

THE UNIVERSITY OF ZAMBIA
SCHOOL OF VETERINARY MEDICINE
DEPARTMENT OF BIOMEDICAL
FIRST SEMESTER EXAMINATIONS-JUNE 2004

1.	Veterinary Anatomy and Physiology	-	VMB 211
2.	Veterinary Histology	-	VMB 311
3.	Veterinary Histology	-	VMB 321
4.	Veterinary Medicine Biochemistry 1	-	VMB 331
5.	Veterinary Physiology	-	VMB341
6.	General Veterinary Pathology	-	VMP411
7.	Veterinary Bacteriology and Immunology	-	VMP 431
8.	Veterinary Pharmacology	-	VMB 451
9.	Clinical Veterinary Medicine 1	-	VMC 511
10.	Veterinary Clinical Pathology	-	VMD 511
11.	Principles of General Veterinary Surgery and Anaesthesiology	-	VMC 521
12.	Infectious Diseases of Livestock	-	VMD 521
13.	Veterinary Epidemiology	-	VMD 531
14.	Clinical Veterinary Medicine 111	-	VMC611
15.	Operative Veterinary Surgery 11	-	VMC 621
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17.	Veterinary Preventive Medicine	-	VMD 641

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

FIRST SEMESTER EXAMINATIONS – JUNE 2004

VMB 211
VETERINARY ANATOMY AND PHYSIOLOGY I

TIME: THREE (3) HOURS

INSTRUCTIONS:

ATTEMPT ALL QUESTIONS

ANSWER SECTIONS A and B IN SEPARATE ANSWER BOOKS

SECTION A – CYTOLOGY AND GENERAL HISTOLOGY

1. Define
 - i) Lysosomes 1 mark
 - ii) Cilia and Flagella 1 mark
 - iii) Extramedullary haematopoiesis 1 mark
 - iv) A neuron 1 mark
 - v) Blood 1 mark
 - vi) Sarcomere 1 mark

2. Outline and briefly describe the following:
 - i) the concepts of cell structure 2 marks
 - ii) the cellular cytoplasmic inclusions 10 marks
 - iii) modes of glandular secretions and give examples of each type 8 marks
 - iv) abnormal forms of erythrocytes 4 marks
 - v) the 3 types of animal responses regulated by the nervous system 3 marks

3. What are
 - i) the four (4) cell lines / series that arise from the multipotential stem cell during haematopoiesis? 4 marks
 - ii) the four (4) basic tissue types 2 marks

4. Discuss
 - i) the rough endoplasmic reticulum (RER) 5 marks
 - ii) the cellular Gap Junction (Nexus) 3 marks
 - iii) Prenatal haematopoiesis 5 marks
 - iv) the Ependymal cells of the CNS 5 marks
 - v. the brown adipose tissue 5 marks

SECTION B –GROSS ANATOMY

6. For each of the following bone prominences name one muscle that attach to it. Include for each muscle you mention its source of nerve supply. (10 marks)

- i) Supraglenoid tubercle
- ii) Ischial tuberosity
- iii) Greater trochanter
- iv) Olecranon
- v) Acromion

7. A dog is brought in the clinic. After careful physical examination you realize that the proximal part of the tibia moves abnormally caudally relative to the femur.

(10marks)

- i) Name the joint involved
- ii) Name the most likely structure involved in this abnormality
- iii) **list** the articulations of this joint
- iv) Name the synovial sacs of this joint.
- v) What are the main movements permitted by this joint?

8. (i) List the carpal bones in the dog. (2marks)

(ii) What articulations constitute the carpal joint? (2marks)

(iii) State the boundaries of the carpal canal. (2marks)

(iv) List **four (4)** muscles (and their actions) that acts on this joint. (4marks)

9. (I) Define the term bronchial tree. (1 mark)

(ii) Outline the ^{Palk} ~~pass~~ taken by air from the trachea to the alveoli? (1 mark)

(iii) Name the lobes of the right lung. (1 mark)

(iv). Name the three divisions of the mediastinum (1 marks)

(v) Draw a simple but well labelled diagram showing a transverse section of the nasal cavity of the dog. (6marks)

10. (i) Name the artery that supplies blood to forelimb. (1mark)

(ii) Name the two structures that the ligamentum arteriosum connects.

(1mark)

(iii) What is the coronary sinus? (1mark)

(iv) List the components of the conducting system of the heart. (1mark)

(v) Briefly describe the interior of the right atrium. (6marks)

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

THE UNIVERSITY OF ZAMBIA

SCHOOL OF VETERINARY MEDICINE

2004 ACADEMIC YEAR FIRST SEMESTER

FINAL EXAMINATIONS

VMB 311 :VETERINARY ANATOMY

TIME: THREE (3) HOURS

INSTRUCTIONS: ATTEMPT ONLY FIVE (5) QUESTIONS

1. Give a detailed account of the muscles associated with the penis in ruminants. Include their innervation in your account.

2. Describe the following parts of the female reproductive system of ruminants.
 - (i) ovary
 - (ii) uterine horns
 - (iii) cervix
 - (iv) vagina

3. Give a detailed description of the reticulum noting its form, position, chief relations, blood and nerve supply.

4. Describe the following structures in ruminants
 - (i) carpal canal
 - (ii) tarsal bones
 - (iii) spleen
 - (iv) subcutaneous abdominal (milk) vein

5. Outline the layers of the ventral and lateral abdominal wall in ruminants. Comment on the innervation of the ventrolateral abdominal wall.

