriate anaesthetic protocol in the following species: **(3 marks each)**
  - i. African python with a wound.
  - ii. African Gray parrot with a broken wing.
  - iii. Laboratory rat with a skin tumour.
  - iv. Tortoise with broken and infected shell.
- b) Outline the pre-anaesthetic considerations in the following patients: **(4 marks each)**
  - i. A 2-month-old German Shepherd dog with a fractured mandible.
  - ii. A pregnant 3-year-old Boerboel presented for emergency caesarean section.

**QUESTION 2**

Outline the radiographical findings of all of the following conditions: **(4 marks each)**

- a) A bitch presented with an 80 day-old pregnancy.
- b) A cat with pneumothorax
- c) Paraprostatic cyst in a male Great Dane.
- d) Osteosarcoma of the canine humerus
- e) Canine hip dysplasia.

### **QUESTION 3**

Write short notes on any **four (4)** of the following (where appropriate utilize the aid of sketch and/or line drawings): **(5 marks each)**

- a) Classification criteria for suture materials.
- b) The comprehensive classification criteria for a surgical suture needle.
- c) The Mapleson alphabet.
- d) Discuss the classification criteria for haemorrhage.
- e) Discuss how to perform the canine Intravenous Regional Nerve Blocks (Bier block) Technique.
- f) The preparation of the equine foot for radiography. (Include marking of the foot for diagnostic radiography).

### **.....SECTION B.....**

### **QUESTION 4**

A 9-year-old broodmare with ultrasonographically confirmed granulose cell tumour of the ovary and suspected pyelonephritis is referred to your practice for an ovariectomy.

- a) List the available celiotomy options for the ovariectomy giving an advantage for each. **(4 marks)**
- b) Describe how you would confirm the pyelonephritis in the broodmare. **(2 marks)**
- c) The ovarian tumour is relatively small and the client does not want to see any post-operative scar tissue. Describe in detail the approach you would use to carry out the ovariectomy (Include anaesthesia and post-operative care). **(12 marks)**
- d) Briefly outline the disadvantages of the approach described in (c) above. **(2 marks)**

### **QUESTION 5**

Abomasum may be displaced either to the left or right with Left Displacement of Abomasum (LDA) being more common. When conservative management does not yield positive results, surgical correction is usually recommended.

- a) List three (3) surgical procedures that can be used to correct the displaced abomasum in cattle. **(6 Marks)**
- b) Describe **one (1)** of the procedures you have listed above in (a) taking into account patient preparation, anaesthetic protocol, surgical procedure and postoperative care. **(14 Marks)**



### **QUESTION 6**

A 2-year-old Domestic Short-Haired cat that you are attending to is depressed and dehydrated. The owner tells you that the cat is fond of playing with an old woolen rug but now has been inappetent for the past two days. It vomits and is able to pass blood-tinged faeces. On examination, you find that the cat's temperature is 39.9°C and it is drooling.

- a) What is your tentative diagnosis? **(2 marks)**
- b) How would you determine the probable cause(s) for the condition in a) above? **(5 marks)**
- c) Describe in detail how you would manage this condition. **(8 marks)**
- d) What are the **two (2)** major complications that can arise as a result of your intervention in (c) above and how can you minimize them from occurring? **(5 marks)**

### **QUESTION 7**

An 8-year-old Golden Retriever has been presented to you after it accidentally swallowed a small ball it was seen playing with. The dog seemed alright but over the previous week, it has lost its appetite. Whenever it tries to eat or drink it immediately vomits. A mass is palpable in the mid cervical area.

- a) What do you suspect has happened to the dog? **(2 marks)**
- b) How you would confirm your suspicion in (a) above. **(4 marks)**
- c) Describe in detail your surgical management (include anaesthesia and post-operative care) of the patient. **(8 marks)**
- d) Compare and contrast the considerations of surgery of the esophagus and that of the stomach. **(6 marks)**

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

**THE UNIVERSITY OF ZAMBIA**  
**SCHOOL OF VETERINARY MEDICINE**  
**END OF YEAR NOVEMBER/DECEMBER EXAMINATIONS-2017/18 ACADEMIC YEAR**

**INTRODUCTION TO VETERINARY REPRODUCTION & OBSTETRICS (VMC 4309)**

**Duration: 3 hours**

**INSTRUCTIONS:**

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

..... **SECTION A** .....

**QUESTION 1**

Artificial insemination (A.I) is the process by which semen is collected from a male animal, processed, stored, and then artificially introduced into the reproductive tract of a female of that same species for the purpose of conception.

- a) List ten (10) benefits of A.I. **(5 marks)**
- b) Outline the animal health precaution(s) would you consider when performing A.I.? **(4 marks)**
- c) The optimal time for insemination is in advance of the time of ovulation, why do you think this is so? **(2 marks)**
- d) Outline the factors that influence conception rate of cows that should be considered in an A.I. programme. **(2 marks)**
- e) Describe the precaution(s) that should be carefully taken in the process of handling and thawing frozen semen. **(4 marks)**
- f) Outline the important differences between A.I. in cattle as opposed to porcine A.I. **(3 marks)**

**QUESTION 2**

A 7-year-old valuable Holstein-Friesian cow has developed an excessively large abdomen at eight months into her pregnancy.

- a) Which disease condition would you suspect and give reasons? **(4 marks)**
- b) Discuss the aetio-pathogenesis of the disease condition you suspect in (a) above. **(6 marks)**
- c) List two (2) differential diagnoses. **(2 marks)**
- d) Outline the management of the condition you suspect in (a) above. **(4 marks)**
- e) Outline the measures you would take in order to prevent future early abortions due to the suspected condition in (a) above? **(4 marks)**

### **QUESTION 3**

Examine the picture below carefully and answer all the questions that follow:



- a) What is your tentative diagnosis? (4 marks)
- b) List **two (2)** differential diagnoses. (2 marks)
- c) Discuss how the condition may have developed. (6 marks)
- d) Describe your treatment of the condition. (6 marks)
- e) What advice would you give to the owner? (2 marks)

### **..... SECTION B .....**

### **QUESTION 4**

A client informs you that they wish to start breeding horses to supply the Zambian equestrian industry and would like your advice on equine reproduction. The following are among the many questions the client would like to be educated on. Please answer the questions as clearly as possible.

- a) Outline why the mare is described as a seasonal breeder and the factors that affect its seasonality. (3 marks)
- b) Briefly outline the methods used to detect for heat in the mare. (3 marks)
- c) Describe the events occurring in the mare that could be equated to maternal recognition of pregnancy. (4 marks)
- d) Briefly outline the methods used to diagnose pregnancy in the mare. (5 marks)
- e) Discuss the endocrinology of pregnancy in the mare. (5 marks)

### **QUESTION 5**

You are presented with Booboo a 3-year-old bull terrier bitch with the primary complaint of failing to reproduce. On examination, you notice that Booboo is bright and active, but she has a distended abdomen and is lactating. No vaginal discharge is observed.

- a) What is your tentative diagnosis? **(2 marks)**
- b) List two (2) differential diagnoses. **(4 marks)**
- c) Describe **three (3)** diagnostic tests that can be used to arrive at a definitive diagnosis. **(9 marks)**
- d) Outline the vaginal cytological findings you would expect in (a) above. **(2 marks)**
- e) Indicate the treatment options for (a) above. **(3 marks)**

### **QUESTION 6**

Write notes on all of the following:

**(5 marks each)**

- a) Functions and uses of non-pituitary gonadotrophins in cattle.
- b) Factors affecting uterine involution in cattle.
- c) Agents and their mode of action that can be used to terminate pregnancy at 114 days of gestation in cattle.
- d) Increasing the ovulation rate in the ewe.

