

# **THE UNIVERSITY OF ZAMBIA**

## **TABLE OF CONTENTS**

### **SCHOOL OF VETERINARY MEDICINE 2020/21**

1. VMB 2100: Veterinary Gross Anatomy
2. VMB 2110: Veterinary Histology and Embryology
3. VMB 2302: Introductory Veterinary Physiology
4. VMB 2511: Animal Welfare and Behaviour
5. VMB 3311: Veterinary Physiology
6. VMB 3600: Veterinary Pharmacology
7. VMC 4112: Principles of Companion Animal Medicine
8. VMC 4122: Principles of Food Animal Medicine
9. VMC 4200: Principles and Introduction to Veterinary Surgery and Diagnostic
10. VMD 4102: Veterinary Clinical Pathology
11. VMD 4201: Veterinary Epidemiology
12. VMP 4111: Pathology of Infectious and Non-Infectious Veterinary Diseases



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

**DEPARTMENT OF BIOMEDICAL SCIENCES**

**END OF YEAR NOVEMBER/DECEMBER FINAL EXAMINATIONS-2020/21  
ACADEMIC YEAR**

**VMB 2100: VETERINARY GROSS ANATOMY**

**PAPER I**

**TIME: THREE (3) HOURS**

**INSTRUCTIONS:**

- 1. ATTEMPT ONLY FIVE (5) QUESTIONS**
  - 2. ALL QUESTIONS CARRY EQUAL MARKS**
  - 3. ANSWER EACH QUESTION IN A SEPARATE ANSWER BOOK**
  - 4. WRITE IN A LEGIBLE HANDWRITING**
- 

**QUESTION 1**

As a student on attachment at a Police Canine Kernel, you are invited to help out with castrations of male dogs, neutering of bitches, and many other activities by the Veterinarian in charge. The Veterinarian asks you:

- i. Briefly describe the gross anatomy of the epididymis. (5 marks)
- ii. Briefly describe the anatomy of an active and inactive ovary. (5 marks)
- iii. Define and state components of the ovarian bursa. (5 marks)
- iv. Define an inguinal canal? Briefly outline the anatomical structures that are transmitted through the inguinal canal in male dogs. (5 marks)

## **QUESTION 2**

As a student on attachment at a Specialized Animal Veterinary Hospital, you are invited to help out with routine examinations of the eye in dogs. The attending surgeon takes advantage to revise her anatomy of the sense organs and asks you:

- i. Briefly outline the anatomy of various tunics or layers of the eyeball stating the function of each tunic. (5 marks)
- ii. Define the terms abduction and adduction as it relates to the eyeball? Briefly outline the extrinsic muscles of the eyeball involved in the two terms you have defined above stating their origin and insertion points. (5 marks)
- iii. Briefly describe the anatomy of the third eyelid. (5 marks)
- iv. Briefly describe the vitreous body of the eye. (5 marks)

## **QUESTION 3**

Briefly distinguish the gross anatomy of following in canine:

- i. Dorsal and ventral root of the spinal cord (5 marks)
- ii. Cerebrum and cerebellum (5 marks)
- iii. Cranial nerve I and cranial nerve II (5 marks)
- iv. Ganglion and nuclei (5 marks)

## **QUESTION 4**

Describe the functional anatomy of the ear in details. (20 marks)

## **QUESTION 5**

Briefly describe the anatomy of the following in carnivores

- i. Bones of the antebrachium (5 marks)
- ii. Sternum (5 marks)
- iii. Bronchial tree (5 marks)
- iv. Omenta (5 marks)

**QUESTION 6**

Describe the various actions skeletal muscles are able to produce. For each action cite one muscle associated with such action. (20 marks)

**QUESTION 7**

Describe in details the exterior and interior features of the right atrium. (20 marks)

**QUESTION 8**

Give a detailed account of the anatomy of canine teeth in the adult animal. (20 marks)

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

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**SCHOOL OF VETERINARY MEDICINE**  
**END OF YEAR NOVEMBER/DECEMBER EXAMINATIONS-2020/21 ACADEMIC YEAR**

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

**DURATION:** 3 hours

**INSTRUCTIONS:**

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

**QUESTION 1**

In a brief statement describe the meaning of the following:

- a. Mesenchyme (1 mark)
- b. Notochord (1 mark)
- c. Primordial Follicle (1 mark)
- d. Corpus Luteum (1 mark)
- e. Zona Pellucida (1 mark)
- f. Corona radiata (1 mark)
- g. Pronuclei (1 mark)
- h. Polar body (1 mark)
- i. Meroblastic cleavage (1 mark)
- j. Trophoblast (1 mark)
- k. Mural Trophectoderm (1 mark)
- l. Primitive streak (1 mark)
- m. Pygopagus (1 mark)
- n. Splanchnopleure (1 mark)
- o. Chorion (1 mark)
- p. Caruncle (1 mark)
- q. Haemocytoblasts (1 mark)
- r. Septum Intermedium (1 mark)
- s. Ligamentum Arteriosus (1 mark)
- t. Luteinizing Hormone (1 mark)

**QUESTION 2**

With the aid of diagrams discuss the stages of cleavage in domestic animals following fertilization up to the blastocyst stage (20 marks)

**QUESTION 3**

What do you know about the following:

- a) Co-joined or fused symmetrical twins (10 marks)
- b) Aristotle in relation to Embryology (10 marks)

#### **QUESTION 4**

The frequency of congenital malformations varies with species, breed, geographical locations and many other factors. Various studies indicate that approximately 1.5% to 6% of all live-born domestic mammals show at least one recognizable congenital malformation.

