

## **UNIVERSITY OF ZAMBIA**

### **1<sup>ST</sup> SEMESTER EXAMINATIONS: AUGUST-SEPTEMBER 2007**

- |     |         |   |   |
|-----|---------|---|---|
| 1.  | VMB 211 | - | VETERINARY GROSS ANATOMY AND PHYSIOLOGY                         |
| 2.  | VMB 311 | - | VETERINARY ANATOMY  |
| 3.  | VMB 321 | - | VETERINARY HISTOLOGY  |
| 4.  | VMB 331 | - | VETERINARY BIOCHEMISTRY I                                       |
| 5.  | VMB 341 | - | VETERINARY PHYSIOLOGY I   |
| 6.  | VMB 451 | - | VETERINARY PHARMACOLOGY   |
| 7.  | VMC 511 | - | CLINICAL VETERINARY MEDICINE I                                  |
| 8.  | VMC 521 | - | PRINCIPLES OF GENERAL VETERINARY<br>SURGERY AND ANAESTHESIOLOGY |
| 9.  | VMC 611 | - | CLINICAL VETERINARY MEDICINE III                                |
| 10. | VMC 621 | - | VETERINARY OPERATIVE SURGERY II                                 |
| 11. | VMC 631 | - | THERIOGENOLOGY II   |
| 12. | VMB 511 | - | VETERINARY CLINICAL PATHOLOGY                                   |
| 13. | VMD 521 | - | INFECTIOUS DISEASES OF LIVESTOCK                                |
| 14. | VMD 531 | - | VETERINARY EPIDEMIOLOGY   |
| 15. | VMD 641 | - | VETERINARY PREVENTIVE MEDICINE                                  |
| 16. | VMD 651 | - | VETERINARY PUBLIC HEALTH  |
| 17. | VMP 411 | - | VETERINARY PATHOLOGY  |
| 18. | VMP 431 | - | VETERINARY BACTERIOLOGY AND IMMUNOLOGY                          |
| 19. | VMP 441 | - | VETERINARY PARASITOLOGY   |

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**UNIVERSITY 1<sup>ST</sup> SEMESTER EXAMINATION: AUGUST-SEPTEMBER 2007**

**VMB 211**

**VETERINARY GROSS ANATOMY AND PHYSIOLOGY I**

**TIME:            THREE (3) HOURS**

**INSTRUCTIONS: ANSWER ALL QUESTIONS. ANSWER QUESTIONS FROM SECTION A AND SECTION B IN SEPARATE ANSWER BOOKS.**

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**SECTION A: VETERINARY CYTOLOGY AND GENERAL HISTOLOGY**

1. a). Briefly describe the appearance of cytoplasmic inclusions. [5 marks].  
b). Discuss in detail the microscopic structure of simple squamous and stratified squamous epithelium [5 marks].  
c). Discuss in detail the morphologic characteristics of simple glands [10 marks].
  2. a). Discuss cartilage development [5 marks]  
b). Discuss, with the aid of a diagram (drawing), the histological structure of a compact bone [10 marks].  
c). State the types of synapses that occur in the nervous system [5 marks].
  3. a). Using a sketch diagram illustrate all the contractile elements of the skeletal and cardiac muscles, and briefly discuss the mechanism of their contractions [15 marks]  
b). State the functions of each granulocyte [5 marks].
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**SECTION B: GROSS ANATOMY (NB: For essay type questions, logical and clear writing will be evaluated as well)**

1. In order to ensure consistency and to reduce confusion in the use of language in the study of veterinary anatomy, the Nomina Anatomica Veterinaria (N.A.V) was introduced in 1968. Under the N.A.V nomenclature **explain** the following terms that indicate position and direction:
  - (i) Dorsal structures
  - (ii) Ventral structures
  - (iii) Cranial structures
  - (iv) Caudal structures
  - (v) Medial structures
  - (vi) Lateral structures
  - (vii) Axial structures
  - (viii) Sagittal plane

**[20 marks]**

2. Write an essay to explain the classification of bones. [20 marks]
3. For the following listed muscles, state (i) whether they belong to the fore or hind limb, (ii) whether they are extrinsic or intrinsic muscles (iii) their origin and insertion (iv) their actions and on which joint(s) and (v) the innervation.
- Latissimus dorsi
  - Semimebranosus
  - Tensor faciae latae
  - Quadratus femoris
  - Sartorius
  - Biceps femoris
  - Deltoideus
  - Teres minor
  - Biceps brachii
  - Omotransversarius
- [20 marks]

4. **Discuss** (i) the functional anatomy of respiration (ii) The conducting nervous system of the heart. [20 marks]

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**END OF EXAMS!!!!!!!!!!!!!!**

THE UNIVERSITY OF ZAMBIA

1<sup>ST</sup> SEMESTER SUPPLEMENTARY EXAMINATION: OCTOBER 2007

**VMB 211: VETERINARY GROSS ANATOMY AND PHYSIOLOGY I**

INSTRUCTIONS:

**TIME: THREE (3) HOURS**

ANSWER ALL QUESTIONS. ANSWER QUESTIONS FROM SECTION A AND SECTION B IN SEPARATE ANSWER BOOKS.

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**SECTION A: VETERINARY CYTOLOGY AND GENERAL HISTOLOGY**

1. Briefly describe the microscopic appearance of ten (10) cytoplasmic organelles [20 marks].
2. Use short notes to discuss;
  - a. Haemopoiesis [5 marks]
  - b. Abnormal terms of erythrocytes [5 marks].
  - c. Nutrient supply to cartilage [5 marks]
  - d. Microscopic structure of the bone [5 marks]
3. Discuss;
  - a). The three (3) types of nervous system responses [5 marks]
  - b). The fluid mosaic model of the plasma membrane [5 marks]
  - c). The three (3) types of muscle tissue [5 marks]
  - d). The microscopic structure of a compact bone [5 marks].

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**SECTION B: GROSS ANATOMY (NB: For essay type questions, logical and clear writing will be evaluated as well)**

1. Discuss the different ways in which joints can be classified and give a detailed description of a **synovial** joint. [20 marks]
2. Name two **extensor** and two **flexor** muscles of the hock joint of the dog and state their origin, insertion and innervation. [20 marks]
3. Provide a detailed description of the skeleton of the rib cage of the dog. [20 marks]
4. What do you understand by the term **pericardium**? Give a detailed description of the anatomical disposition of the pericardium in the dog. [20 marks]

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END OF EXAMINATION

**VMB 311**

**VETERINARY ANATOMY I**

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**INSTRUCTIONS:**

1. Time three (3) hours
  2. Answer five (5) questions only.
  4. Each question should be answered in a separate answer book.
  3. All questions carry equal marks
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1. (i) A transverse section through the middle of the neck may reveal the following structures: rhomboideus muscle; nuchal ligament; vertebra; longus colli muscle; esophagus; trachea; external jugular vein; sternohyoideus and sternothyroideus muscles; sternomandibularis muscle; brachiocephalicus muscle; common carotid artery; thymus; internal jugular vein. **15 points**  
**Draw** a well-labeled diagram that will depict the disposition of those structures.
- (ii) What name is given to the procedure whereby the trachea is opened surgically? List (in order) the soft tissues that can be traversed before reaching the trachea during that surgical procedure. **5 points**
2. (i) What do you understand by pleurae? Describe the anatomical disposition of the pleurae of the ruminants. **10 points**  
(ii) The heart and lung sounds of ruminant animals (and indeed any other domestic animal) can be auscultated by placing a stethoscope on the surface of the chest wall. **Discuss.** **10 points**
3. A number of organs can be found in the ruminant abdominal cavity. Some of those abdominal organs include the stomach and the large intestines. **Describe** in detail the anatomical disposition of the ruminant stomach and the large intestine. In your description of the anatomical disposition of the ruminant stomach and large intestine identify any areas of clinical/surgical significance. **20 points**
4. (i) Give a **detailed** description of the wall of the pelvis of the ruminant animal. **15 points**

(ii) Briefly state the main features of the internal surfaces of the following components of the female reproductive organs: (a) The uterus (b) The cervix (c) Vagina (d) Vestibule (e) Ovaries  
**5 points**

5. Write **short notes** on the following:

- (i) The carotid sheath
- (ii) Course of the esophagus in the neck
- (iii) Mediastinum of the thoracic cavity
- (iv) Paravertebral nerve blocks
- (v) Ruminal contractions

**20 points**

6. Discuss the ruminant forelimb with respect to:-

- a) Osteology of the shoulder girdle
- b) Muscles of the digits

**10 points**

**10 points**

7. Discuss the innervation of the ruminant hindlimb, noting the origin of the nerves and muscles they supply. Mention the clinical significance of ONE of the nerves discussed.