### **QUESTION 7**

The duration of the oestrous cycle in the cow is approximately 21 days. With the aid of a simple diagram, describe the:

- a) Fluctuations in the levels of oestrogen, progesterone, luteinizing hormone (LH) and follicle stimulating hormone (FSH) during the oestrous cycle. **(10 marks)**
- b) Pattern of follicular development during the oestrous cycle. **(10 marks)**

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

**THE UNIVERSITY OF ZAMBIA  
SCHOOL OF VETERINARY MEDICINE  
DEPARTMENT OF DISEASE CONTROL**

**2017/2018 ACADEMIC END OF YEAR EXAMINATION**

**VETERINARY CLINICAL PATHOLOGY (VMD 4102)**

**DURATION: 3HRS**

**INSTRUCTIONS: PLEASE ANSWER ALL**

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**QUESTION 1**

(A) What do you know about FNAC and its application? Write the microscopic cytological differentiating characteristics in tabular form of neoplastic lesions in dogs leading to differential diagnosis of lymphoma, mastocytoma, plasmacytoma, melanoma and transmissible venereal tumour **(10 Marks)**

(B) Write one pathognomonic lesion or symptom and the appropriate **specimens** to be collected and preservatives to be used in each of the following suspected diseases of livestock for laboratory confirmation. **(10 Marks)**

- i. Foot and Mouth Disease
- ii. Rabies
- iii. New Castle Disease
- iv. (iv). Rift Valley Fever
- v. Haemorrhagic Septicaemia
- vi. Anthrax
- vii. Contagious Bovine Pleuro-pneumonia
- viii. Heartwater
- ix. East Coast Fever
- x. Cryptosporidiosis

**QUESTION 2**

A three-year-old female Domestic Short H aired (DSH) cat was presented to the University of Zambia Veterinary Clinic for elective surgery. A blood sample was obtained and analysis revealed the following findings:

Hematocrit:	38%
Hemoglobin:	12.5 g/dL
Red Blood Cell Count:	$7.2 \times 10^6/\mu\text{L}$
Total Protein:	6.2 g/dL
White Blood Cell Count:	$18,600/\mu\text{L}$
Neutrophils:	$8,000/\mu\text{L}$
Eosinophils:	$300/\mu\text{L}$
Lymphocytes:	$10,000/\mu\text{L}$
Monocytes:	$300/\mu\text{L}$
Platelets:	Adequate

- (A) Interpret the results (15 Marks)  
 (B) What is your diagnosis? (5 Marks)

### **QUESTION 3**

A 3-month-old female intact Irish wolfhound presents for stunted growth and episodes of intermittent lethargy and disorientation. A serum biochemistry panel is performed, with the results shown below.

The fasted ammonia concentration is 175  $\mu\text{mol/L}$  (normal range, 0–50  $\mu\text{mol/L}$ ).

Preprandial and postprandial (2-hour) bile acids are 40  $\mu\text{mol/L}$  (normal, 0–8  $\mu\text{mol/L}$ ) and 102  $\mu\text{mol/L}$  (normal, 0–30  $\mu\text{mol/L}$ ), respectively.

#### **Serum Biochemistry Results**

<b>Analyte</b>	<b>Value</b>	<b>Normal Range</b>
BUN	3mg/dL	7 - 27mg/dL
Total Protein	5g/dL	5.2 – 8.2g/dL
Albumin	2g/dL	2.4 – 4g/dL
Glucose	118mg/dL	74 – 140mg/dL
ALT	50U/L	10 – 130U/L
AST	15U/L	10 – 34U/L
ALP	180U/L	24 – 147U/L
GGT	<10U/L	0 – 25U/L
Total Bilirubin	0.1mg/dL	0 – 0.8mg/dL

- (A) Interpret the results (10 Marks)  
 (B) What is your diagnosis? (5 Marks)  
 (C) What further test(s)/examination(s) would you carry out to confirm your diagnosis? (5 Marks)

### **QUESTION 4**

Write short notes on the following

- (A) Cardiac action potential (4 marks)  
 (B) Functional and leakage markers (4 marks)  
 (C) Cholestasis (4 marks)  
 (D) Preparation and use of plasma and serum (4 marks)  
 (E) Isoenzymes and Biomarkers (4 marks)

### **QUESTION 5**

- (A) The investigation of organ malfunction in dogs is important for diagnosis and therapy of various conditions affecting animals. Using appropriate examples of hypothalamic-pituitary-organ axis describe the laboratory investigation protocols that you would perform in order to make a diagnosis. (10 marks)  
 (B) Compare and contrast diabetes insipidus and diabetes mellitus outlining the tests you would carry out to confirm your diagnosis (10 marks).

..... End of Examination.....

**UNIVERSITY OF ZAMBIA**  
**SCHOOL OF VETERINARY MEDICINE**  
**END OF YEAR NOVEMBER/DECEMBER EXAMINATION-2017/18 ACADEMIC**  
**YEAR**  
**APPLIED FOOD ANIMAL MEDICINE (VMC 5130)**

**Duration:** 3 hours

**INSTRUCTIONS:**

1. Please read the instructions and each question carefully
2. Answer **ALL** the 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.
5. Write in a legible handwriting.

.....**SECTION A**.....

**QUESTION 1**

A 4-day-old bull calf from a beef herd is very dull and has been unwilling to suckle for the past 36 hr. The calf appeared normal for the first 2 days and was observed to suckle colostrum within the first 2 hrs. The rectal temperature is 38.2°C. The calf is very depressed and weak but able to stand when assisted. The calf is markedly dehydrated and has congested mucous membranes. The respiratory rate is 40 breaths per minute. The abdomen is markedly distended with fluid sounds audible on succussion. There is no evidence of diarrhoea and there are no faeces on the thermometer. There is thickening of the umbilical stump. The superficial lymph nodes are not enlarged.

- a) What is your tentative diagnosis? **(2 marks)**
- b) List three (3) differential diagnoses. **(6 marks)**
- c) Describe how you would confirm your diagnosis in (a) above. **(6 marks)**
- d) What is the prognosis for this calf? **(2 marks)**
- e) Outline the treatment(s) of the condition in (a) above. **(4 marks)**

**QUESTION 2**

Neonatal polyarthritis causes death in up to 1.5% of affected pigs.

- a) Describe the clinical features of neonatal polyarthritis in pigs. **(6 marks)**
- b) Briefly describe the risk factors and pathogenesis for this condition. **(6 marks)**
- c) Discuss the treatment of the condition. **(6 marks)**
- d) Briefly comment on how the condition may be prevented. **(2 marks)**

**QUESTION 3**

A farmer in Chisamba is complaining of losing his Boer goats and sheep from a “mysterious” disease. He has been spraying his animals regularly and deworming them every month. On

your quick observation you notice that some animals have pale mucous membranes diarrhoea, ascites and subcutaneous oedema. This problem has persisted for a long time despite afore mentioned management practices

- a) List three diseases that could be affecting the animals? (6 Marks)
- b) Discuss the problem at this farm. (6 Marks)
- c) How would you go about investigating the persistence of the problem? (4 Marks)
- d) Briefly describe how you would educate the farmer to prevent this problem in future. (4 Marks)

.....SECTION B.....

**QUESTION 4**

During your routine farm visits to goat, sheep and cattle farmers in Sinazongwe, you notice that most animals are losing weight despite it being rainy season with enough pasture. You then collect blood sample for a number of laboratory tests, one of which reveals that the cattle are anaemic and have eosinophilia. You also notice that liver enzymes (GGT and GLDH) are elevated.