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

#### **QUESTION 5**

Briefly describe the following:

- a) Polyspermy (**5 marks**)
- b) Capacitation (**5 marks**)
- c) Sex determination (**5 marks**)
- d) Transposition of great vessels (**5 marks**)

#### **QUESTION 6**

Write brief notes on the following:

- a) Gastrulation (**5 marks**)
- b) Barriers to fertilization (**5 marks**)
- c) Complex anomalies of cardiac development (**5 marks**)
- d) Atrial septation (**5 marks**)

#### **QUESTION 7**

- a) Describe in detail how the respiratory system develops before birth. (18 marks)
- b) Mention 2 abnormalities that can occur during development of the respiratory system. (2 marks)

#### **QUESTION 8**

Write short notes to describe the following:

- A. Epiploic foramen (**5 marks**)
- B. The development and attachments of the greater and lesser omenta. (**6 marks**)
- C. Structures that arise from each of the following segments of the primitive gut (**9 marks**)
  - i. Foregut
  - ii. Midgut
  - iii. Hindgut

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

**THE UNIVERSITY OF ZAMBIA**  
**SCHOOL OF VETERINARY MEDICINE**  
**END OF YEAR NOVEMBER/DECEMBER EXAMINATIONS-2020/21 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
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**QUESTION 1**

- a) List four (4) supporting cells of the nervous system **(2 marks)**
- b) Using sketch diagrams, outline the classification of neurons based on the number of processes that emanate from the cell body **(4 marks)**
- c) List any four (4) differences in the sequence of events in the contraction of Skeletal muscle and Cardiac muscle **(4 marks)**
- d) Muscle cells and neurons are examples of excitable cells. What do you understand by the term “excitable cell”? **(2 marks)**
- e) Describe in detail the electro-physiologic properties of skeletal muscle **(8 marks)**

**QUESTION 2**

- a) Explain the functions of the following types of white blood cells **(5 marks)**
  - i. Monocytes **(5 marks)**
  - ii. Lymphocytes **(5 marks)**
- b) With reference to the functions of the lymphatic system, describe the mechanisms that lead to:
  - i. Oedema **(5 marks)**
  - ii. Lymph node enlargement in disease conditions such as East Coast Fever. **(5 marks)**

**QUESTION 3**

- a) State the functions of the different lobes of the cerebrum **(8 marks)**
- b) During physiological stress, a certain part of the nervous system is activated. State this part of the nervous system and conclusively describe the changes it brings about in response to stress. Include the various receptors involved in your description **(12 marks)**

#### **QUESTION 4**

- a) Outline the hierarchy of organisation of animal cells (2.5 marks)
- b) Define homeostasis. (2.5 marks)
- c) When in good health, an animal maintains a steady internal environment by coordinating many systems at once. With the use of appropriate examples, describe two mechanisms that the body uses to maintain a stable internal environment. (15 marks)

#### **QUESTION 5**

- a) Briefly describe the mechanisms that inhibit blood clotting in intact blood vessels. (6 marks)
- b) Give a detailed account of the cascade of reactions that lead to haemostasis in a ruptured blood vessel. (14 marks)

#### **QUESTION 6**

- a) Give an outline of the water/fluid compartments in an animal's body, clearly indicating percentage estimates from total body water contained in each compartment. (8 marks)
- b) Briefly describe any two (2) processes by which water moves between fluid compartments of the body. (4 marks)
- c) Describe the physiological adaptations to long periods of water lack in Sheep. (8 marks)

#### **QUESTION 7**

- a) Movement of water molecules between the capillaries and interstitial fluid is explained by Starling equation. Explain how these forces interact to influence water movement. (8 marks)
- b) The heart pumps blood around the body. What term is used to describe the amount of blood pumped out per minute and how would you calculate this? (3 marks)
- c) Define heart failure. Describe in detail how cardiovascular function is affected and how compensatory mechanisms would come into play, in the case of heart failure. (9 marks)

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



**THE UNIVERSITY OF ZAMBIA  
SCHOOL OF VETERINARY MEDICINE  
END OF YEAR NOVEMBER/DECEMBER EXAMINATIONS  
2020/21 ACADEMIC YEAR**

**ANIMAL WELFARE AND BEHAVIOUR (VMB 2511)**

**Duration:** 3 hours

**INSTRUCTIONS:**

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

**QUESTION 1**

A good understanding of the horse's nature enables veterinarians to learn how to work more safely and more effectively with horses and allows for their easy management.

- a) Briefly outline the following normal behaviours of horses. **(2 marks each)**
  - i. Ingestive behaviour
  - ii. Elimination behaviour
  - iii. Vigilance behaviour
- b) List and outline **four (4)** stereotypic behaviours of horses that may be harmful to humans or to the animal's health. **(2 marks each)**
- c) Write short notes on a horse's flight zone (Use of a sketch diagram is advised). **(6 marks)**

**QUESTION 2**

- a) Outline the five freedoms of animal welfare. **(10 marks)**
- b) Outline the welfare inputs and outputs in relation to the five freedoms **(10 marks)**

### **QUESTION 3**

Write short notes on any **four (4)**, on how each of them may affect the welfare of an animal.