**20 points**

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*END OF EXAMINATION*

# THE UNIVERSITY OF ZAMBIA

## UNIVERSITY FIRST SEMESTER EXAMINATIONS – AUGUST 2007

### VMB 321 – VETERINARY HISTOLOGY

TIME: THREE (3) HOURS

**INSTRUCTIONS: ANSWER ALL QUESTIONS. ANSWER QUESTIONS 1 AND 2 IN A SEPARATE ANSWER SHEET.**

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1. The urinary system consists of many different parts with specific functions
  - i) Draw a well labeled diagram of the uriniferous tubule (10 marks)
  - ii) A histological preparation of the distal and proximal convoluted tube shows that the two are intermingled within the cortex. What are the major differences between the two (5 marks)
  - iii) Describe the histological composition of layers of the ureter (5 marks)
2. The primary reproductive organs of a mammal are gonads. Describe the main histological features of the:
  - i) Ovary (10 marks)
  - ii) Epididymis (10 marks)
3. Write brief notes on the following:
  - i) Histological features of the vomeronasal organ (5 marks)
  - ii) The chief or Zymogenic cells (5 marks)
  - iii) The histology of the Heart (10 marks)
4. Discuss the:
  - i) Vallate (5 marks)
  - ii) Primary and secondary immune responses of the lympho-reticular system (5marks)
  - iii) Splenic blood circulation (10 marks)
5. Using a simple sketch drawing show the histological relationship of enamel, cementum and dentine in the Hypsodont teeth in the following plane:
  - i) Cross section view of the lower molar tooth (10 marks)
  - ii) Longitudinal and cross section view of the upper molar tooth (10 marks)

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**END OF EXAM!!!!!!!!!!!!!!!!!!!!!!!!!!!!**

# **THE UNIVERSITY OF ZAMBIA**

## **UNIVERSITY FIRST SEMESTER DEFFERED EXAMINATIONS – OCTOBER 2007**

### **VMB 321 – VETERINARY HISTOLOGY**

**TIME: THREE (3) HOURS**

**INSTRUCTIONS: ANSWER ALL QUESTIONS. ALL QUESTIONS CARRY  
EQUAL 20 MARKS. QUESTIONS 1, 2 AND 3 SHUOLD BE ANSWERED IN  
SEPARATE ANSWER BOOKS.**

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1. Use short notes to discuss (i) the cementum (ii) continuous capillaries (iii) the taste buds (iv) alveolar macrophages (v) the secretory units of salivary glands
2. Discuss (i) the functional histology of the spleen (ii) filiform papilla (iii) vomeronasal organ (iv) the trachea
3. Compare and contrast (i) the two cell types of the blood-air barrier of the alveoli (ii) the basal zone and functional zones of the endometrium (iii) the histology of the 3 distinct regions of the mucosa of the glandular stomach.
4. (i) Describe the histology of the male urethra (ii) Briefly describe the histologic structure of the oviduct.

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**END OF EXAM!!!!!!!!!!!!!!!!!!!!!!!!!!!!**



**THE UNIVERSITY OF ZAMBIA  
SCHOOL OF VETERINARY MEDICINE  
2007 ACADEMIC YEAR FIRST SEMESTER  
FINAL EXAMINATIONS – AUGUST / SEPTEMBER 2007**

**VMB 331 : VETERINARY BIOCHEMISTRY I**

**TIME : THREE (3) HOURS**

**INSTRUCTIONS:** There are two sections in this paper, A and B. Answer **all** questions in SECTION A and **any two** questions in SECTION B. All questions carry equal marks.

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**SECTION A : Answer ALL the three questions in this section.**

- Q1. Write an essay on regulation of enzyme activity. Use cholesterol biosynthesis as an example.
- Q2. Using  $\text{CH}_3\text{CH}_2\text{CH}_2\text{COS-ACP}$  as the starting point, describe a complete cycle of fatty acid biosynthesis. State clearly the starting compound used to begin fatty acid biosynthesis and any other simple ketone compounds that can be derived from the compound you named.
- Q3. Describe the degradation of glycogen. Show how the product(s) are converted to a suitable precursor(s) for subsequent metabolism and name the pathway in which they may be metabolized.

**SECTION B : Answer any TWO questions only in this section.**

- Q4. (a) The TCA cycle is a central pathway for the generation of energy in aerobic organisms, explain.
- (b) Explain how this pathway is regulated.
- (c) Describe how the generation of energy and formation of water, among others, from glucose might be inhibited by certain chemicals in an aerobic system.

Q5. Write short notes on:-

- (a)  $\alpha$  - Helix
- (b) Ruminant cellulose digestion
- (c) McArdle's disease
- (d) Cyclic photophosphorylation

Q6. Discuss the secondary bonds responsible for the configuration of protein structure and state those that stabilize the quaternary structure of proteins.

Q7. Write notes on the principles of the following isolation and purification procedures, giving one example where possible;

- (a) Differential centrifugation
- (b) Differential precipitation
- (c) Isoelectric focusing
- (d) Two named variations of chromatography

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**END OF EXAMINATION**

# THE UNIVERSITY OF ZAMBIA

## UNIVERSITY FIRST SEMESTER EXAMINATIONS - SEPTEMBER 2007

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### VMB 341-VETERINARY PHYSIOLOGY I

**TME: Three (3) Hours**

**INSTRUCTIONS:** Answer any five (5) questions. All questions carry equal marks.

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1. Explain in detail the mechanisms in which the following factors can influence heart function:
  - a) Potassium and calcium ions
  - b) Adrenaline
  - c) Acetylcholine
  - d) Stannous ligature
2.
  - a) Give the general organisation of the autonomic nervous system.
  - b) What are the effects of parasympathetic and sympathetic stimulation, respectively, on the:-
    - Eye
    - Lungs
    - Salivary glands
    - Small intestine, and
    - Heart
3.
  - a) Describe the anatomy of baroreceptors.
  - b) Explain the response of baroreceptors to changes in arterial blood pressure.
4. Write short notes on the following:
  - a) Normal electrocardiogram and its use
  - b) Upper motor neurons and lower motor neurons
  - c) Hypothalamus
  - d) Ascending reticular activating system (ARAS).
5. Describe the digestion and absorption of dietary fat in the small intestine.
6.
  - a) State the secretions of three types of cells found in the gastric mucosa.
  - b) Explain the role of hydrochloric acid (HCl) in gastrointestinal function.
  - c) Describe the mechanism of HCl secretion in the stomach.
7. Write short explanatory notes on the following:-
  - a) Thermostatic theory of Brobeck
  - b) Enterohepatic circulation of bile salts
  - c) Cholesystokinin-pancreozymin
  - d) Rumination

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**END OF EXAMINATION**

THE UNIVERSITY OF ZAMBIA

UNIVERSITY FIRST SEMESTER EXAMINATIONS - AUGUST 2007

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VMB 451

VETERINARY PHARMACOLOGY

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**INSTRUCTIONS:**

1. Time three (3) hours
  2. Answer five (5) questions only.
  3. All questions carry equal marks.
  4. Each question should be answered in a separate answer book.
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1. i) Define drug absorption. (1 mark)  
ii) List at least three (3) factors that can affect the absorption of a drug from the gastrointestinal tract with respect to:-
    - a) physicochemical properties of the drug, (3 marks)
    - b) pharmaceutical properties, and (3 marks)
    - c) physiological factors. (3 marks)
  - iii) a) What is meant by the term "first pass" effect? (1 mark)  
b) Briefly describe Phase I and Phase II biotransformation reactions giving at least two (2) examples of the specific types of reactions involved in each phase. (6 marks)
  2. a) Barbiturates may be grouped into four classes based on their duration of action. List these classes giving one example of a barbiturate in each class. (4 marks)  
b) Discuss the pharmacological effects of barbiturate anaesthetic agents. (8 marks)  
c) Compare and contrast the elimination from the body of a thiobarbiturate and an oxybarbiturate in a lean Greyhound and an obese Labrador. (8 marks)
  3. a) Describe features of osmotic, secretory and mixed diarrhoea. (10 marks)  
b) Discuss the approach you would take in treatment of a case of diarrhoea in a dog. (10 marks)
  4. Discuss the mode of action and pharmacological effects of acepromazine. (20 marks)
  5. Substances that are commonly used as growth promoters include anabolic and antimicrobial agents.
    - i) Anabolic agents (sex hormones and their analogues) may be used as growth promoters or stimulants for feedlot cattle.