- a) What is your tentative diagnosis? (2 Marks)
- b) List two (2) differential diagnoses. (4 Marks)
- c) Describe how you would confirm the condition in (a) above. (4 Marks)
- d) How would you treat the condition in a) above? (6 Marks)
- e) Briefly describe how you would prevent/control the condition in (a) above. (4 Marks)

**QUESTION 5**

You are presented with a Jersey cow for clinical examination with the history of recumbency for 24 hours post-calving. The farmer informs you that the calving was unaided but he noticed that the process took a bit longer than the previous pregnancy. The cow had strained a lot before it finally calved. This is its second successful calving since it was introduced in to the dairy herd. The cow was artificially inseminated with semen collected from the Holstein Friesian cross Bull at the farm. On clinical examination the cow is in ventral recumbency with both hindlimbs extremely abducted and extended forward. It however bright and alert, and is able to graze the hay around it.

- a) What is your tentative diagnosis? (2 Marks)
- b) List two (2) differential diagnoses for the condition in a) above. (4 Marks)
- c) Describe the possible aetiopathogenesis for this condition. (6 Marks)
- d) Describe how you would manage the condition you have stated in a) above. (8 Marks)



### **QUESTION 6**

A Beef farmer in Lufwanyama has reported a disease that is affecting his breeding heifers. The affected animals seem to develop blindness, grinding of teeth, muscle tremors, and excitability.

- a) What is your tentative diagnosis? (2 Marks)
- b) List two (2) differential diagnoses. (4 Marks)
- c) Describe how you would confirm the condition in (a) above. (4 Marks)
- d) How would you treat the condition in (a) above? (6 Marks)
- e) What would your client education be? (4 Marks)

### **QUESTION 7**

A pig farmer in Lusaka East has reported a strange disease. He reports that the disease is spreading rapidly affecting all age groups but especially piglets and weaners. The affected pigs appear to lie on their belly and shivering. These piglets and weaners also show nystagmus and convulsions. Some piglet are found dead.

- a) What is your tentative diagnosis? (2 Marks)
- b) List two (2) differential diagnoses. (4 Marks)
- c) Describe how you would confirm the condition in (a) above. (8 Marks)
- d) Outline your treatment and client education. (6 Marks)

.....**END OF THE EXAMINATION**.....

**THE UNIVERSITY OF ZAMBIA  
SCHOOL OF VETERINARY MEDICINE  
END OF YEAR NOVEMBER/DECEMBER EXAMINATIONS  
2017/18 ACADEMIC YEAR**

**COMPANION ANIMAL MEDCICINE (VMC 5149)**

**Duration:** 3 hours

**INSTRUCTIONS:**

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

.....**SECTION A**.....

**QUESTION 1**

A 600 kg, well-muscled gelding underwent abdominal surgery at your clinic. The surgery was successful but protracted and the gelding had to be on gaseous anesthesia for a longer time than expected. It recovered well from the anesthesia but one hour after standing, the horse starts sweating showing signs of weakness in all the limbs, restlessness and anxiety. The triceps, pectoral and hindquarter muscles look swollen and are hot and painful on deep palpation.

- a) What is your tentative diagnosis? **(4 marks)**
- b) List two (2) differential diagnoses. **(2 marks)**
- c) Briefly outline how you would confirm the diagnosis in (a) above. **(4 marks)**
- d) Discuss how you would manage the condition in (a) above. **(8 marks)**
- e) Outline measures you would undertake to prevent the occurrence of the condition in (a) above. **(2 marks)**

**QUESTION 2**

You are presented with a 10-year-old female cat with polydypsia, polyuria, weightloss, polyphagia and listlessness of a month's duration. Your physical examination reveals tachycardia and a swelling in the ventral cervical region.

- a) What is your tentative diagnosis? **(2 marks)**
- b) List two (2) differential diagnosis. **(2 marks)**
- c) Outline the ancillary tests that should be carried out to confirm the tentative diagnosis in (a). **(3 marks)**
- d) Outline the risk factors for the condition in (a) above. **(3 marks)**
- e) Briefly discuss the management options for the condition in (a) above. **(8 marks)**

### **QUESTION 3**

A 6-year-old male German Shepherd dog is presented with progressive hindlimb neurological signs. Physical examination reveals loss of proprioception, ataxia and upper motor neuron signs of the hindlimbs. The forelimbs appear to be normal. No abnormalities are found on the basic ancillary tests. The dog is fully vaccinated and was recently dewormed.

- a) What is your tentative diagnosis? (2 marks)
- b) List two (2) differential diagnosis. (2 marks)
- c) Outline any **three (3)** physical exam findings that suggest the following (3 marks)  
each)
  - i. loss of proprioception
  - ii. UMN signs in the limbs
- d) Outline the management options for the condition in (a) above. (8 marks)
- e) Outline possible post-mortem findings in such a case. (5 marks)

### **.....SECTION B.....**

### **QUESTION 4**

Write notes on the clinical presentation, risk factors, diagnostic findings and management of the following in the dog:

- a) Hypertrophic osteopathy (10 marks)
- b) Metaphyseal osteopathy (10 marks)

### **QUESTION 5**

A 3-year-old male Boerboel is presented with persistent lacrimation from the right eye. Physical examination of the eye reveals blepharospasm, corneal oedema and vascularisation, conjunctivitis and miosis. Eyelid conformation is normal.

- a) What is your tentative diagnosis? (2 marks)
- b) List two (2) differential diagnosis. (2 marks)
- c) Outline how corneal changes may be used as a prognostic indicator in dogs with eye problems. (6 marks)
- d) Outline the ancillary tests that should be carried out to confirm the tentative diagnosis in (a). (2 marks)
- e) Discuss the medical management options for the condition in (a) above. (8 marks)

### **QUESTION 6**

Horses are primarily kept for their athletic ability and thus used for various equestrian events. Therefore owners of the horses expect them to perform optimally at all times. Poor performance can be defined as a suboptimal 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 performance of a horse.

- a) List the body systems that you would pay particular attention to when evaluating a poorly performing horse. (2 marks)
- b) Discuss your clinical evaluation of a poorly performing horse. (4 marks)
- c) During exercise, a seven-year-old gelding develops a short, stiff stride which worsens when exercise is continued. Upon stopping, the horse becomes reluctant to move and adopts a posture as if to urinate. The big muscles become firm and painful and cramping is evident when these muscles are palpated. The horse is also sweating profusely. What is your tentative diagnosis and how would you confirm the diagnosis? (4 marks)
- d) Outline the pathogenesis of the condition in (c) above. (4 marks)
- e) Discuss how you would manage the condition in (c) above. (6 marks)

### **QUESTION 7**

A 3-year-old female Labrador is presented with exercise intolerance of 2 days duration. Physical examination reveals petechial and ecchymotic haemorrhages, icterus and pallor. You notice that the patient is rapidly deteriorated over the few hours that she has been in the clinic. During blood collection you notice agglutination of the blood on the EDTA tube. No blood parasites are seen on the blood smear but PCV is 19%.

- a) What is your tentative diagnosis? (2 marks)
- b) List two (2) differential diagnosis. (2 marks)
- c) Briefly describe the pathogenesis of the condition in (a) above. (6 marks)
- d) Outline the ancillary tests that should be carried out to confirm the tentative diagnosis in (a) (2 marks)
- e) Outline the medical management options for the condition in (a) above. (8 marks)

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

**THE UNIVERSITY OF ZAMBIA  
SCHOOL OF VETERINARY MEDICINE  
END OF YEAR NOVEMBER/DECEMBER EXAMINATIONS-2017/18 ACADEMIC  
YEAR**

**VETERINARY OPERATIVE SURGERY (VMC 5210) /6210**

**Duration:** 3 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
5. Write in a legible handwriting

.....**SECTION A**.....