**(5 marks each)**

- a) Stress
- b) Disease
- c) Inability to perform natural behaviour
- d) Worker's attitude
- e) Barren Environment

### **QUESTION 4**

a) For each of the following species, state the ideal method of euthanasia/slaughter:

**(2 marks each)**

- a. Goats
- b. Baby Crocodile
- c. Adult duck
- d. Adult cat
- e. Donkey

b) Outline the major factors to take into consideration when reviewing a method of slaughter for humaneness

**(10 marks)**

### **QUESTION 5**

For each of the following species, indicate **five (5)** common welfare issues which may affect the species: **(5 marks each)**

- a) Aquarium fish
- b) Piglets
- c) Broiler chickens
- d) Goats

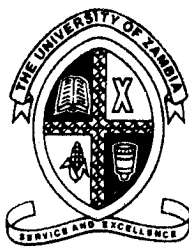
### **QUESTION 6**

- a) Briefly define stereotypic behaviour. (2 marks)
- b) For each of the following, **state one** common stereotypic behavior. (2 marks each)
  - a. Pig
  - b. Lion in zoo
  - c. Horse
  - d. Dog
  - e. Laboratory mice
- c) Outline the effect of poor welfare on the behavior of an animal (8 marks)

### **QUESTION 7**

Compare and contrast the welfare of Lions kept at a zoo to those in a national park. (20 marks)

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



**THE UNIVERSITY OF ZAMBIA  
SCHOOL OF VETERINARY MEDICINE  
FINAL EXAMINATIONS-2020/21 ACADEMIC YEAR**

**VETERINARY PHYSIOLOGY (VMB 3311)**

**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**

- a) Outline the classification of respiratory centres depending on their location in the brain stem. **(5 marks)**
- b) Discuss the carbon dioxide transport in blood. **(5 marks)**
- c) Briefly describe the chemical factors affecting respiration. **(5 marks)**
- d) Animals remaining at high altitudes for days, weeks or years become more and more acclimatized to low  $PO_2$ . **List** five (5) principal means by which acclimatization comes about. **(5 marks)**

**QUESTION 2**

Give a detailed account of the role of aldosterone in maintaining blood volume. In your description, clearly outline the stimuli, cascade of enzymatic and hormonal activation steps of the Renin-angiotensin system that lead to the secretion of aldosterone, and the sites of production and action for each of the hormones released. **(20 marks)**

### **QUESTION 3**

The oestrous cycle represents the cyclical pattern of ovarian activity that facilitates female animals to go from a period of reproductive non-receptivity to receptivity ultimately enabling mating and subsequent establishment of pregnancy. The oestrous cycle in cattle lasts for 18–24 days. It consists of a luteal phase (14–18 days) and a follicular phase (4–6 days).

- a) **List** four ovarian functions. (4 marks)
- b) State the Corpus luteum function (s) during the oestrous cycle. (4 marks)
- c) Describe the endocrine regulation of the oestrous cycle. (12 marks)

### **QUESTION 4**

- a) Outline the factors affecting lactation in domestic animals. (5 marks)
- b) Briefly describe the maternal recognition of pregnancy in the cow. (5 marks)
- c) Describe the endocrinological aspects of parturition in the cow. (10 marks)

### **QUESTION 5**

Hormones can be broadly classified into two types.

- a) State the two types of hormones? (2 marks)
- b) Compare and contrast the two types of hormones in detail. Include the mechanism of action in your discussion? (8 marks)
- c) Describe in detail the renin-angiotensin-aldosterone regulation of sodium? (10 marks)

### **QUESTION 6**

Write short notes on the following:

- a) Functions of parietal cells of the stomach. (4 marks)
- b) Pancreas as an accessory organ to digestion. (4 marks)
- c) Peyer's patches. (4 marks)
- d) The role of antidiuretic hormone in maintaining blood volume. (4 marks)
- e) Functions of the loop of Henle. (4 marks)

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

**THE UNIVERSITY OF ZAMBIA  
SCHOOL OF VETERINARY MEDICINE  
END OF YEAR NOVEMBER/DECEMBER EXAMINATIONS-2020/21 ACADEMIC  
YEAR**

**VETERINARY PHARMACOLOGY (VMB 3600)**

**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
- 

**QUESTION 1 (20 marks).**

With regard to the corticosteroid, Dexamethasone, discuss the following:

- a) Its genomic mechanism of action (**10 marks**),
- b) Pharmacological effects (**5 marks**),
- c) Clinical uses (**5 marks**).

**QUESTION 2 (20 marks).**

Discuss the mode of action and pharmacological effects of acepromazine.

**QUESTION 3 (20 marks).**

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 (**2 marks**)
- b) Describe their mode of action (**4 marks**)
- c) Describe their pharmacological effects (**2 marks**)
- d) Describe their specific clinical indications (**2 marks**)
- e) Summarise the arachidonic acid cascade indicating sites of action of anti-inflammatory agents. (**10 marks**)

**QUESTION 4 (20 marks).**

Drugs such as captopril, enalapril or lisinopril are very effective in the treatment of heart failure or hypertension. With the aid of an illustration, give an explanation of how they work.

**QUESTION 5 (20 marks)**

Discuss in detail:

- a) Factors that should be considered when choosing antimicrobials (10 marks).
- b) Mode of action, uses, spectrum of activity and subclasses of tetracyclines (10 marks).

**QUESTION 6 (20 marks)**

Describe:

- a) Antifungal drugs based on the site of infection (10 marks).
- b) Properties and beneficial use of pyrethroid ectoparasiticides (10 marks).

**QUESTION 7 (20 marks)**

Write short comprehensive notes on:

- a) Buparvaquone (4 marks).
- b) Vincristine (4 marks).
- c) Amprolium (4 marks).
- d) Isometamidium (4 marks).
- e) Triclabendazole (4 marks).