- a) What is the definition of a growth promoter? (1 mark)
  - b) In what type of feedlot cattle would you use a combination of 20mg oestradiol + 200mg testosterone and 20mg oestradiol + 200mg progesterone? (2 marks)
  - c) List seven (7) clinical uses of oestrogen analogues other than growth promotion. (7 marks)
  - ii) Antimicrobial agents can also be used as growth promoters.
    - a) What is the rationale and requirements of using antimicrobials as growth promoters? (6 marks)
    - b) List four (4) antimicrobials commonly used as growth promoters. (4 marks)
6. Inflammation and pyrexia are normal physiological responses to injury. Excessive inflammatory reactions can be harmful and need to be controlled.
- i) List four (4) anti-inflammatory pyrazolone derivatives, their mode of action, pharmacological effects and specific clinical indications. (10 marks)
  - ii) Summarise the arachidonic acid cascade indicating sites of action of anti-inflammatory agents. (10 marks)
7. There are many drugs used to treat diseases caused by infectious organisms. Describe the mode of action and spectrum of activity of albendazole, ivermectin, oxytetracycline, diminazene and fluconazole. (20 marks)
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*END OF EXAMINATION*

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

**2007/8 ACADEMIC YEAR FIRST SEMESTER  
FINAL EXAMINATIONS**

**VMC 511: CLINICAL VETERINARY MEDICINE I**

**TIME: THREE HOURS**

**INSTRUCTIONS**

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

1. It is common to find cattle or pigs with diseases affecting the locomotor system.
  - a) Briefly discuss step-by-step, how you would carry out clinical examination of this system.
  - b) Discuss in short, factors associated with lameness in a dairy production system.
  - c) Discuss the differences in approach when you are clinically examining cattle and pigs.
2. a) Postural reactions evaluation makes up part of a detailed neurological examination; write short notes on the evaluation of the following reflexes.
  - i) Placing reflex
  - ii) Extensor postural thrust
  - iii) Proprioceptive positioning
- b).
  - i) Write short notes on the technique for evaluating pulse in a dog.
  - ii) Write detailed notes on the data sought after and likely findings from an

oxen by using a stethoscope as part of cardiac evaluation.

- iii) Draw a normal electrocardiogram (ECG) tracing and label the important features.

3. The British High Commissioner brings his much-loved nine-year-old mongrel to your clinic. History reveals that the dog has been coughing and weak for the past one week and the condition is getting worse.
- a) What other relevant points would you want to know from the client?
  - b) How would you proceed with the examination of this patient?
  - c) What other tests would help you arrive at a diagnosis?

## SECTION B

4. A six-months-old crossbreed dog is presented to UNZA VET CLINIC showing signs of pruritus.
- a) Define pruritus and list conditions that would cause pruritus in dogs.
  - b) Describe how you would systematically examine this patient to arrive at a definitive diagnosis?
  - c) What laboratory tests would you carry out to rule out some conditions mentioned in (a) above?
  - d) Define any four of the following:
    - i) Macule.
    - ii) Pustule.
    - iii) Vessicle.
    - iv) Hypertrichosis.
    - v) Ulcer.
5. Most infectious diseases of domestic animals are characterized by fever.
- a) Define fever.
  - b) What are the clinical signs of fever?
  - c) With the aid of a well-labeled diagram, describe the stages of fever.
  - d) Briefly describe the pathogenesis of fever.

6. Hypoxia and respiratory failure are the principal causes of most clinical signs seen in respiratory diseases of cattle.

- a) Define the underlined terms.
- b) Describe the various types of hypoxia and their causes.
- c) Describe the types of respiratory failure and their treatment.

7. Write briefly on the following:

- a) The differences between ptyalism and psuedoptyalism.
- b) The differences between vomiting and regurgitation.
- c) Causes of halitosis and dysphagia.
- d) The relevant diagnostic tests in the investigation of hematoemesis in a dog.

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



**THE UNIVERSITY OF ZAMBIA  
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DEPARTMENT OF CLINICAL STUDIES**

**2007/8 ACADEMIC YEAR FIRST SEMESTER  
FINAL EXAMINATIONS**

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

**TIME: THREE HOURS**

**INSTRUCTIONS:**

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

1. a) Describe the indications and procedure of the following techniques.
    - i) Auriculopalpebral nerve block in the cow
    - ii) Cornual nerve block in the cow
    - iii) Cranial epidural in a pig
    - iv) Cambridge method paravertebral nerve block in the cow
  - b) Briefly describe the methods of local analgesia that you can use to castrate a horse.
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2. Haemostasis is an important adjunct to good surgical technique.
    - a) Discuss the importance of adequate haemostasis in veterinary surgery and possible sequela of poor haemostasis.
    - b) List five broad categories of methods of achieving haemostasis available to the veterinary surgeon.
    - c) Discuss three of the five methods listed in (b) above.

3. You are a private practitioner in Mansa district and a visiting expatriate medical doctor presents to you a recumbent, 35 kg Rottweiler with severe dehydration. You examine the dog and the mucous membranes are pale and tacky, the pulse is weak and thready, the extremities are very cold and the orbits are sunken. The dog also has a Packed Cell Volume (PCV) of 11%.
- a) What is your tentative diagnosis?
  - b) List three possible causes of the condition named in a) above.
  - c) What other clinical signs would you see associated with the tentative diagnosis?
  - d) What would your immediate action be?
  - e) After thoroughly examining the patient, you decide that you need to give blood, how much blood would you give and how? What would be your criteria for choosing a blood donor?

## **SECTION B**

4. Describe how you would completely anaesthetise an adult horse that requires elective surgery that would last about an hour (include preparation, premedication, induction and maintenance of anaesthesia). Discuss the concerns you would need to bear in mind in an anaesthetized and recumbent horse.
5. Briefly describe the pre-anaesthetic considerations and anaesthetic protocol for each of the following:
- a) An eagle with a snare on its leg
  - b) Five guinea pigs for health screening
  - c) A two-month old Great Dane for tail docking
  - d) A python for radiography
  - e) A baboon with extensive burns
6. A wound is a disruption in the normal anatomic continuity of an organ, particularly skin.
- a) What is a degloving wound?
  - b) How would you manage such a wound in an equine patient? Include any pre-, intra- and postoperative considerations you would make to ensure successful management.
  - c) What are the possible complications of your management in (b)?

7. Euthanasia is defined as pain-free or stress-free death

- a) Discuss briefly **six** criteria used for evaluating methods of euthanasia.
- b) List **three** disadvantages of using carbon dioxide for euthanasia.
- c) Give **two** euthanasia options for each of the following:
  - i) Fish
  - ii) A litter of kittens
  - iii) Laboratory mice
  - iv) A rabbit
  - v) A hyena

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

**THE UNIVERSITY OF ZAMBIA  
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DEPARTMENT OF CLINICAL STUDIES  
2007/8 ACADEMIC YEAR FIRST SEMESTER FINAL EXAMINATIONS**

**VMC 611: CLINICAL VETERINARY MEDICINE III**

**TIME: THREE HOURS**

**INSTRUCTIONS:**

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

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**SECTION A**

**1.** You are a veterinary officer in Choma and a farmer reports to you that eight of his twelve horses have developed fever and have nasal discharge. The farmer informs you that about six months ago he had imported a horse for Polocross from Zimbabwe, but it is not one of the ones affected. You go to the farm and after carrying out a physical examination you find that rectal temperature ranges from 40-41 °C, lymph nodes of the neck region are markedly swollen, serous nasal discharge and in one horse the discharge is turning mucopurulent. There is also conjunctivitis, respiratory stertor and dyspnea in most of the affected horses. One of the horses has a discharging abscess on the left parotid area. All the affected horses are anorexic and lethargic.