**QUESTION 1**

Ophthalmic surgery is one of the most common types of surgery needed in Boerboels.

- a) Outline **two (2)** procedures that can be used to treat entropion in an 8-month-old dog  
(2 marks)
- b) Using sketch and/or line diagrams, describe the procedure for **one (1)** of the answers  
given in (a) above. (6 marks)
- c) List **three (3)** indications for a temporary tarsorrhaphy. (3 marks)
- d) Write concisely on the surgical management of a prolapsed nictitans gland. (6 marks)
- e) List **three (3)** clinical signs associated with ocular pain. (3 marks)

**QUESTION 2**

Lameness is one of the most common reason for lack of performance in horses. A 14-year old gelding is presented with lameness. Evaluation of the horse's gait revealed intermittent right forelimb lameness with the horses preferring to step more on the toe. Hoof testers indicate mild heel pain on the right foot. Radiographs of both feet reveal a normal left foot (figure 1) and highly sclerotic small bone (arrow) at the back of the coffin bone (figure 2).

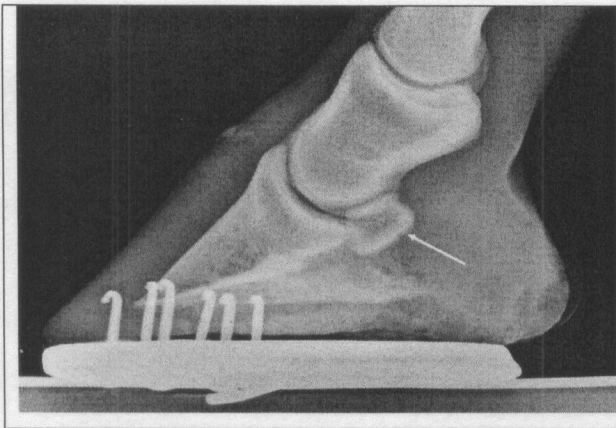


Figure 1



Figure 2

- What is your definitive diagnosis? (2 marks)
- Outline the aetio-pathogenesis of your diagnosis in (a) above. (2 marks)
- Discuss in detail how you would manage the condition in (a) above. (12 marks)
- What would be your client education with regards to return to full athletic ability by the horse. (4 marks)

### **QUESTION 3**

You are presented with a cow with sudden onset of weight-bearing lameness affecting the left hindlimb. It is the only affected animal from a herd of 100 Dairy cows. On physical examination, you notice a localized septic inflamed area on the solar pododerm near the white line. On past history, the farmer informs you that he has had sporadic cases of the condition and all were previously managed by the ambulatory unit of UNZAVET Clinic. The Dairy herd is supplemented with concentrates only during milking in the milking parlor, and during the day they graze freely in the paddocks around the Farm. Based on the history and physical examination findings,

- What is your tentative diagnosis of the condition described above? (2 Marks)
- List two (2) differential diagnoses for the condition. (4 Marks)
- Describe how you would manage the condition in (a) above. (10 Marks)
- How would you advise the farmer to avoid/prevent such a condition? (4 Marks)

.....SECTION B.....

**QUESTION 4**

You are a recent graduate from the School of Veterinary Medicine, University of Zambia and intend to enroll for an MSc in Veterinary Dentistry. To enroll you need to sit for an aptitude test before you can be admitted. The following are some of the questions in the test. You are expected to answer the questions as concisely and clearly as possible.

- a) List any **five (5)** malocclusions that you know that can occur in dogs and state the significance of each. **(10 marks)**
- b) Outline the clinical signs associated with oropharyngeal disease and indicate the most likely cause(s). **(10 marks)**

**QUESTION 5**

Equine castration is a procedure that is commonly performed by equine practitioners. It requires adequate knowledge of anaesthesia and surgical skills.

- a) List techniques available to the veterinary surgeon for equine castration. **(4 marks)**
- b) With the aid of sketch and/or line drawings, describe one of the techniques listed in (a) above (Include pre-surgical considerations, anaesthetic protocol, and post-operative care) **(12 marks)**
- c) List possible complications that may arise from equine castrations. **(4 marks)**

**QUESTION 6**

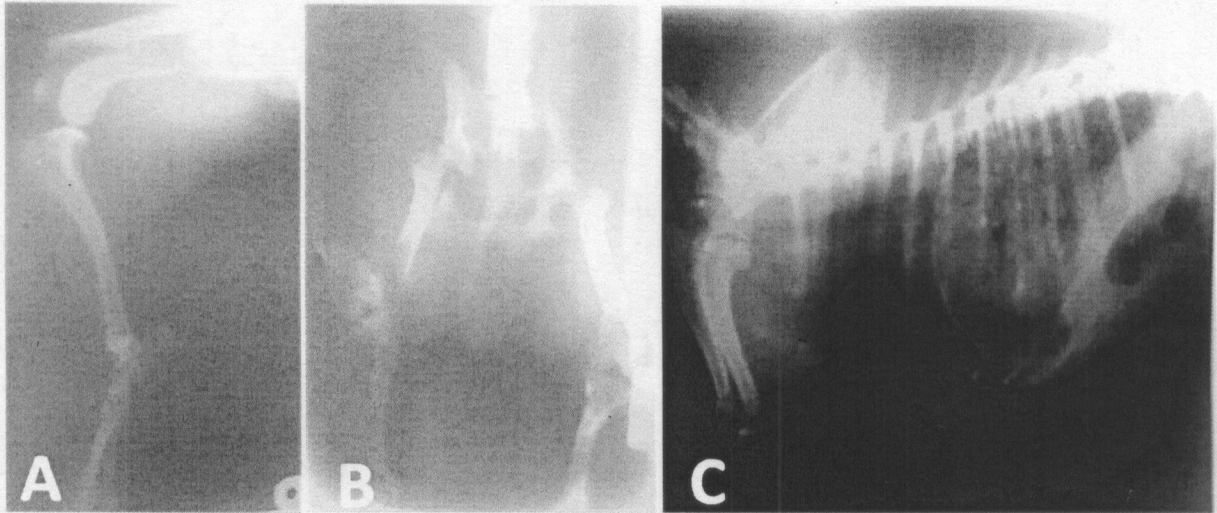
Mr. Siambizi calls you to the Zambia Police stables suspecting that their 9-year-old mare was having an episode of colic because it has been seen pawing, looking at its flanks, stretching and attempting to roll. Its appetite had reduced and only small amounts of faeces were found in its stable. The physical examination reveals normal parameters except for moderately elevated heart and respiratory rates during painful episodes. There is an increase in borborygmis and rectal examination reveals a firm and enlarged terminal left ventral colon.

- a) What is your tentative diagnosis? **(2 marks)**
- b) Briefly describe the medical management you would institute. **(4 marks)**
- c) Outline the factors that would indicate surgical intervention. **(4 marks)**
- d) Due to the marked cardiovascular deterioration, you decide to carry out surgical intervention, describe how you would surgically manage the condition (Include anaesthesia, patient preparation, intra-operative precautions and post-operative care). **(8 marks)**
- e) Outline the prognosis of the condition? **(2 marks)**



### **QUESTION 7**

Examine the provided radiographic pictures (A-C) of a middle-aged dog that was hit by car a few hours before presentation to you. The major presenting problem was non-weight bearing lameness of the right hindlimb. On physical examination, you observe that the patient is in respiratory distress, has muffled heart sounds, discontinuity in the middle of the affected leg, and an unstable pelvis. Furthermore, the patient is in extreme pain and prefers to sit in a praying position.