**QUESTION 8 (20 marks)**

Estrogens influence the female sex characteristics such as an increase in the growth, fluid secretions of oviduct, uterus, cervix and vagina.

- a) List eight (8) clinical uses of estrogens. (8 marks)
- b) List five (5) sources of estrogen production in the body (5 marks)
- c) Name two (2) examples of natural estrogens. (2 marks)
- d) Name two (2) examples of synthetic steroidal estrogens. (2 marks)
- e) Give three (3) adverse side effects of estrogens. (3 marks)

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

**THE UNIVERSITY OF ZAMBIA**  
**SCHOOL OF VETERINARY MEDICINE**  
**END OF YEAR NOVEMBER/DECEMBER EXAMINATIONS**  
**2020/21 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 in Section A and any **THREE** questions in Section B
3. Write the answer to each question on a separate answer sheet.
4. **ALL** questions carry equal marks
5. Write in a legible handwriting

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

**QUESTION 1**

Respiratory distress is common in small animal practice. A thorough clinical examination coupled with ancillary tests are required for the proper management of a pet with respiratory distress. A 1-year-old Bulldog is presented with laboured breathing. Physical examination reveals a body condition score of 4/5, non-reactive lymph nodes, stridor and a deep and prolonged inspiratory phase with dyspnoea. All other parameters are normal. The dog is fully vaccinated and dewormed.

- a) What is your tentative diagnosis? **(2 marks)**
- b) List two (2) differential diagnosis. **(2 marks)**
- c) Describe the aetiopathogenesis of the condition in (a) above. **(5 marks)**
- d) Outline the ancillary tests including the expected findings, that you would carry out in order to reach a definitive diagnosis for the condition in (a) above. **(4 marks)**
- e) Describe the management options of the case in (a) above. **(7 marks)**

**QUESTION 2**

Although equine colic is a leading cause of equine mortalities, it could successfully be managed medically. However, this requires a thorough evaluation of the case to arrive at an aetiological diagnosis so that appropriate management can be instituted.

- a) Briefly outline the diagnostic aids you would utilize in the field to investigate a colic case. **(5 marks)**
- b) List and briefly outline **five (5)** types of colic. **(5 marks)**
- c) Discuss in detail the aims of medical management of a colic case and how you would achieve each of these aims. **(6 marks)**
- d) Outline indications for the surgical management of a colic case. **(4 marks)**



### **QUESTION 3**

A 4-year-old female Domestic short-haired cat is presented to your practice with hindlimb paresis of sudden occurrence two days before presentation. Physical examination reveals respiratory dyspnoea, gallop rhythm, severe pulmonary oedema and attenuation of the ventral lung sounds. Further examination reveals absence of both pulses, the nail beds are cyanotic and the muscles are painful on palpation. The cat is vaccinated against rabies and cat flu.

- a) What is your tentative diagnosis? (2 marks)
- b) List two (2) differential diagnoses. (2 marks)
- c) Outline the ancillary tests (and the findings) that you would carry out in order to reach a definitive diagnosis for the condition in (a) above. (4 marks)
- d) Briefly outline the pathophysiology of the presenting problem in this cat. (4 marks)
- e) Describe the management of the condition in (a) above. (8 marks)

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

### **QUESTION 4**

A 2-year-old, female Pug is presented to your practice with vomiting and anorexia of a week's duration. The owner tells you that he has seen the dog assume a posture of relief, where he gets down on his sternum. Physical examination reveals depression, severe abdominal pain on palpation, pyrexia, hyperaemic mucous membranes and what appears to be sloughing of the tongue. Further examination reveals a body condition score of 5/5. The dog is fully vaccinated and dewormed.

- a) What is your tentative diagnosis? (2 marks)
- b) List two (2) differential diagnoses. (2 marks)
- c) Outline the ancillary tests (and the findings) that you would carry out in order to reach a definitive diagnosis for the condition in (a) above. (4 marks)
- d) Briefly outline the pathophysiology of the condition in (a) above (4 marks)
- e) Describe the management of the condition in (a) above. (8 marks)

### **QUESTION 5**

Ulcerative and epizootic lymphangitis are dermatological conditions affecting horses in many parts of the world.

- a) Outline the aetiology and predisposing factors for each of the two conditions. (6 marks)
- b) Discuss the clinical signs associated with each of the two conditions. (4 marks)
- c) Discuss in details how you would manage and prevent each of these conditions. (10 marks)

## **QUESTION 6**

Write short notes on each the following:

**(5 marks each)**

- a) Management of hepatic encephalopathy in dogs.
- b) Staging of chronic kidney disease in cats.
- c) Calcium oxalate urolithiasis in dogs and cats.
- d) Prevention of canine infectious respiratory disease complex (kennel cough).

## **QUESTION 7**

A client presents his **two** 3-year-old mongrels with severe pruritus to your practice. Physical examination reveals skin lesions mainly on the borders of the pinnae, the elbows, hocks and sternum. The lesions are erythematous maculopapular eruptions and alopecic with crusting and skin thickening. There is also evidence of self-trauma. The owner's children whom the client says always play with the dogs, have also developed some itchy maculopapular eruptions on their hands as well. The dogs are fully vaccinated and dewormed.