- a) What is your diagnosis?
- b) What causes this condition?
- c) What are your differential diagnoses?
- d) How would you confirm your diagnosis?
- e) How would you go about managing this condition?
- f) How is this disease prevented?

**2.** Renal disease in small animal practice is a relatively common problem with many possible causes.

- a) Briefly outline the differences between azotemia and uraemia.
- b) How would you distinguish between acute and chronic renal failure, clinically and with regards to laboratory findings, in a dog?
- c) When would you recommend performing contrast urethrocytography as opposed to excretory urography in a patient with azotemia?
- d) List the clinical signs you would expect in a case of urethral obstruction in a cat.

3. Compare and contrast infectious meningoencephalitis and cerebrocortical necrosis in cattle at a feedlot taking into account the aetiology, pathology, clinical signs and disease management.

## **SECTION B**

4. Compare and contrast hip dysplasia and degenerative myelopathy in terms of cause, clinical presentation, diagnosis and treatment.

5. A 15-month old Doberman pinscher with no history of vaccination is presented to UNZA VET Clinic with complaints of vomiting, melena, haematemesis and increased thirst for the last two weeks. You physically examine the patient and find that the dog is pyrexia and has widespread mucosal petechiae.

- a) What is your tentative diagnosis?
- b) Describe the pathogenesis and other clinical signs you would see in the condition named in a) above
- c) List the differential diagnoses.
- d) How would you manage the case and what advice would you give the owner ?

6. You are presented with a kitten that is anorexic and has high fever. The owner has been giving the kitten paediatric antibiotic syrup for the last two weeks but there has not been any improvement.

- a) What is your tentative diagnosis?
- b) How is the condition in a) transmitted?
- c) What other clinical findings would you expect to see on thorough physical examination?
- d) How would you confirm your diagnosis and what would be your treatment plan?

7. After examination of the reported sick cattle belonging to Chiledze's feedlot, you notice that most of the affected animals are between six and twelve months old. These animals also have very high fever, appear dull, are possibly blind and have difficulties in breathing.

- a) What is your tentative diagnosis?
- b) What is the aetiology, pathogenesis and complete clinical picture of this disease?
- c) How do you diagnose and manage this disease?

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

**THE UNIVERSITY OF ZAMBIA  
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DEPARTMENT OF CLINICAL STUDIES**

**2007/8 ACADEMIC YEAR FIRST SEMESTER  
SUPPLEMENTARY EXAMINATIONS**

**VMC 611: CLINICAL VETERINARY MEDICINE III**

**TIME: THREE HOURS**

**INSTRUCTIONS**

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

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**SECTION A**

**Question 1**

A client contacts you with a complaint that his seven year old mare is refusing to move out of the stable. You rush to the stables and carry out a thorough physical examination of this mare. All parameters are within normal range, but you discover infected wounds on the distal aspects of both the hind limbs. These limbs are also markedly swollen and very painful. There are subcutaneous nodules, especially around the fetlock. Some of these nodules have ulcerated and are releasing a purulent discharge.

- a) What is your diagnosis?
- b) What are your differential diagnoses?
- c) How would you confirm your diagnosis?
- d) Describe in detail how you would manage this condition?
- e) How is this disease prevented?

**Question 2**

A six-year-old Labrador that you have been treating for lymphosarcoma presents with signs of ocular pain and according to the owner sometimes bumps into people. On closer examination you notice that the dog also has hyphema, myosis and a sluggish pupillary light reflex.

- a) What is your tentative diagnosis?
- b) List three (3) other findings that may be associated with this condition?
- c) Describe the diagnostic tests you would carry out to arrive at a definitive diagnosis.
- d) How would you treat this patient?
- e) List five (5) possible sequelae to this condition.

### **Question 3**

You are presented with a cow that has been off feed for the past two days. On clinical examination, you find that the cow is emaciated and pyrexia, the mucous membranes are icteric and it passes red urine.

- a) What is your tentative diagnosis?
- b) What is the aetiopathogenesis of this condition
- c) Give three differential diagnoses for this condition, stating how you would differentiate them from the condition you have given in a) above.
- d) How would you treat and control the condition you have stated in a) above?

## **SECTION B**

### **Question 4**

A four-year-old cat presents with blepharospasm, conjunctival hyperemia, mucoid ocular discharge, chemosis and sneezing.

- a) What is your tentative diagnosis?
- b) What are the possible causes of this condition?
- c) Outline your diagnostic plan.
- d) Describe in detail how you would manage this case including client education.

### **Question 5**

An emaciated bull is presented to your clinic for an expert opinion and treatment. On clinical examination, you notice that the bull is showing signs of pain especially on palpation of the abdomen, has an arched back and yellowish mucous membranes.

- a) What is your tentative diagnosis?
- b) What other clinical signs would you expect to find and how would they arise?
- c) How would you reach a definitive diagnosis of this disease?
- d) How would you treat this disease?

### **Question 6**

Discuss toxoplasmosis in cats with regard to aetiology, transmission, lifecycle, clinical features, treatment and public health significance.

## Question 7

Mr. Wallace brings a dead foal to your busy equine practice and informs you that it died about an hour before coming to your clinic. He informs you that it was 3 months old and that it had not been well for 2 days. It had an acute onset of fever, a cough, nasal discharge and had difficulties in breathing. He goes on to say that he had treated it with penicillin the day he saw the clinical signs and was surprised that it had died so soon. You carry out a post mortem and some of the significant findings are lung abscesses and diffuse pneumonia. Other findings were ulcerations in the small intestine, typhilitis, colitis and lymphadenitis of the lymph nodes draining the intestinal tract.

- a) What is your diagnosis?
- b) What causes this condition and how is it transmitted?
- c) How would you confirm your diagnosis?
- d) What is the best drug combination you can use to treat this condition?
- e) What advice would you give Mr. Wallace on how he can prevent future occurrence of a similar problem on his horse breeding farm?

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



**THE UNIVERSITY OF ZAMBIA  
SCHOOL OF VETERINARY MEDICINE  
DEPARTMENT OF CLINICAL STUDIES  
2007 ACADEMIC YEAR FIRST SEMESTER FINAL EXAMINATIONS**

**VMC 621: VETERINARY OPERATIVE SURGERY II**

**TIME: THREE HOURS**

**INSTRUCTIONS:**

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

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**SECTION A**

- 1) Food animal surgery is in most cases avoided due to the cost of surgery and the reduction in productivity postoperatively. However, there are a number of surgical procedures that can be performed.
  - a. Explain in detail:
    - i. The indications for digit amputation in a dairy cow
    - ii. The amputation procedure including surgical preparation, anaesthesia and post operative care
    - iii. The contra-indications of the procedure described in ii?
  - b. Briefly outline the best two procedures of disbudding in cattle and advantages of disbudding as compared to dehorning.
- 2) A five-month-old boxer presents with two-hour-old bite wounds to the thorax. On examination, the puppy is severely dyspnoeic, and has subcutaneous emphysema around a small perforation on the left thoracic wall. There are also bleeding, puncture wounds on the right thoracic wall and neck area. Radiography reveals evidence of pneumothorax, pleural effusion and broken 8<sup>th</sup> and 9<sup>th</sup> ribs on the left side.
  - a) What would your immediate action be upon presentation of this patient?
  - b) Outline the pre-surgical preparation including the anaesthetic protocol you would use.
  - c) Describe how you would manage this case surgically, including post-operative care.
- 3) A case of a four-year-old Bull Mastiff with calculi in the renal pelvis and ureter is referred to UNZA from Chuundu Veterinary Services. Radiographs reveal two large spiculated calculi in the right renal pelvis and two small, round and smooth calculi in the right ureter. There is also mild hydronephrosis and mild ureteral distension. The left kidney looks small and knobbly.
  - a) How would you further proceed with this case in terms of diagnostics in order to facilitate management?
  - b) How would you surgically manage this case (Outline the detailed surgical procedure only. The use of line and sketch drawings is advised)?
  - c) What urinary tract-surgery-specific post-operative care/management would you administer?