- a) Describe the condition(s) affecting this patient? **(5 marks)**
- b) List and explain the preoperative and postoperative considerations in managing this case? **(5 marks)**
- c) Discuss in detail how you would go about managing this patient (include the rationale of your intervention(s) and anesthesia) **(10 marks)**

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



**THE UNIVERSITY OF ZAMBIA  
SCHOOL OF VETERINARY MEDICINE  
END OF YEAR NOVEMBER/DECEMBER EXAMINATIONS-2017/18 ACADEMIC YEAR**

**VETERINARY REPRODUCTION & GYNAECOLOGY (VMC 5319)**

**Duration: 3 hours**

**INSTRUCTIONS:**

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

..... **SECTION A** .....

**QUESTION 1**

A seasonally-calving Friesian-Holstein herd comprising 250 milking cows, has the following fertility indices for the last breeding year:

Mean calving-to-first-service interval	82 days
Mean calving-to-conception interval	106 days
First service pregnancy (conception) rate	52%
Overall pregnancy (conception) rate	49%
The 60-90 days non-return rate	40%
The fertility factor	20
Heat detection rate	40%
Cullings	25%
Abortions	10%
Services per conception	2

- a) Comment on each of these values, particularly in relation to maintaining a seasonal calving pattern. **(10 marks)**
- b) Discuss strategies for improvements where necessary. **(10 marks)**

## **QUESTION 2**

On your routine fertility visits on a beef farm, you find that many of the cattle have small, smooth ovaries with no evidence of recent cyclical activity.

- a) What is your tentative diagnosis? (3 marks)
- b) List **three (3)** differential diagnoses. (3 marks)
- c) Describe how this condition in (a) above may have developed. (6 marks)
- d) Discuss how you would manage the condition in (a) above. (6 marks)
- e) What advice would you give to the farmer? (2 marks)

## **QUESTION 3**

Hormone preparations and Antimicrobials are utilized as reproductive management tools, diagnostic aids and therapeutic agents.

- a) State the main objective of hormonal therapy in resolving postpartum metritis. (2 marks)
- b) What precaution would you take before using prostaglandin F<sub>2</sub> alpha in a cow that a dairyman has presented as being in anoestrous? (2 marks)
- c) Outline **three (3)** ways in which oestrogen works to resolve uterine infections. (3 marks)
- d) List five (5) principles of the use of hormone preparations and antimicrobial as therapeutics agents. (5 marks)
- e) Discuss in detail the factors of importance in the disposition of antimicrobials in the female genital tract. (8 marks)

## **..... SECTION B .....**

## **QUESTION 4**

A 3-year-old female Boxer whelped **eight (8)** puppies without any complications. Three weeks in the postpartum period, the bitch still exhibited intermittent red-tinged vulval discharge. Despite the discharge, the dog was alert, had a good appetite and was mothering without any difficulty. The owner was concerned and consulted Dr Phiri at Ruims Veterinary Clinic, he was relieved of his anxiety as the vet assured him that it was normal for bitches to have a discharge during their postpartum period. However, after the puppies were weaned at two months old, two weeks later, the owner found the bitch in a collapsed state. No other signs were noticed apart from the vulva remaining blood-tinged from the day of whelping. The owner has now rushed to you with the patient.

- a) What is your tentative diagnosis? (2 marks)
- b) Discuss the opinion of the veterinarian who earlier attended to the patient. If you do not agree with that opinion, discuss how you could have dealt with the case. (8 marks)
- c) Discuss in detail how you would manage this case. (10 marks)

### **QUESTION 5**

Mares are reported to have one of the lowest average conception/birth rates of any of the domestic species (about 60-70%) and investment in modern breeding management and technologies can considerably increase the rate of conception. Therefore, mare and stallion selection is an important first step in breeding horses.

- a) Briefly outline a breeding soundness evaluation of a mare and a stallion. **(6 marks)**
- b) The majority of reproductive problems in a mare fall into one of three categories, briefly discuss these categories. **(4 marks)**
- c) Outline one example of a functional and an infectious cause of infertility in the mare clearly stating how each one can be managed. **(8 marks)**
- d) Briefly outline the factors that affect daily spermatozoa output of a stallion. **(2 marks)**

### **QUESTION 6**

Write short notes on the following:

**(5 marks each)**

- a) Best treatment for undifferentiated cystic ovaries in cattle.
- b) Why signs of negative energy balance appear earlier and are more pronounced in first calvers than multi-parturient cows.
- c) Apparent anoestrus in the doe.
- d) "Cloudburst" in the doe.

### **QUESTION 7**

Carrying out *In vitro fertilization* (IVF) requires strict adherence to protocol and availability of all the required equipment and media. Briefly:

- a) Discuss the general set-up requirements of an IVF laboratory. **(5 marks)**
- b) Outline and state the primary function of at least 16 critical equipment required in an Assisted Reproduction Technology (ART) laboratory for purposes of carrying out effective IVF procedures. **(10 marks)**
- c) State in full the following acronyms. **(5 marks)**
  - i) ICSI
  - ii) MESA
  - iii) PESA
  - iv) OPU
  - v) COCs

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

**THE UNIVERSITY OF ZAMBIA  
SCHOOL OF VETERINARY MEDICINE  
END OF YEAR NOVEMBER/DECEMBER EXAMINATIONS 2017/18  
ACADEMIC YEAR**

**VETERINARY CLINICAL PATHOLOGY (VMD 5100)**

**Duration: 3 hours**

**INSTRUCTIONS:**

1. Please read the instructions and each question carefully
  2. Answer **ALL** questions
  3. Answer **EACH QUESTION IN EACH SEPARATE BOOKLET**
  4. Write in a legible handwriting
- 

**QUESTION 1**

- a) What do you know about FNAC and its application? Write the microscopic cytological differentiating characteristics in tabular form of neoplastic lesions in dogs leading to differential diagnosis of lymphoma, mastocytoma, plasmacytoma, melanoma and transmissible venereal tumour **(10 marks)**
- b) Write one pathognomonic lesion or symptom and the appropriate specimens to be collected and preservatives to be used in each of the following suspected diseases of livestock for laboratory confirmation. **(10 marks)**
  - i. Foot and Mouth Disease
  - ii. Rabies
  - iii. Newcastle Disease
  - iv. Rift Valley fever
  - v. Haemorrhagic Septicaemia
  - vi. Anthrax
  - vii. Contagious Bovine Pleuro-pneumonia
  - viii. Heartwater
  - ix. East Coast Fever
  - x. Cryptosporidiosis

## **QUESTION 2**

Write short notes on the following:

- a) ACTH (4 marks)
- b) Natriuretic peptides (4 marks)
- c) Reticulocytes (4 marks)
- d) Erythropoietin (4 marks)
- e) T3 (4 marks)

## **QUESTION 3**

- a) Compare and contrast TWBC and differential white blood cell count, outlining the clinical significance. (10 marks)
- b) Discuss the clinical significance of Creatine kinase and its complementary enzymes. (10 marks)

## **QUESTION 4**

Cerebral spinal fluid examination is used in the clinical investigation of the central nervous system. Describe how it is collected from a dog. (20 marks)

## **QUESTION 5**

Write short notes on the following

- a) Blood Urea Nitrogen in the diagnosis of kidney disease (5 marks)
- b) Bile acids in the diagnosis of liver disease (5 marks)
- c) Causes of neutrophilia (5 marks)
- d) Regenerative Anemia (5 marks)

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

**THE UNIVERSITY OF ZAMBIA  
SCHOOL OF VETERINARY MEDICINE  
END OF YEAR NOVEMBER/ DECEMBER EXAMINATIONS – 2017/18  
ACADEMIC YEAR**

**DISEASE OF WILDLIFE, FISH AND AQUACULTURE (VMD 5302)**

**Duration: 3 hours**

**INSTRUCTIONS**

1. Please read the instructions and each question carefully
  2. Answer ALL questions
  3. Write the answer to each question in a separate answer booklet where applicable)
  4. Write in a legible handwriting
- 

**QUESTION 1**

- a) Outline five (5) properties of a good immobilization drug for wildlife.
- b) Very briefly, outline four (4) main side effects of Ketamine as an anaesthesia in wild primates.
- c) List six main **side effects** of M99 [Etorphine hydrochloride].
- d) Compare and contrast Boma Capture Vs Drop nets capture methods.