- a) What is your tentative diagnosis? **(2 marks)**
- b) List two (2) differential diagnoses. **(2 marks)**
- c) Outline the ancillary tests (and the findings) that you would carry out in order to reach a definitive diagnosis. **(4 marks)**
- d) Briefly outline the pathophysiology of this condition in (a) above. **(3 marks)**
- e) Describe the management of the condition in (a) above. **(9 marks)**

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

**THE UNIVERSITY OF ZAMBIA**  
**SCHOOL OF VETERINARY MEDICINE**  
**END OF YEAR NOVEMBER/DECEMBER EXAMINATIONS**  
**2020/21 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** 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**

White muscle disease (WMD) is more common in the progeny of beef cows and small ruminants fed on selenium deficient pastures and without appropriate mineral supplementation. In countries like Zambia, however, more factors make this disease more common including the weather pattern. Both selenium and Vitamin E play key complimentary but independent roles.

- a) What physiological roles do selenium and Vitamin E play? (4 marks)
- b) What pathophysiological roles do selenium and Vitamin E play? (4 marks)
- c) What is the clinical picture you expect to see in WMD? (6 Marks)
- d) How would you manage and prevent this disease if diagnosed? (6 Marks)

**QUESTION 2**

Mr. Pesulani Banda has a mixed livestock farm in Chongwe. His animal caretaker suggests that there is mange outbreak in pigs and goats. You do not seem to agree with his assertion due to gaps in clinical description of the disease in both animal species.

- a) Describe clinical signs in severe mange infection in both species? (6 marks)
- b) Briefly, outline the pathogenesis for the condition in both animal species. (4 marks)
- c) Describe treatment plan in each of the animal species. (4 marks)
- d) Draw up a plan to eradicate mange in the piggery at this farm. (6 marks)

**QUESTION 3**

A farmer calls on your services because ten of his calves with an average age of 7 months have been exhibiting depression, ataxia, head-pressing and convulsions. Upon arriving at the farm, the farmer informs you that **three (3)** of the calves died 30 minutes prior to your arrival. The farmer further informs you that two weeks prior to presentation, the calves were introduced to maize bran. Based on these findings and history;

- e) What is your tentative diagnosis? (2 marks)
- f) Describe the possible aetiopathogenesis of the condition in (a) above. (6 marks)
- g) Describe how you would diagnose this condition. (4 marks)
- h) List two (2) differential diagnoses. (4 marks)
- i) Describe the management of the condition in (a) above. (4 marks)

## QUESTION 2

A young Veterinary Assistant has called for consultation on a disease outbreak in cattle in his camp catchment area. He reports that the lesions first manifest themselves as round circumscribed areas of erect hair, measuring up to 50 mm in diameter. They are firm and slightly raised above the surrounding normal skin from which they are often separated by a narrow ring of haemorrhage.

- What is your tentative diagnosis? (2 marks)
- List two (2) differential diagnoses for the condition in (a) above. (2 marks)
- Describe in detail the clinical signs of the disease in (a) above (6 Marks)
- Describe the management of the condition in (a) above. (6 marks)
- Briefly outline your client education. (4 marks)

## QUESTION 5

There is an increase in the number of bloat cases especially during the start of the rain season. Bloat is most commonly seen when grass growth is at its peak. It is one of the most common causes of death in adult cattle at grass pasture.

- Discuss the pathogenesis of the two (2) main types of bloat (8 marks)
- Describe the clinical picture of acute to chronic bloat in cattle. (4 marks)
- Discuss the management of the two (2) types of bloat. (4 Marks)
- Briefly give client education in relation to bloat prevention in cattle. (4 marks)

## QUESTION 6

Write short note on any four (4) of the following diseases focusing on pathogenesis, clinical manifestation and disease management. (5 Marks each)

- Nasal bot - *Oestrus ovis* in small ruminants.
- Sheep Keds (*Melophagus ovinus*) in sheep.
- Contagious Pustular Dermatitis in goats.
- Caseous Lymphadenitis (CL) in exotic Goats and sheep.
- Urticaria (Hives, Nettle rash) in beef cattle.

## QUESTION 7

A farmer in Kabwe presents to you a 7-year-old Hereford Cow with the history of depression, reduced appetite, weight loss and always lagging behind. Clinical examination reveals a mild fever, elevated heart and respiratory rate, muffled heart sounds, jugular vein distention and brisket oedema.

- What is your tentative diagnosis? (2 marks)
- List two (2) differential diagnoses for the condition in (a) above. (4 marks)
- Briefly, outline the pathogenesis for the condition in (a) above. (6 marks)
- Describe your diagnostic approach to the condition in (a) above. (4 marks)
- Describe the management and prevention the condition in (a) above. (4 marks)

THE END OF EXAMINATION

**THE UNIVERSITY OF ZAMBIA**  
**SCHOOL OF VETERINARY MEDICINE**  
**END OF YEAR NOVEMBER/DECEMBER EXAMINATIONS - 2020/21 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**

The post-operative outcome of equine patients requiring laparotomies has greatly improved with the increasing use of laparoscopy and standing flank laparotomies using local analgesic techniques.

- a) Other than laparoscopy and flank approaches, list three (3) other laparotomy approaches that you can use in a mare. **(3 marks)**
- b) Outline the advantages of laparoscopy over the approaches listed in (a) above. **(2 marks)**
- c) For one of the approaches listed in (a) above, outline the anaesthetic protocol you would use to carry out the technique. **(5 marks)**
- d) Describe an approach listed in (a) above that you would use for an ovariectomy of a relatively large granulosa cell tumour of the right ovary in a mare. **(10 marks)**

**QUESTION 2**

Surgical conditions involving the oral cavity and pharynx are common in cats and dogs.