## SECTION B

- 4) You are presented with a five-year-old male local breed dog with a primary complaint of severe ventral abdominal and genital wounds sustained during a baboon attack. Clinical examination reveals a normothermic dog with numerous bruises on the ventral abdomen, a lacerated scrotum with one soiled testicle hanging through the tear but contained within the *tunica vaginalis*. Examination of the penis reveals a lacerated prepuce and a severely traumatized distal penis of questionable viability and cut at the level of the *os penis*. Manipulation of the distal penis shows that it is just barely attached to the proximal penis by the *os penis*. An attempt to carry out urethral catheterization is unsuccessful.
- Outline in detail how you would surgically manage this case (use line/sketch drawings to aid in the description of the surgical procedure)
  - List the possible complications that may occur
  - What other alternative procedure would you have performed to manage this case?
- 5) Lameness is a disturbance in gait and locomotion as a response to pain or injury.
- What are the different classes of conditions responsible for lameness in small animals?
  - Choose one condition in each class and discuss the clinical presentation, diagnosis and management.
- 6) A gelding is presented to you with a swelling in the parotid area. After carrying out a physical examination you conclude that you might be dealing with a disease of the guttural pouches.
- List the various approaches to the equine guttural pouches.
  - Describe in detail any one of the approaches listed in (a) including anaesthesia, surgical technique, possible complications and advantages your chosen approach has over the others.
- 7) A Friesian cow is presented to you with a full-thickness eyelid cancerous lesion. It measures 3 cm in diameter and is located in the middle portion of the lower eyelid.

Discuss in detail how you would manage this case? (Include in your discussion, the name of the procedure, pre-operative preparation, anaesthesia, surgical technique, and post-operative care).

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END OF EXAMINATION

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

**2007 ACADEMIC YEAR FIRST SEMESTER  
FINAL EXAMINATIONS**

**VMC 631: THERIOGENOLOGY II**

**TIME: THREE HOURS**

**INSTRUCTIONS:**

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

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**SECTION A**

1. A dairy farmer calls you to see one of his high yielding Holstein-Friesian cows that is 80 days postpartum, and was exhibiting frequent estrus a month ago but is now anestrus. Worried that it may lead to extension of the calving interval he pleads with you to examine it. Upon palpation *per rectum* of the reproductive tract you find that the right ovary is 6x6x5 cm with a follicular structure that has a thick wall and is 4 cm in diameter. The left ovary is 3x3x2 cm with a *corpus luteum*.
  - i. What would your tentative diagnosis be?
  - ii. Explain the mechanism that leads to the development of the condition.
  - iii. How would you manage the condition?
  - iv. What advice would you give to the farmer regarding the condition of his cow?
2. A sexually mature doe should show cyclic estrus during the normal breeding season. Failure of estrus implies a number of diverse causes.
  - i. List **four (4)** causes of anestrus in the doe.
  - ii. Discuss in detail how you would treat/manage and prevent this condition in the doe with respect to each cause you listed in (a).
- 3(a). An eight-year-old bitch last seen on heat 2 years ago is presented to you for examination because the owner wants it to breed. Upon examination you notice that the abdomen is distended and radiography and ultrasonography reveal a mass in the abdomen.
  - i. List **five (5)** differential diagnoses.
  - ii. An exploratory laparotomy reveals an enlarged right ovary and a small atrophied, inactive left ovary, a uterus with little tone and a small amount of fluid. What would your definitive diagnosis be?
  - iii. List your treatment options for the condition in (ii) above.

- iv. Explain the advantages and disadvantages of your treatment of choice in (iii) above.
- 3(b). Vaginal discharge in the bitch may or may not imply some pathological condition.
- i. List four differential diagnoses of vaginal discharge in the bitch (two normal and two pathological).
  - ii. Describe how you would treat/manage one of pathological conditions in (i) above.

## SECTION B

4. A dairy farm east of Lusaka comprising 150 Guernsey cows which are showing signs of infertility such as, repeat breeding, irregular estrous cycles, low pregnancy rates and early abortions.
- i. Which two very important reproductive diseases of cattle would you suspect?
  - ii. How would you differentiate them?
  - iii. What treatment and control measures would you employ for each disease?
5. You are called to Nkumba farm to examine a fat sow that farrowed some 48 hours ago but is not nursing its piglets. The sow is in sternal recumbency, anorexic sluggish and shows signs of tiredness. On physical examination you notice some cyanotic spots on the skin, increased lochial discharge and a rectal temperature of 42°C.
- i. What disease condition would you suspect?
  - ii. Describe its pathogenesis.
  - iii. What are the predisposing factors to the condition in (i).
  - iv. How would you treat and prevent this condition?
6. A severely depressed mare showing signs of rhinitis is brought to your clinic for a thorough clinical examination. History indicates that the mare aborted nine months after being serviced by a stallion.
- i. Which infectious reproductive disease would you suspect?
  - ii. Following your clinical examination, what would be your other clinical findings?
  - iii. What would be your differential diagnoses?
  - iv. How would you control and/or prevent this disease?
7. Describe in detail how you would carry out a breeding soundness examination of a bull. Include all parameters one should consider while performing physical and laboratory examination.

END OF EXAMINATION

**THE UNIVERSITY OF ZAMBIA**  
**UNIVERSITY FIRST SEMESTER EXAMINATIONS**  
**AUGUST/ SEPTEMBER 2007**

**VMD 511**  
**VETERINARY CLINICAL PATHOLOGY**

**TIME: THREE HOURS**

**ANSWER: ALL QUESTIONS**

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**Question 1**

Answer all of the following:

- i. What is meant by a Differential white blood cell count?
- ii. Briefly describe its significance in disease diagnosis.
- iii. In detail explain how ~~do~~ carry out a differential white blood count?
- iv. What would be the significance of an eosinophilia.

**(20 marks)**

**Question 2**

Describe each of the following:

- i. How to carry out an Erythrocyte sedimentation rate and its significance
- ii. How to do platelet count
- iii. Regenerative anaemia and its characteristics
- iv. Anticoagulants and their importance

**(20 marks)**

**Question 3**

A dog is presented to your hospital for a blood transfusion. Describe in detail the indications for carrying out a blood transfusion, Immunological considerations before the transfusion, Choice of a donor, Collection procedure on a donor and the administration procedure to the to the recipient.

**(20 marks)**

**Question 4**

Describe the different cytological findings in the following canine neoplastic conditions:

- i. Lymphoma,
- ii. Mastocytoma,
- iii. Histiocytoma,
- iv. Plasmocytoma
- v. TVT

Furthermore describe how these conditions differ from each other ?

**(20 marks)**

**Question 5**

Write short notes on:

- i. Differences between avian haematology and mammalian haematology
- ii. Difference between transudates and exudates
- iii. Advantages of exfoliative cytology in the practice of clinical pathology
- iv. Suitable specimens for the laboratory diagnosis of Foot and Mouth Disease, CBPP, Rabies, Haemorrhagic Septicaemia and Anthrax in cattle.

**(20 marks)**

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**END OF EXAMINATION**

**THE UNIVERSITY OF ZAMBIA  
UNIVERSITY FIRST SEMESTER EXAMINATIONS  
AUGUST/SEPTEMBER, 2007**

**VMD 521  
INFECTIOUS DISEASES OF LIVESTOCK**

**TIME: 3 HOURS**

**TOTAL MARKS: 100**

**INSTRUCTIONS: ANSWER ALL QUESTIONS**

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**Question 1**

Discuss the constraints for the control of Foot and Mouth Disease in Zambia, keeping in mind the epidemiological status of the disease in the country.