**10 marks**

**QUESTION 2**

- a) Elaborate in detail on why game ranching in Zambia is rapidly growing as a far much more profitable form of ranching than cattle ranching.
- b) What are the critical aspects one should consider before embarking on any game capture exercise?
- c) Mention two forms of wildlife utilization. Of the two forms of wildlife utilization, which one is very actively practiced in Zambia? Further, briefly, mention at least four components of this form of active utilization.
- d) Compare and contrast between Adenoviral hepatitis and Chlamydiosis among farmed crocodiles in terms of the causative agent(s), the type and age groups affected, transmission, symptomatology (both clinical and post mortem lesions), treatment (if any) and control and/or prevention.

**15 marks**

### **QUESTION 3**

- a) Briefly discuss water transparency as an indicator of water fertility
- b) In order to achieve high fish production, regular maintenance and monitoring of the pond is necessary. Briefly explain how this is done.
- c) Briefly discuss the structural and functional anatomy of the fish's gill apparatus
- d) Briefly explain the significance of the air/ swim bladder in fish and give an example of a fish species in which this organ is highly developed and the reasons for this.

**15 marks**

### **QUESTION 4**

- a) There are some basic rules which must be observed if outbreaks of disease in the fish pond are to be prevented or, if they occur, to be controlled. Briefly outline these rules
- b) Compare and contrast between EUS and Enteric Septicemia of catfish in terms of the nature of the causative agent(s), host fish species, symptomatology and treatment (if any)
- c) Discuss the different treatment methods in fish management.
- d) Briefly discuss how you would investigate a disease outbreak in the fish pond.

**20 marks**

### **QUESTION 5**

- a) Briefly outline the importance of the honey bee to animals, man and other insects and, name the most important honey bee in Africa. Explain why it is called "honey bee" and how it differs from other insects.
- b) Briefly outline the structural and functional anatomy of the honey bee's respiratory and circulatory systems. Briefly describe how the honey bee's crop functions. What other names is this organelle known by?
- c) A healthy honey bee colony has three distinct individuals. Name these individuals and briefly outline their roles and functions in the colony. How can one differentiate amongst these individual members of the colony?
- d) Briefly outline the stage wise development process of the honey bee, describing the appearance and pattern of each normal stage. What is the common name for all these developmental stages. Why is it necessary to know the normal appearance and patterns of these stages?

**20 marks**

### **QUESTION 6**

- a) Compare and contrast between American foulbrood (AFB) and European foulbrood (EFB) in terms of aetiology, transmission, symptomatology, pathogenicity, prevention and/ or treatment.
- b) Describe the varroa parasitosis in terms of the causative agent, its destructive nature and capacity to transmit other diseases giving examples.
- c) Compare and contrast between Aethinosis and Galleriosis.
- d) Outline and briefly discuss human activities that negatively affect the honey bee health. Also outline any five measures that can be applied to prevent the spreading of honey bee diseases.

**20 marks**

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



**THE UNIVERSITY OF ZAMBIA  
SCHOOL OF VETERINARY MEDICINE  
DEPARTMENT OF DISEASE CONTROL  
END OF YEAR EXAMINATIONS NOVEMBER/DECEMBER 2017/18 ACADEMIC  
YEAR**

**VETERINARY PUBLIC HEALTH (VMD 5400/6800)**

**Duration:** 3 hours

**INSTRUCTIONS:**

1. Please read the instructions and each question carefully
  2. **SECTION A:** Answer ALL questions in Section A
  3. **SECTION B:** Answer only three [3] questions in Section B
  4. Write in a legible handwriting
- 

**SECTION A**

**QUESTION 1**

- a. Precisely and concisely define **any five** of the following and **give appropriate** examples:
  - i. Food borne disease (1 mark)
  - ii. Food borne infection (1 mark)
  - iii. Food borne intoxication (1 mark)
  - iv. Food spoilage (1 mark)
  - v. Food deterioration (1 mark)
  - vi. Disaster (1 mark)
  - vii. Emergency (1 mark)
- b. Differentiate between **Intradietetic** intoxication and **Intravital** intoxication. (1 mark)
- c. **List sources** of food contamination and how contamination can be controlled. (2 marks)
- d. Food borne disease may occur because of consuming food that is **spoilt** or **deteriorated**. Explain the factors that influence food spoilage. (2 marks)

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**10 Marks**

**QUESTION 2**

- a. Discuss the **five broadly defined** needs on which a strategy in support of a risk based food chain approach to fish safety should be based. (5 marks)
- b. Discuss **briefly** the 'Farm to Folk' hygiene concept in poultry production, giving examples of **hazards** and the **source** from which risk agents are generated or released at each of the major five divisions. (5 marks)

**QUESTION 3**

- a. **Precisely and concisely** define any five of the following terms:
- i. Food Hygiene (0.5 mark)
  - ii. Sanitation (0.5 mark)
  - iii. Waste (0.5 mark)
  - iv. Air Pollution (0.5 mark)
  - v. Pollutant (0.5 mark)
  - vi. By-product (0.5 mark)
- b. In waste management, the aim should be to reduce the amount of waste being generated by using up waste products. With necessary **detail** and **examples**, outline waste management in **Poultry Production**. (5 marks)
- c. List the 10 steps in conducting a food borne outbreak investigation (2.5 marks)

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10 Marks

**QUESTION 4**

- a. With necessary detail and examples, differentiate between **Primary Air** pollutants and **Secondary Air** Pollutants. (2 marks)
- b. Discuss the effects of atmospheric pollutants on human health and the Environment. (5 marks)
- c. Discuss the strategies that can be used to control Environmental atmospheric pollution (3 marks)

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10 Marks

**SECTION B**

**QUESTION 5**

Discuss the **Effective Systems** that can be put in place in a Food Processing Plant to ensure **Food safety and Hygiene**. (20 Marks)

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20 Marks

**QUESTION 6**

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

- a) List four (4) vector-borne protozoan parasitic zoonoses (4 marks)

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

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**20 Marks**

### **QUESTION 7**

Although zoonotic helminths are now potentially eradicable, they continue to cause public health problems in endemic areas.

- a) Define the terms taeniosis, cysticercosis and neurocysticercosis. (3 marks)
- b) Outline the reason(s) why *Taenia solium* is considered to be of greater public health importance than *Taenia saginata*. (2 marks)
- c) Briefly discuss the factors that maintain *Taenia solium* in communities. (3 marks)
- d) Apart from *Taenia solium*, name another pig associated zoonotic helminth and its public health significance. (3 marks)
- e) *Echinococcus granulosus* causes a condition known as cystic echinococcosis. Discuss the challenges faced in the control of this parasite in endemic areas. (3 marks)
- f) Discuss the factors that make *Taenia solium* potentially eradicable. (4 marks)
- g) With reference to the life cycle of *Taenia solium*, briefly outline potential sites that can be broken to prevent this important cestode. (2 marks)

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**20 Marks**

### **QUESTION 8**

Parasitic zoonoses such as cryptosporidiosis and giardiasis are common in cattle especially among dairy calves less than three (3) months of age.