- (a) Discuss the surgical principles applicable in oral surgery. **(6 marks)**
- (b) List the four (4) flaps that can be employed in the management of oronasal fistulas. **(4 marks)**
- (c) With the aid of a schematic or line diagram, describe in full **one (1)** of the flaps listed in (b) above (include preoperative care, anaesthesia and postoperative management). **(10 marks)**

### **QUESTION 3**

Inhalation anaesthesia is considered safer than Total Intravenous Anaesthesia (TIVA).

- a) With the aid of line drawings or sketches, concisely discuss the circle system (rebreathing) inhalation anaesthetic system. (4 marks)
- b) Discuss the leak testing of an inhalation anaesthetic machine. (4 marks)
- c) Comprehensively discuss the application of an endotracheal tube using the normograde and retrograde approach. (12 marks)

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

### **QUESTION 4**

Most hernias are either due to congenital anomalies or different types of injuries and commonly involve the abdominal content including intestine in most species including cattle, sheep, goat, horse, and donkey.

- a) List three (3) classifications of hernias in large animals. (3 marks)
- b) List any three (3) principles of hernia repair in large animals. (3 marks)
- c) With the aid of schematic drawings, describe how you would surgically manage an umbilical hernia in a calf. Include;
  - i. Patient preparation (2 marks)
  - ii. Anaesthetic consideration (2 marks)
  - iii. Surgical procedure (8 marks)
  - iv. Post-operative care (2 marks)

### **QUESTION 5**

Outline the radiographical features of each of the following conditions: (4 marks each)

- a) Osteosarcoma.
- b) Congenital hydrocephalus.
- c) Rubber jaw.
- d) Periapical abscess.
- e) Severe periodontal disease.

### **QUESTION 6**

Oesophageal foreign bodies warrant either non-surgical or surgical interventions. Sometimes, a combination of the two options can be applied.

- (a) List the three (3) common anatomical points where foreign bodies can lodge in the oesophagus. Justify your answer. (3 marks)
- (b) Discuss the non-surgical treatment and management of oesophageal foreign bodies. (5 marks)
- (c) Compare and contrast the surgical options for foreign body removal lodged in the cervical, thoracic and abdominal oesophagus (include anaesthesia and postoperative care). (12 marks)

### **QUESTION 7**

Suspected foreign body penetration of the reticulum is an indication for medical or surgical intervention in cattle.

- a) What is the name of the surgical procedure that can be used to remove a foreign body from the reticulum? **(2 marks)**
- b) List three (3) indications for rumenostomy in cattle. **(6 marks)**
- c) Describe the surgical procedure named in a) above that you can use to remove the foreign body from the reticulum. Include;
  - i. Patient preparation **(2 marks)**
  - ii. Anaesthetic consideration **(2 marks)**
  - iii. Surgical procedure **(6 marks)**
  - iv. Post-operative care **(2 marks)**

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

**THE UNIVERSITY OF ZAMBIA  
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**END OF YEAR NOVEMBER/DECEMBER EXAMINATIONS  
2020/2021 ACADEMIC YEAR**

**VETERINARY CLINICAL PATHOLOGY (VMD 4102)**

**Duration:** 3 hours

**INSTRUCTIONS:**

1. Please read the instructions and each question carefully
  2. Answer all the **FIVE (5)** questions
  3. **ALL** questions carry equal marks (20 marks)
  4. Write in a legible handwriting
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**QUESTION 1**

- a) What is the meaning of 'Exfoliative Cytology' or 'Cytopathology'? Write the scope, advantages and disadvantage or limitations. **(10 marks)**
- b) Write the differentiating microscopic features in the tabular form of different types of round cell tumours found in dogs that can be diagnosed cyto-pathologically giving a sketch of each cell type. **(10 marks)**

**QUESTION 2**

Routine urinalysis is a quick and relatively inexpensive test which can be readily performed in most practices.

- a) Give five (5) tests that can be done on a physical examination of urine **(5 marks)**
- b) List the significance of each of the following urinalysis results **(7 marks)**
  - a. Low levels of proteinuria
  - b. Glucosuria
  - c. Cast cells
  - d. Haematuria
  - e. Haemoglinuria
  - f. Pus cells
  - g. Ketonuria
- c) List Four (4) methods you would use to collect a urine sample in dogs. **(4 marks)**
- d) List TWO (2) causes of Polyuria and another TWO (2) for Oliguria. **(4 marks)**



### **QUESTION 3**

- a) Name only one (1) site you would collect blood from for haematological examination: **(10 marks)**
- i. Dog
  - ii. Sheep
  - iii. Cat
  - iv. Horse
  - v. Bull
  - vi. Pig
  - vii. Chicken
  - viii. Guinea fowl
  - ix. Duck
  - x. Guinea pig
- b) List the Three (3) main causes of Hemolytic Anaemia. **(3 marks)**
- c) Name the Three (3) different sections that can be seen after centrifuging a blood sample in a capillary tube. **(3 marks)**
- d) On blood smear examination of red blood cells, which of these represents regenerative or a non-regenerative anaemia? **(4 marks)**
- i) Anisocytosis
  - ii) Microcytes
  - iii) Macrocytes
  - iv) Reticulocytosis

### **QUESTION 4**

Blood transfusions in small animal medicine have become more common and are now an integral part of advanced treatment.