**(10 marks)**

**Question 2**

Describe the clinical symptoms of highly pathogenic avian influenza (HPAI) in chickens and discuss the measures that Zambia should undertake in order to prepare for the disease outbreak. **(10 marks)**

**Question 3**

Discuss the current status of African Swine Fever (ASF) in Zambia and in your own view, what do you think the government should do to encourage community participation in the control of the disease. **(10 marks)**

**Question 4**

- i. Describe the epidemiological diagnosis of Bluetongue. **(5 marks)**
- ii. You are a District Veterinary Officer (DVO) and while you are away, you receive a report of a disease outbreak with heavy rains for weeks, a large number of mosquitoes, and influenza-like condition in humans. Name the disease you suspect. **(5 marks)**
- iii. Send a report of clinical and pathological diagnosis to the Livestock officer in the district to assist him with diagnosis of the disease as well as measures to be taken. **(5 marks)**

- iv. Define rabies and give a detailed account of the pathogenesis in cats as such justifying the diagnosis of the disease both in and outside the laboratory. **(5 marks)**

### **Question 5**

As a Chief Veterinary Officer in Charge of Contagious Bovine Pleuropneumonia (CBPP) disease control and management in the country:

- i. Outline factors that would lead to a massive outbreak of the disease in the country. **(5 marks)**
- ii. Discuss the clinical signs, diagnosis and control measures of the disease. **(5 marks)**
- iii. Explain why vaccination of CBPP is usually considered a controversial measure. **(5 marks)**

### **Question 6**

- i. Discuss the transmission and control of bacterial mastitis. **(5 marks)**
- ii. How many forms of mastitis can be identified? **(5 marks)**
- iii. Explain the best way of handling the treatment of mastitis, when you have a fully equipped diagnostic laboratory. **(5 marks)**

### **Question 7**

As a new House Surgeon at UNZA VET, you go to a farm where you are presented with a Boran yearling that is demonstrating the following clinical picture:

A suppurating puncture wound of 2 weeks duration on the caudal gluteus fold of the rump. The animal walks with a stiff gait and extended head with legs spread in a sawhorse stance.

You immediately administer a shot of long acting tetracycline (OXYJECT® 20% L.A), and two days later you visit the farm and still no improvement and the animal even lies down on its side.

Given the presenting clinical signs,

- i. What do you think you are dealing with? Define the named disease



- giving its familiar and unfamiliar manifestations. **(2 marks)**
- ii. On the farm, there is a simple, but key sign of diagnosing this disease. Briefly describe how you can conduct this key sign of diagnosis? **(5 marks)**
- iii. Give at least three predisposing factors that could have lead to the yearling having this condition? **(3 marks)**
- iv. The farmer is afraid of the other animals in the herd. Using terms that the farmer can understand, outline your course of action that you will institute on this farm, including prevention and treatment, giving details of the names of the vaccines and medicines you can use if applicable. Indicate the preferred routes of administration, and product names available in Zambia. **(10 marks)**

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**END OF EXAMINATION**

**THE UNIVERSITY OF ZAMBIA**  
**UNIVERSITY FIRST SEMESTER EXAMINATIONS**  
**AUGUST/ SEPTEMBER 2007**

**VMD 531**  
**VETERINARY EPIDEMIOLOGY**

**TIME: THREE HOURS**

**ANSWER: ALL QUESTIONS**

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**Question 1**

The following data comprises of specimen 3-week weaning weights (kg) of two groups (A and B) of piglets:

**Group A**

4.2, 4.6, 4.7, 5.2, 5.2, 5.3, 5.3, 5.4, 5.4, 5.4, 5.5, 4.8, 4.9, 5.5, 5.5, 5.6, 5.7, 5.8, 5.9, 5.9, 6.0

**Group B**

2.6, 3.4, 3.6, 3.8, 3.9, 4.0, 4.0, 4.1, 4.2, 4.3, 4.3, 4.3, 4.4, 4.4, 4.4, 4.4, 4.5, 4.6, 4.7, 4.8, 5.0

- i) Calculate the sample mean and variance for both groups.
- ii) Given that the two groups are samples from different populations with means  $\mu_1$  and  $\mu_2$  and a common unknown variance  $\sigma$ , test the hypothesis that there is no difference in 3-week weaning weights between the two groups (i.e.  $\delta=0$ ) using the Student's t-test of significance at 0.1 significance level.

**(15 marks)**

**Question 2**

A screening test revealed 80 cattle positive for a certain infectious disease out of a total herd of 900. On culturing, 68 of the test positive cattle were confirmed as infected. A random sample of the test negative cattle also revealed that 10% of these were actually infected.

- a) From the data construct a 2 x 2 Table filling in all the details.
- b) Calculate
  - i) True and Apparent prevalence and define and state the significance of the two types of prevalence.

- ii) Sensitivity and Specificity of the screening test.
- c) Using appropriate illustrations for your answer compare and contrast cluster and multistage sampling highlighting important aspects of the methods.

**(20 marks)**

### **Question 3**

- a) Define and classify carrier state. Using an example outline the significance of this state in relation to disease control? What do you understand by antigenic variation?
- b) Name and briefly describe the methods of disease transmission.
- c) Briefly discuss the concept of multi-factorial nature of disease explaining how man and soil can act as environmental determinants of disease.
- d) Define the following terms, briefly mentioning their significance:
  - i) Power of the test
  - ii) Attack rate
  - iii) Experimental population
  - iv) Endemic pulsations

**(15 marks)**

### **Question 4**

- a) Sampling is an important technique in Veterinary Epidemiology. In your discussion, justify the use of sampling in a particular population for:
  - i) Detecting disease presence
  - ii) Proving that a disease is not present
- b) An area with a total cattle population of 10,000 is thought to have Rift Valley fever with a probable prevalence of 30%. Determine the sample size required to estimate the true prevalence with a bound on error of estimation at 5% and confidence level 95%.
- c) Define the following terms:
  - i) Sampling unit
  - ii) Sample
  - iii) Sampling fraction
- d) Briefly describe any two (2) sampling methods and state when it is appropriate to use them. **(15 marks)**

Question 5

- a) Name three types of observational studies and briefly explain what occurs in each. State the major difference between observational and experimental studies.
- b) You are a District Veterinary Officer and a Veterinary Assistant reports that he had come across a herd of cattle with some animals limping, salivating and smacking the lips. How would you react to this information?
- c) What is the primary objective of monitoring and/or surveillance? How is CBPP monitored in Zambia?
- d) A disease breaks out in a certain area and you are called in to investigate this outbreak. Name any three major questions on which your investigation is likely to be based. How would you go about finding answers to these questions (be brief)?

(20 marks)

Question 6

The following data was obtained from a retrospective study to determine the individual prevalence of bovine tuberculosis in interface herds (IFH) and transhumance herds (TRH) in wildlife livestock interface areas of Zambia by virtue of their interaction with infected wildlife.

	TB +	TB -	
Exposed IFH	29	250	279
non exposed TRH	11	296	307
	40	546	586

- a) Using the above information, calculate the RR and interpret your results.
- b) Define the following terms:
  - i) Sufficient cause
  - ii) Necessary cause
  - iii) Predisposing factor
  - iv) Precipitating factor
  - iv) Confounding factor
- c) What do you understand by association? Name and describe types of association.

(15 marks)

END OF EXAMINATION

**THE UNIVERSITY OF ZAMBIA**

**UNIVERSITY FIRST SEMESTER SUPPLEMENTARY EXAMINATIONS**  
**OCTOBER 2007**

**VMD 531**

**VETERINARY EPIDEMIOLOGY**

**TIME:        THREE HOURS**

**ANSWER:    ALL FIVE QUESTIONS**

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1. (a) In a trial to determine the impact of depriving piglets of colostrum on their weaning weights, Group A of a sample of piglets was manually fed colostrum while Group B was not. Weaning was at 6 weeks with the following weights:

Group A

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

Group B

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

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

Calculate for Group A showing calculations:

- (i) The mode
  - (ii) The median
  - (iii) The arithmetic mean
  - (iv) The confidence interval
  - (v) Using the above statistics compare and contrast between the two groups
- (b) As a follow-up to a disease report received on the 22 of April, 2000, you visit the affected farm on 23<sup>rd</sup> of April to investigate and collect specimen. You revisit the farm exactly a month later to report back on your findings and provide recommendations on possible control measures. You have the following basic data:
- Total herd size on 23<sup>rd</sup> April was 800
  - Number of sick animals on the same day was 30
  - Number of animals becoming sick between 23<sup>rd</sup> April and 23<sup>rd</sup> May is 100
  - Number of deaths from the disease during same period is 20.