- a) Compare and contrast the transmission patterns of *Cryptosporidium* spp and *Giardia*, the causative agents of cryptosporidiosis and giardiasis, respectively in calves and humans. (8 marks)
- b) List four (4) zoonotic species of *Cryptosporidium* that you know. (4 marks)
- c) Outline the recommendations you would give to the farmer to prevent on-farm calf-to-calf transmission and calf-to-human transmission. (8 marks)

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**20 Marks**

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

**THE UNIVERSITY OF ZAMBIA  
SCHOOL OF VETERINARY MEDICINE  
END OF YEAR AUGUST/SEPTEMBER EXAMINATIONS-2016/17 ACADEMIC  
YEAR**

**VETERINARY CLINICAL MEDICINE (VMC 6110)**

**Duration:** 3 hours

**INSTRUCTIONS:**

1. Please read the instructions and each question carefully
2. Answer **ALL** questions Section A and **THREE** questions in Section B  
(Instructions vary)
3. Write the answer to each question in a separate answer booklet (where applicable)
4. **ALL** questions carry equal marks (May vary depending on questions)
5. Write in a legible handwriting

.....SECTION A .....

**QUESTION 1**

You are presented with a nine-year-old female poodle with polydipsia, polyuria and polyphagia. Physical examination reveals symmetrical alopecia and a pendulous abdomen.

- a) What is your tentative diagnosis? **(2 marks)**
- b) Briefly outline the pathogenesis of the condition in (a) above. **(4 marks)**
- c) Outline the ancillary tests that should be carried out to confirm the tentative diagnosis in (a) above. **(6 marks)**
- d) Outline the management options for the condition in (a) above. **(8 marks)**

**QUESTION 2**

You are newly appointed as the District Veterinary Officer for Sesheke District in Western Province. Within a week of your arrival, you receive reports of cattle dying of a chronic disease characterised by severe emaciation and sternal recumbency. The cattle do not respond to antibiotic chemotherapy. You rush to the affected area and confirm the reports. On clinical examination of affected animals, you find that they have anaemia,

oedema, lacrimation and enlarged lymph nodes. Some of the pregnant animals aborted.

- a) What is your tentative diagnosis? **(2 marks)**
- b) List four (4) differential diagnoses. **(4 marks)**
- c) Describe how you would differentiate the conditions you have listed in (b) above from your tentative diagnosis. **(4 marks)**
- d) Describe the possible mechanisms of development of anaemia for the condition you have stated in (a) above. **(4 marks)**
- e) Describe how you would investigate a case of anaemia in ruminants with a view of coming up with a definitive diagnosis. **(6 marks)**

### **QUESTION 3**

Nasal discharge is one of the common clinical signs of respiratory tract diseases in horses. The nasal discharge can either be unilateral or bilateral and its nature can differ depending on the cause of the disease. A good clinical work-up is essential in coming up with a definitive diagnosis.

- a) Outline how you would investigate a horse with a nasal discharge to come up with a diagnosis. **(4 marks)**
- b) Briefly outline how the nature of the nasal discharge could give indication on the likely aetiology of the problem. **(4 marks)**
- c) List four (4) conditions that result in a bilateral nasal discharge. **(2 marks)**
- d) List four (4) conditions that result in a unilateral nasal discharge. **(2 marks)**
- e) Name **one (1)** bacterial disease of the equine respiratory tract and write short notes on aetiology, clinical signs, diagnosis and management. **(8 marks)**

.....SECTION B .....

**QUESTION 4**

A 6-year old Domestic Short-haired cat is presented to you with severe weight loss of a month's duration. Clinical examination reveals pale mucous membranes, severe rhinitis, diarrhoea and uveitis. You have also been treating this cat for intractable gingivitis and demodicosis for the past year. The cat is vaccinated against rabies and dewormed frequently.

- a) What is your tentative diagnosis? **(2 marks)**
- b) List two (2) differential diagnoses. **(2 marks)**
- c) Describe the pathogenesis of condition in (a) above **(3 marks)**
- d) Outline the **five (5)** stages of clinical progression. **(5 marks)**
- e) Outline the tests you would carry out with your definitive diagnosis **(2 marks)**
- f) Describe in detail the management options of condition in (a) above. **(6 marks)**

**QUESTION 5**

following your graduation from UNZAVET School, a farmer calls on your services with a presenting problem of weakness and inability to stand affecting two piglets. Upon arrival you notice that these two piglets are dull and weak with extreme abduction of hindlimbs and inability to use the hind legs. You are informed that the sow farrowed a litter of 12 piglets 2-days prior to presentation and only the two piglets were affected. This is the second time in two years that the farmer has experienced such a condition from the same sow. There has been no change in the management and all the vaccinations and deworming programme for the 200 breeding sows are up to date.

- a) What is your tentative diagnosis? **(2 Marks)**
- b) List **two (2)** differential diagnoses for the condition in (a) above. **(4 Marks)**

c) Describe the possible aetiopathogenesis for this condition.

**(6 Marks)**

d) Describe how you would manage the condition you have stated in (a) above.

**(8 Marks)**

### **QUESTION 6**

A goat and sheep farmer has observed that some of his cattle especially sheep are depressed, have decreased appetite and fever. Other signs in the herd include incoordination, circling in the same direction and hindlimbs paralysis,

a) What is your tentative diagnosis?

**(2 Marks)**

b) List two (2) differential diagnoses.

**(4 Marks)**

c) Compare and contrast one of the two diseases listed in (b) above with your tentative diagnosis taking into account pathogenesis and clinical picture.

**(8 Marks)**

a) Discuss how you would treat the condition in (a) above? **(6 Marks)**

### **QUESTION 7**

There is a reported outbreak of a disease in Mumbwa where animals are either found dead or show signs of lameness and those examined have fever.

a) What is your tentative diagnosis?

**(2 Marks)**

b) List four (4) differential diagnoses.

**(4 Marks)**

c) Compare and contrast two of the diseases listed in (b) above taking into account pathogenesis and clinical picture. **(8 Marks)**

b) How would you treat the condition in (a) above?

**(6 Marks)**

**THE UNIVERSITY OF ZAMBIA  
SCHOOL OF VETERINARY MEDICINE  
END OF YEAR NOVEMBER/DECEMBER EXAMINATIONS-2017/18 ACADEMIC YEAR**

**VETERINARY REPRODUCTION & GYNAECOLOGY (VMC 6319)**

**Duration: 3 hours**

**INSTRUCTIONS:**

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

..... **SECTION A** .....

**QUESTION 1**

A seasonally-calving Friesian-Holstein herd comprising 250 milking cows, has the following fertility indices for the last breeding year:

Mean calving-to-first-service interval	82 days
Mean calving-to-conception interval	106 days
First service pregnancy (conception) rate	52%
Overall pregnancy (conception) rate	49%
The 60-90 days non-return rate	40%
The fertility factor	20
Heat detection rate	40%
Cullings	25%
Abortions	10%
Services per conception	2

- a) Comment on each of these values, particularly in relation to maintaining a seasonal calving pattern. **(10 marks)**
- b) Discuss strategies for improvements where necessary. **(10 marks)**



## QUESTION 2

On your routine fertility visits on a beef farm, you find that many of the cattle have small, smooth ovaries with no evidence of recent cyclical activity.