- a) What are the two (2) main indications for a blood transfusion? **(2 marks)**.
- b) In most bleeding disorders, fresh blood is preferred for transfusion therapy. Give two (2) reasons why this is so. **(2 marks)**
- c) The following diseases may require blood transfusion therapy:
- Bone marrow disease
  - Septicaemia
  - Platelet defects
  - Warfarin poisoning
  - Haemophilia A
  - Von Willebrand's Disease

In each case, what blood product would be appropriate to transfuse the patient? **(6 marks)**

- d) List five (5) non-hemolytic immunological transfusion reactions and five (5) non-immunologic transfusion reactions that would arise from incompatible blood. **(10 marks)**

### **QUESTION 5**

- a) A dog is presented to you with a suspicion of Hyperthyroidism. Explain the methodical diagnostic approach to establish the extent and confirmatory diagnosis of the origin of the conditions **(10 marks)**
- b) In the laboratory, you have been mistakenly presented with a urine sample. Justify the collection of this urine for the diagnosis of a digestive system complication. **(10 marks)**

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

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END OF YEAR NOVEMBER/DECEMBER EXAMINATIONS  
2020/2021 ACADEMIC YEAR**

**VETERINARY EPIDEMIOLOGY (VMD 4201)**

**Duration:** 3 hours

**INSTRUCTIONS:**

1. Please read the instructions and each question carefully
  2. Answer **FIVE (5)** questions only
  3. State **ALL** assumptions used and show **ALL** calculations
  4. **ALL** questions carry equal marks
  5. Write in a legible handwriting
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**QUESTION 1**

You are asked to investigate an outbreak of a disease at a piggery. You decided to choose another piggery with low levels of the disease that has similar management to the one reporting the outbreak. Your suspicion is that the feed may be the source. Your investigation reveals that the composition of the feed is the same except that on the farm with an increase in the incidence of the disease, there is an additional ingredient of groundnut cake which is not provided on the piggery without the outbreak. You therefore suspect that groundnut cake is associated with the increase in the incidence of the disease on the piggery with a higher disease level. There are 100 pigs on each piggery. However, the piggery experiencing an increase in the disease incidence has 30 cases while the one with endemic level of the disease has only 5 cases.

- a) Define the term "Association". **(2 marks)**
- b) What measure of association would you use to determine whether the groundnut cake is responsible for the outbreak? **(2 marks)**
- c) Draw a 2X2 contingency table to summarise the results of disease on the two farms. **(4 marks)**
- d) What method would you have used to come up with the hypothesis that groundnut cake is the cause of the outbreak? **(2 marks)**
- e) From your table in (c) above, calculate the following proportions: **(7 marks)**
  - i) exposed
  - ii) diseased
  - iii) diseased and exposed
  - iv) diseased in the exposed group
  - v) diseased in the non-exposed group

- vi) exposed in the diseased group
- vii) Exposed in the non-diseased group.

f) Calculate the risk ratio, odds ratio, and attributable rate. **(3 marks)**

## **QUESTION 2**

- a) Discuss the concept of sampling; merits, and demerits **(5 marks)**
- b) Define target population and its relevance in epidemiological studies **(5 marks)**
- c) PCR is an important diagnostic test. Briefly discuss the role of primers in influencing the sensitivity and specificity of PCR **(10 marks)**

## **QUESTION 3**

- a) Define the term 'Determinant' as applied to disease causation. **(2 marks)**
- b) List the various classifications of disease determinants. **(5 marks)**
- c) With the aid of a diagram, describe an epidemiological triad. **(3 marks)**
- d) In terms of infectious diseases, define the term 'carrier', and briefly describe the types of carrier states. **(5 marks)**
- f) Outline the various methods of disease transmission. **(5 marks)**

## **QUESTION 4**

- a) Compare and contrast conclusion and inference **(5 marks)**
- b) Using your knowledge of sampling, diagnostic tests, outline how you would use this information to implement the elimination of tuberculosis in a herd of cattle **(10 marks)**
- c) Using appropriate illustration, briefly discuss the meaning of dichotomy of diagnostic test results **(5 marks)**

## **QUESTION 5**

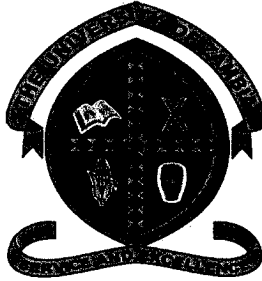
- a) What are the general objectives of investigating outbreaks? What do you understand by the following terms?
  - i) Outbreak **(2.5 marks)**
  - ii) Outbreak investigation **(2.5 marks)**

- b) A disease breaks out in a certain area with a high density of cattle, and you are called upon to investigate it, state any three major questions on which your investigations are likely to be based. How would you go about providing replies to these questions (be brief)? **(5 marks)**
- c) What is epidemiological surveillance and/or monitoring? Differentiate between epidemiological surveillance and epidemiological monitoring and state how they are related Epidemiological diagnosis. **(5 marks)**
- d) Briefly discuss considerations required when designing an epidemiological monitoring programme. **(5 marks)**

### **QUESTION 6**

- a) Provide definitions of OIE List A and List B diseases and name any 5 diseases under each list, that affect livestock in the SADC Region. **(6 marks)**
- b) Suppose you were a district veterinary officer, what would you do if a list A disease broke out in an area in your district? **(8 marks)**
- c) What is EMPRES and what role does EMPRES play? **(2 marks)**
- d) Define Trans-boundary diseases and classify them according to EMPRESS. State which of these classes are regarded as most important and how they are important. **(4 marks)**

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



**THE UNIVERSITY OF ZAMBIA**

**SCHOOL OF VETERINARY MEDICINE**

**DEPARTMENT OF PARACLINICAL STUDIES**

**END OF YEAR EXAMINATION – 2020/2021 ACADEMIC YEAR**

**PATHOLOGY OF INFECTIOUS AND NON-INFECTIOUS VETERINARY DISEASES**

**(VMP 4111)**

**DURATION: 3 HOURS**

**INSTRUCTIONS:**

1. Please read the instructions and each question carefully
  2. Answer **ALL** questions
  3. Each question may have separate instructions
  4. Write the answer to **EACH** question in a **SEPARATE ANSWER BOOKLET**
  5. **ALL** questions carry equal marks
- .....