Calculate:

- (i) Attack rate
- (ii) Incidence rate for the specified period
- (iii) Prevalence rate on April 23<sup>rd</sup>. How would you call rate?
- (iv) Mortality rate
- (v) Case fatality rate

**20 points**

2. An area with a total cattle population of 10,000 is thought to have EBL with a Probable prevalence of 30%.

- (a) Determine the sample size needed to estimate the prevalence with a bound on error of estimation equals 5% and confidence level 95%.
- (b) What would be the sample size required to detect at least 1 animal with EBL in this population at 95% confidence level?
- (c) A screening test revealed 62 cattle positive for a certain infectious disease out of a total herd of 700. Out of the 62, only 48 were confirmed positive by culture. Specimen were also collected from a random sample of the test negative cattle and on culture, it was revealed that 10% of these animals was actually infected.

(i) From the data, construct a 2 x 2 table filling in all the details.

(ii) Calculate:

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

(d) Name and briefly describe the requirements of diagnostic tests. What are the specialised uses of diagnostic tests?

**25 points**

3. (a) Define and classify carrier state. What do you understand by antigenic variation?

(b) Name and briefly describe the methods of disease transmission.

(c) Briefly explain how the soil acts as an environmental determinant of disease.

(d) Briefly describe the basic epidemic theory. State the factors that influence the shape of epidemic curves.

(e) State the difference between observational and experimental studies. Why do veterinarians require knowledge of the principles of the design and conduct of field trials?

**12points**

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

(b) Define the following terms:

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

(c) Consider the following data derived from testing blood samples for antibodies to *Brucella abortus* using the Tube agglutination (TAT) and complement fixation (CFT) tests. All intermediate level titres were designated as positive for current purposes.

	CFT+	CFT-	TOTAL
TAT	38 (a)	29 (s) (b)	67
TAT-	21 (r) (c)	1749 (d)	1770
Totals	59	1778	1837 (n)

Note that all cell entries are pairs and not individuals i.e. 38 samples were positive on both tests)

- (i) Using the Chi-square test, find out if the proportion positive in the TAT (67/1837) is significantly different from the proportion positive in the CFT (59/1837).
  - (ii) Interpret your results.
- (d) Suppose you wish to compare the 305 day milk production (Y) of cows with clinical mastitis (M+) to those without (M-). You are informed that the control cows (i.e. M-) were maternal siblings of the affected cows. You have the following milk production for the two groups:

GROUP 1 M+	GROUP 2 M-	DIFFERENCE d
128	142	-14
133	143	-10
123	134	-11
141	155	-14
129	141	-12

- (i) Using the Student's t-test and the significance level of 1% (probability level of 0.01), determine if there is a significant difference in milk production between the two groups.
- (ii) Interpret your results

30 points

5. (a) Define surveillance/ Monitoring. What is the primary objective of Surveillance/Monitoring.
- (b) At any level, effective surveillance will depend on a number of considerations. Briefly describe these considerations.
- c) 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)?
- d) What are the general objectives of investigating outbreaks? What do you understand by the following terms:
- i) Outbreak
  - ii) Outbreak investigation
- 13 points**
- 

**END OF EXAMINATION**



**THE UNIVERSITY OF ZAMBIA**  
**UNIVERSITY FIRST SEMESTER EXAMINATIONS**  
**AUGUST/SEPTEMBER, 2007**

**VMD 641**  
**VETERINARY PREVENTIVE MEDICINE**

**TIME: 3 HOURS**

**TOTAL MARKS: 100**

**INSTRUCTIONS: ANSWER ALL QUESTIONS**

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**Question 1**

- a) Define Veterinary Preventive Medicine (VPM).
  - b) How is VPM related to Epidemiology?
  - c) Name and briefly describe the evolutionary phases of Livestock Production Systems.
  - d) How do the individual systems relate to livestock disease occurrence?
  - e) How is the livestock movement control enforced generally and in Zambia particularly?
- (12 marks)**

**Question 2**

- a) What are the requirements of an ideal vaccine? Briefly discuss the advantages and disadvantages of mass immunization.
  - b) Briefly discuss factors influencing the animals' response to vaccination.
  - c) Define and classify Environmental Hygiene. What is Environmental Control and how is it done?
  - d) What is disinfection? Briefly describe disinfection methods.
- (12 marks)**

**Question 3**

- a) Briefly define and describe the Test and Slaughter Method.
  - b) What is Depopulation and under what circumstances is it put into use.
  - c) Name and briefly describe the main Vector Control strategies; which one is the most applicable for Zambia and why?
  - d) List the issues involved in planning disease control programmes.
- (12 marks)**

#### Question 4

- 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.
  - c) Discuss performance targets and shortfalls in herd health and productivity schemes.
  - d) What are the main causes of reproductive inefficiency in the dairy herd and how would you get rid of them?
  - e) Briefly how would you assess the mastitis status of the dairy herd?
- (15 marks)**

#### Question 5

- a) What is the major objective of a beef cattle herd health programme? What is a weaner calf crop?
  - b) List the type of farm records you would require for an assessment of the annual performance of the beef herd.
  - c) What is the primary objective of a herd health programme in the feedlot?
  - d) What are the major causes of production and reproductive inefficiency in the swine herd?
- (12 marks)**

#### Question 6

- a) What are the objectives of studying 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) Give a brief description of any fish disease you have learnt about. How would you treat or prevent this disease?
  - d) Briefly discuss the diagnostic methods in fish diseases.
- (12 marks)**

#### Question 7

- a) With the help of a diagram indicate the transmission cycle of *Salmonella enteritidis*.
  - b) Clearly indicate the clinical symptoms and control measures of *Salmonella enteritidis* disease at the hatchery level.
  - c) Discuss the clinical and gross pathological diagnosis of Infectious Bursal Disease (IBD).
  - d) The age of poultry submitted for diagnosis of a number of diseases is an important consideration. Justify this suggestion by listing at least six (8) viral poultry diseases with their susceptibility ages.
- (12 marks)**

### **Question 8**

- a) Before conducting a game capture exercise, there are cardinal points to consider for it to be successful. Comment on these points explaining why they are important.
  - b) Briefly, outline at least four (4) components of consumptive wildlife utilization in Zambia.
  - c) Discuss the following diseases, outlining predisposing factors and preventive measures you would initiate to control them:
    - (i) Necrotic Enteritis (Crocodile gout)
    - (ii) Rabies in Jackals
- (13 marks)**

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**END OF EXAMINATION**

**THE UNIVERSITY OF ZAMBIA**  
**UNIVERSITY FIRST SEMESTER EXAMINATIONS**  
**AUGUST/SEPTEMBER, 2007**

**VMD 651**

**VETERINARY PUBLIC HEALTH**

**Time: 3 hours**

**Total Marks: 100**

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

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**SECTION A (60 MARKS)**

**Answer all questions in this section**

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**QUESTION 1**

State at least three known food sources and symptoms in humans of the following disease syndromes:

- a. Salmonellosis (2.5 marks)
- b. Campylobacteriosis (2.5 marks)
- c. Listeriosis (2.5 marks)
- d. Cholera (2.5 marks)

Define the following terms as concisely as possible:

- a. Intravital intoxication (2.5 marks)
- b. Type A outbreak (2.5 marks)
- c. Clonal expansion (2.5 marks)
- d. Infection (2.5 marks)

**(20 marks)**

## QUESTION 2

a. Give a precise and concise definition of the following terms:

- i. Veterinary Public Health **(2 Marks)**
- ii. Pasteurization **(2 Marks)**
- iii. Food hygiene **(2 Marks)**
- iv. Zoonoses **(2 Marks)**
- v. Water activity **(2 Marks)**

b. Answer the following:

- i. Name at least 4 important pathogenic agents that can be transmitted through milk. **(2 Marks)**
- ii. Name at least 4 important pathogenic agents that can be transmitted through fish. **(2 Marks)**
- iii. Name at least 4 important pathogenic agents that can be transmitted through chickens. **(2 Marks)**
- iv. Name the three components of risk analysis. **(1.5 marks)**
- v. List the five steps required before implementing the HACCP principles. **(2.5 marks)**

**(20 marks)**

## QUESTION 3

- a. Briefly describe how meat quality is affected by stress in physiological and microbiological terms and ways in which animals may be stressed prior to and during slaughter. **(5 marks)**
- b. Define, compare and contrast a slaughter slab, a slaughter shelter and a slaughterhouse. **(5 marks)**
- c. In food plant sanitation, a number of factors can affect the efficacy of disinfectants and sanitizers used. Briefly outline these factors and give at least three methods of disinfection used in the food industry. **(10 marks)**

**(20 marks)**

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## SECTION B (40 MARKS)

Answer only **two (2) questions** from this section

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### QUESTION 4

You are a Veterinary Public Health Official recently appointed to run the outbreak investigation unit at the Centre for Infectious Disease Control and Research. Your first assignment is to train your staff on the epidemiology of foodborne diseases in humans. Give a concise description of causal components and sequence of events involved in the facilitation of infection in humans.