- a) What is your tentative diagnosis? (3 marks)
- b) List **three (3)** differential diagnoses. (3 marks)
- c) Describe how this condition in (a) above may have developed. (6 marks)
- d) Discuss how you would manage the condition in (a) above. (6 marks)
- e) What advice would you give to the farmer? (2 marks)

## QUESTION 3

Hormone preparations and Antimicrobials are utilized as reproductive management tools, diagnostic aids and therapeutic agents.

- a) State the main objective of hormonal therapy in resolving postpartum metritis. (2 marks)
- b) What precaution would you take before using prostaglandin F<sub>2</sub> alpha in a cow that a dairyman has presented as being in anoestrous? (2 marks)
- c) Outline **three (3)** ways in which oestrogen works to resolve uterine infections. (3 marks)
- d) List five (5) principles of the use of hormone preparations and antimicrobial as therapeutics agents. (5 marks)
- e) Discuss in detail the factors of importance in the disposition of antimicrobials in the female genital tract. (8 marks)

## ..... SECTION B .....

## QUESTION 4

A 3-year-old female Boxer whelped **eight (8)** puppies without any complications. Three weeks in the postpartum period, the bitch still exhibited intermittent red-tinged vulval discharge. Despite the discharge, the dog was alert, had a good appetite and was mothering without any difficulty. The owner was concerned and consulted Dr Phiri at Ruims Veterinary Clinic, he was relieved of his anxiety as the vet assured him that it was normal for bitches to have a discharge during their postpartum period. However, after the puppies were weaned at two months old, two weeks later, the owner found the bitch in a collapsed state. No other signs were noticed apart from the vulva remaining blood-tinged from the day of whelping. The owner has now rushed to you with the patient.

- a) What is your tentative diagnosis? (2 marks)
- b) Discuss the opinion of the veterinarian who earlier attended to the patient. If you do not agree with that opinion, discuss how you could have dealt with the case. (8 marks)
- c) Discuss in detail how you would manage this case. (10 marks)

### **QUESTION 5**

Mares are reported to have one of the lowest average conception/birth rates of any of the domestic species (about 60-70%) and investment in modern breeding management and technologies can considerably increase the rate of conception. Therefore, mare and stallion selection is an important first step in breeding horses.

- a) Briefly outline a breeding soundness evaluation of a mare and a stallion. (6 marks)
- b) The majority of reproductive problems in a mare fall into one of three categories, briefly discuss these categories. (4 marks)
- c) Outline one example of a functional and an infectious cause of infertility in the mare clearly stating how each one can be managed. (8 marks)
- d) Briefly outline the factors that affect daily spermatozoa output of a stallion. (2 marks)

### **QUESTION 6**

Write short notes on the following: (5 marks each)

- a) Best treatment for undifferentiated cystic ovaries in cattle.
- b) Why signs of negative energy balance appear earlier and are more pronounced in first calvers than multi-parturient cows.
- c) Apparent anoestrus in the doe.
- d) "Cloudburst" in the doe.

### **QUESTION 7**

Carrying out *In vitro fertilization* (IVF) requires strict adherence to protocol and availability of all the required equipment and media. Briefly:

- a) Discuss the general set-up requirements of an IVF laboratory. (5 marks)
- b) Outline and state the primary function of at least 16 critical equipment required in an Assisted Reproduction Technology (ART) laboratory for purposes of carrying out effective IVF procedures. (10 marks)
- c) State in full the following acronyms. (5 marks)
  - i) ICSI
  - ii) MESA
  - iii) PESA
  - iv) OPU
  - v) COCs

.....END OF EXAMINATION.....

**THE UNIVERSITY OF ZAMBIA**  
**SCHOOL OF VETERINARY MEDICINE**  
**END OF YEAR NOVEMBER/DECEMBER EXAMINATION 2017/18 ACADEMIC YEAR**

**PREVENTIVE VETERINARY MEDICINE (VMD 6609)**

**Duration:** 3 hours

**INSTRUCTIONS:**

1. Please read the instructions and each question carefully
  2. **ANSWER ALL QUESTIONS**
  3. Answer **EACH QUESTION IN A SEPARATE BOOKLET**
  4. Write in a legible handwriting
- 

**QUESTION 1**

- a) Outline five (5) objectives of establishing a National Park, explaining the “dos” and “don’ts” within it.
- b) Briefly, outline the key properties of a good immobilization drug for wildlife.
- c) Very briefly, outline four (4) main side effects of Ketamine as an anesthetic.
- d) Compare and contrast Boma Capture Vs Drop nets capture methods.
- e) During game capture preparations, outline four (4) important factors that should be put in place prior to a capture operation.
- f) Outline four (4) principles behind a successful game capture operation.

**(20 marks)**

**QUESTION 2**

- a) What is the main objective of a herd health programme in the dairy and how can it be achieved?
- b) What are the methods for achieving optimum reproductive efficiency in the dairy?
- c) What are the main causes of reproductive inefficiency in the dairy herd and how would you get rid of them?
- d) Briefly, how would you assess the mastitis status of the dairy herd?

**(15 marks)**

### **QUESTION 3**

- a) The demand for chicken meat is on the increase in Africa. This has resulted into increasing the production of day-old chicks. As a Manager of an upcoming hatchery, discuss disease management in a hatchery with emphasis on:
- i. Prevention of disease transmission (Biosecurity)
  - ii. Problems of chicks after hatching
  - iii. Significance of nutrition and maternal antibodies in the production of quality chicks.
- b) What are the predisposing factors leading to outbreaks and how would you prevent and control avian pox? What are the challenges of prevention and control of Newcastle disease in village chickens? Suggest mitigation measures that would improve poultry production in the traditional sector of Zambia.

**(15 marks)**

### **QUESTION 4**

- a) What are the objectives of studying fish diseases? Briefly discuss the diagnostic methods in fish diseases.
- b) Briefly describe the methods used in the vaccination of fish. What are the factors that may affect the efficacy of fish vaccines?
- c) Compare and contrast between EUS and Enteric Septicaemia of catfish in terms of the nature of the causative agent(s), host fish species, symptomatology and treatment.
- d) Briefly explain the significance of the air/swim bladder in fish and give an example of a fish species in which this organ is highly developed and the reasons for this.

**(15 marks)**

### **QUESTION 5**

- a) State in general terms the primary objectives and goals of a herd health programme.
- b) Briefly state the criteria for the selection of participating farmers. Briefly define performance targets and shortfalls.
- c) What is the major objective of a beef cattle herd health programme? What is a weaner calf crop? List the type of farm records you would require for an assessment of the annual performance of the beef herd.

- d) What is the primary objective of a herd health programme in the feedlot?
  - e) What are the major causes of production and reproductive inefficiency in the swine herd?
- Briefly discuss types of swine units.

(15 marks)

### **QUESTION 6**

- a) Discuss how flock medicine compares with clinical medicine.
- b) Describe strategic vector control concept in flock medicine.
- c) Prevention of disease is important in livestock production. In this process of disease prevention, a number of measures are put in place in order to minimize transmission and spread of disease. The activities have to be carried out in a professional and correct manner in order to ensure efficiency. Below are some activities that, if not carried out appropriately would result in failure to manage diseases.

Give a clear and concise description on **any four** of the following activities in order to allow the veterinary students carry out these disease control measures:

- i. Control of tuberculosis in Lusaka west.
- ii. A farmer moving an animal from Mazabuka to Kafue.
- iii. Stamping out due to an outbreak of African Swine Fever in Lusaka.
- iv. Importation of a heifer from Namibia to Lusaka.
- v. Control of foot and mouth disease outbreak in Mkushi.

(20 marks)

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