## **QUESTION 1**

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

- (a) Briefly describe the pathogenesis of anthrax disease. (5 marks)
- (b) Describe the toxins with regard the pathogenesis of Clostridial diseases. (5 marks).
- (c) Write on the etiology of clostridial diseases in ruminants. (5 marks).
- (d) Describe the gross pathology seen in Contagious Bovine Pleuropneumonia in cattle. (5 marks).
- (e) Describe the hosts in anthrax disease. (5 marks).
- (f) Describe the gross lesions seen in tuberculosis disease. (5 marks).
- (g) Describe the characteristics of anthrax spores with regard to its being used in bacterial warfare. (5 marks).

## **QUESTION 2**

**Answer any TWO (2) of the following**

- (a) Describe the important pathological differences between visceral schistosomiasis and nasal schistosomiasis in cattle (10 marks)
- (b) You have been posted as a district veterinary Officer to a remote area in the Kafue flood plains, and you are the only qualified Veterinarian. You receive a message from a veterinary camp officer that the farmers in the area are losing their cattle. After going to the area, you find that all the animals grazing in the swamps have severe submandibular edema. State your diagnosis and describe the important clinical and pathological finding of the disease you suspect (10 marks).
- (c) As a practising veterinarian, you are called for a house call where the presenting problem is intense pruritus among the all dogs in the yard and the care taker of the dogs. What disease would you suspect based on the history? Describe the disease you would suspect (10 marks).
- (d) You are a veterinarian and called to a farm where a four-year old high-producing dairy cow is showing signs of flaccid paralysis about 3 days after parturition. What would be your diagnosis? Describe the clinical signs of the disease you would suspect (10 marks).

### **QUESTION 3**

**Answer any TWO (02) of following questions**

- (a) You are called to a farm where 1 week old chicks are dying after a history of dyspnoea and gasping. On post mortem examination you find yellow nodules in the respiratory passages, lungs and air sacs. What disease would you suspect? What diagnostic methods would you use to confirm your suspicion? Describe the pathogenesis of the disease, the diagnostic features and post mortem lesions that you expect (10 marks).
- (b) Describe the pathological features of blastomycosis; outlining the pathogenesis, morphological features and diagnostic methods including findings you would see to confirm the disease (10 marks).
- (c) As a veterinarian, a cat is presented to you with a history of a gelatinous mass on the face and rhinitis. The cat did not respond to antibiotic treatment and died. On histopathology of the mass, a non-staining capsular material appearing as a "soap bubble" was seen. Name and describe the pathology of the disease (10 marks).
- (d) Name and briefly describe the pathological and diagnostic features of a disease that causes circular patches of scaling and alopecia on the skin, especially around the eyes in cattle (10 marks)

### **QUESTION 4**

**Answer any TWO (02) of the following infections**

- (a) Compare and contrast the pathological features of babesiosis and anaplasmosis in cattle; outline the important diagnostic features that differentiate the two diseases (10 marks)
- (b) Describe the pathological features of Trypanosomiasis in different animal species and what diagnostic methods you would use to confirm the disease (10 marks).
- (c) As a veterinarian, you are called to a farm in Lusaka West where cattle are dying after a short history of dyspnoea and lacrimation. On physical examination, you observe lymph node swelling and fever up to 41°C. Name and describe the pathology of the disease (10 marks).
- (d) Describe the pathological features of Ehrlichiosis in dogs (10 marks).



## **QUESTION 5**

**Answer any TWO (2) of the following**

- (a)** A pregnant dam was infected with Bovine Viral Diarrhoea Virus (BVD) after day 30 of gestation. Discuss in detail what would happen to the calf. (10 marks)
- (b)** You have received reports of a large number of mortalities on pig farms around Lusaka. On physical examination you notice bleeding from the nose and cyanosis of the skin and ecchymotic haemorrhages on the ears and muzzle.
  - (i) Name the disease you would suspect (1 mark)
  - (ii) Describe the pathogenesis the disease named in (i) (5 marks)
  - (iii) Describe the gross lesions would you see in the diseases named in (i) (other than those described above) (4 marks)
- (c)** Compare and contrast Equine herpes virus 1 and Equine herpes virus 4 infections (10 marks)

## **QUESTION 6**

**Answer any FOUR (4) of the following**

- (a)** Describe the gross and microscopic lesions in Peste des Petite ruminants (PPR) (5 marks)
- (b)** Describe the gross and microscopic lesions of canine distemper virus infection (5 marks)
- (c)** Describe the pathogenesis of foot and mouth disease (5 marks)
- (d)** Describe the gross and microscopic lesions in canine parvovirus infection (5 marks)
- (e)** Describe the pathogenesis of rabies virus infection (5 marks)
- (f)** Describe the gross and microscopic lesions in feline corona virus infection (5 marks)

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