**(20 marks)**

### QUESTION 5

- a. Assume you work for a fish factory and observed a ballooning fish on the sorting table.
  - i. Discuss the characteristics of good quality fish. **(5 marks)**
  - ii. What are the likely causes of this observation giving details on both causation and the process of degeneration? **(5 Marks)**
- b. As a farm manager on a dairy farm, how would you ensure that milk from your farm is safe, sound and wholesome? **(10 Marks)**

**(20 marks)**

### QUESTION 6

You are the Public Health Officer in Kazungula. You have received information of a situation following the funeral of one of the district officials where people ate food the night before the burial and got sick. Among the foodstuffs fed to mourners were eggs, chicken, beef, cabbage and nshima. The day after the burial, of the 100 people that were in attendance, 15 have been attended to at the local clinic with similar ailments. Twenty people ate eggs, chicken and nshima, of which 15 reported symptoms.

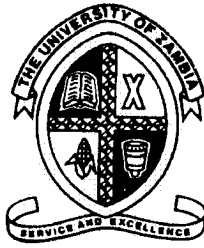
- a. Is this an outbreak? If so, what type of an outbreak is it? **(2 marks)**
- b. Outline the steps you would take to investigate the suspected outbreak. **(5 marks)**

- c. Assuming the 15 persons are showing symptoms of diarrhoea and vomiting. What steps would you take to diagnose the causative agent? (10 marks)
- d. If the symptoms included severe vomiting and stomach cramps within 2 hours of consumption of the affect food, what type of illness would you suspect and why? (3 marks)

**(20 marks)**

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**END OF EXAMINATION**



**THE UNIVERSITY OF ZAMBIA**

**FIRST SEMESTER EXAMINATIONS – AUGUST/SEPTEMBER 2007**

**VETERINARY PATHOLOGY I (VMP 41I)**

**TIME: THREE (3) HOURS**

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**SECTION A: Answer all questions in this section**

- Q1. (a) With examples **classify** and **list** the **causes** of degeneration and necrosis. (10 marks)
- (b) Discuss **fatty liver** in relation to its **causes** and **consequences**. (5 marks)
- Q2. (a) What are the clinical signs of anaemia? (4 marks)
- (b) What do you understand by Disseminated Intravascular Coagulation (DIC)? (4 marks)
- (c) Describe in detail the causes of congestion. (7 marks)
- Q3. (a) Write briefly on the cell types involved in the cellular response in an inflammatory reaction. (10 marks)
- (b) Briefly describe **chronic cellular inflammation**. (5 marks)



**SECTION B:** Answer question **one (1)** and any other **two (2)** questions in this section.

Q1. Write short notes on:

- (a) Polycythemia (5 marks)
- (b) Metastasis (5 marks)
- (c) Infarction (5 marks)
- (d) Icterus (Jaundice) (5 marks)
- (e) Catarrhal (mucoid) inflammation (5 marks)

Q2. (a) What factors affect the adequacy and quality of repair? (10 marks)

(b) What is granulation tissue and briefly describe its **microscopic** appearance. (5 marks)

Q3. (a) Define atrophy and discuss the causes, giving examples. (8 marks)

(b) Classify and discuss the **forms** of **prenatal** developmental anomalies that are associated with malformations. (7 marks)

Q4. (a) Give an account of the basic mechanisms by which neoplasms grow and spread. (5 marks)

(b) Briefly describe the systemic effects that may be associated with malignant neoplasms. (10 marks)

**END OF EXAMINATION**

**THE UNIVERSITY OF ZAMBIA**

**SCHOOL OF VETERINARY MEDICINE**

**UNIVERSITY FIRST SEMESTER FINAL EXAMINATION AUGUST 2007**

**VETERINARY BACTERIOLOGY AND IMMUNOLOGY (VMP 431)**

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

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**SECTION I: IMMUNOLOGY**

Q1. Antigen presentation plays a central role in activation of the immune system following an infection. Discuss antigen presentation under the following headings:

- a) Components of antigen presentation.
- b) Major steps of antigen presentation.
- c) Major histocompatibility complex molecules.
- d) Consequences of antigen presentation.

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

- a) Autoimmunity
- b) Common terminal pathway of complement activation
- c) Immunity against worms
- d) Immunoglobulin mu ( $\mu$ )
- e) Secondary lymphoid organs
- f) Natural passive immunity in mammals
- g) Fc region of immunoglobulins

## SECTION II: BACTERIOLOGY

Q1. Members of the genus *Mycobacterium* cause economically important diseases to livestock and man in Zambia. Describe the causative agent of tuberculosis in cattle under the following headings:

- a) Laboratory diagnosis and identification
- b) Source of infection /natural habitat of the bacteria
- c) Pathogenesis
- d) Treatment and control/prevention

Q2. Discuss the anatomy of the bacterial cell wall, with emphasis on the structure and principal components of the gram positive and negative bacteria.

Q3. a) Write brief notes based on the Biotyping, Phage typing and Antigenic structure as a method of characterizing *Salmonella*.

b) List the toxins produced by:

- i) Virulent *Escherichia coli*
- ii) *Clostridium perfringens*
- iii) *Clostridium tetani*

Q4. Discuss the process of infection and disease production by bacteria under the following headings:

- a) Entrance and establishment of bacteria within the host.
- b) Mechanisms of disease production.
- c) Types of bacteria infections.

# THE UNIVERSITY OF ZAMBIA

SCHOOL OF VETERINARY MEDICINE

FINAL EXAMINATIONS – SEPTEMBER 2007

VETERINARY PARASITOLOGY - VMP 441

**TIME:** THREE (3) HOURS

**ANSWER:** ALL QUESTIONS

**ALL QUESTIONS:** CARRY EQUAL MARKS

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## SECTION A: PROTOZOOLOGY

Q1. Describe in detail, the Phylum Apicomplexa. Discuss an over view of one genera of economic importance in Zambian livestock belonging to this Phyla.

Q2. Write brief notes on ALL of the following topics:

- a) Modes of transmission in protozoan parasites.
- b) Modes of reproduction in protozoan parasites.
- c) Intrinsic and extrinsic factors in the classification of protozoan parasites.
- d) Reproduction capabilities in parasitic infections.
- e) Common habitats of protozoan infections with specific examples.

## SECTION B: HELMINTHOLOGY

Q1. a) Describe in detail the differences and similarities that exist between the classes Trematoda and Cestoda.

b) With reference to *Taenia solium*, describe its life cycle stating why it is of public health significance.

Q2. Write short notes on ALL of the following topics:

- a) The 'dwarf tapeworm.'
- b) Pathological and economic significance of fasciolosis.
- c) Terrestrial and aquatic life cycles in cestodes:
- d) The pathogenicity of blood flukes.
- e) Transmission of *Fasciola* spp.

### SECTION C: ENTOMOMLOGY

Q1. Describe the morphological and biological characteristics of organisms belonging to the Order Diptera. Discuss in general, how these arthropods affect the well being and productivity of livestock.

Q2. Write short notes on ALL of the following topics:

- a) Growth and metamorphosis in arthropods.
- b) Pheromone system.
- c) Acari.
- d) Malpighian tubules.
- e) Reproduction in arthropods.

END OF EXAMINATION