6. Give an account of pleural reflections in ruminants under the following headings.

(i) cupula pleurae

(ii) caudal line of pleural reflection

7. Describe in detail the bovine forelimb fetlock joint.

END OF EXAMINATION

**THE UNIVERSITY OF ZAMBIA
SCHOOL OF VETERINARY MEDICINE
2004 ACADEMIC YEAR FIRST SEMESTER
FINAL EXAMINATIONS**

VMB 321: VETERINARY HISTOLOGY

TIME: THREE HOURS

**INSTRUCTIONS: There are seven (7) questions numbered 1, 2, 3, 4, 5, 6, 7.
ATTEMPT ANY FIVE QUESTIONS**

1.

- I. Compare and contrast the histological characteristics of an elastic artery and a muscular artery 5 MARKS
- II. List the five different types of capillaries and explain the main histological features of each. 5 MARKS
- III. List all the different components of the tunica mucosa of the GIT and show how these components differ between the stomach and the duodenum. 5 MARKS
- IV. Name three main glands found in the oral cavity and describe the histological features of 2 of them. 5 MARKS

2.

- I. Select one component of the conducting airway and one component of the gaseous exchange area of the lung and compare their detailed microscopic structures. 8 MARKS
- II. List all the cells that may be involved in the defence mechanisms of the respiratory system and state how these cells perform their defence functions. 4 MARKS
- III. Draw a diagram that depicts the locations of the following components on an ovarian graafian follicle: basement membrane; theca externa cells; zona pellucida; corona radiata; antrum; theca interna cells; zona granulosa. 8 MARKS

3.

- I. Name all the important stages that a spermatid must pass through during its metamorphosis into a spermatozoa. 6 MARKS
- II. Explain how the process of spermatogenesis is maintained indefinitely AND list all the components of the seminiferous epithelium. 8 MARKS
- III. Draw a diagram showing the following morphological features of a spermatozoa: acrosome, head, nucleus, neck region, end piece, middle piece. 6 MARKS

- *
I List the layers of the epidermis of the skin. How does the epidermis of the skin differ from the epidermis of the hoof?
6 MARKS
- II Name the three main components of the hoof and describe in detail the microscopic structure of the wall of the hoof.
6 MARKS
- III Why is it important to understand the microscopic structure of the mammary glands of ruminants? Describe the histological structure of the mammary gland of the ruminant including the duct system.
8 MARKS
5.
I Draw a diagram that clearly depicts the different histological components of a lymph node stating the function(s) of the main components.
10 MARKS
- II State the main functions of the spleen. Give detailed descriptions of the histology of the white pulp and red pulp.
10 MARKS
6.
I Briefly explain how the “releasing hormones” that are produced in the hypothalamus reach the adenohypophysis of the pituitary gland.
4 MARKS
- II What name is given to the technique used to determine whether a particular cell type in the adenohypophysis produces follicle stimulating hormone (FSH) or luteinizing hormone (LH)? 2 MARKS
- III Name seven (7) organs or tissues of the body that secrete hormones. Briefly describe the histology of the endocrine organs that are responsible for regulating blood calcium and phosphorus levels.
14 MARKS
7. Write short notes to describe the histological structures of the following:
- I Juxtaglomerular apparatus
II Endometrium
III Hepatic lobule
IV Cerebral cortex
20 MARKS

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA
SCHOOL OF VETERINARY MEDICINE
UNIVERSITY EXAMINATIONS – JUNE / JULY 2004
2004 ACADEMIC YEAR FIRST SEMESTER FINAL EXAMINATIONS

VMB 331 : VETERINARY MEDICINE BIOCHEMISTRY I

TIME : THREE (3) HOURS

INSTRUCTIONS: There are SEVEN (7) Questions in this Paper.
Answer both Questions 1 and 2 in Section A and any other three
Questions in Section B. Each Question carries 20 maximum
possible marks only.

SECTION A : ANSWER BOTH QUESTIONS

- Q1. Consider a saturated fatty acid Y and a carbohydrate Z, each containing six carbon atoms. When both Y and Z are each completely oxidised to carbon dioxide and water, Y produces a greater number of adenosine triphosphate (ATP) molecules than Z. Using relevant equations, explain this scenario and hence determine the number of ATP molecules generated by each compound.
- Q2. The enzymes of particular importance in the *de novo* synthesis of glucose that proceeds via pyruvate are located at the beginning and at the end of the pathway. Give detailed evidence to support this statement.

SECTION B : ANSWER ANY THREE QUESTIONS ONLY

- Q3. (a). Describe the structure and function of animal haemoglobin.
(b). What is the Bohr effect? Discuss its mechanism.
- Q4. (a). Describe, in detail, how you can experimentally clearly distinguish between the two major types of competitive and non-competitive enzymatic inhibitions.
(b). List four environmental factors that affect enzyme activity and then clearly explain how each of the listed environmental factors affects enzyme activity.

- Q5. Write short notes on each of the following:
- (a). Electrophoresis
 - (b). Dialysis
 - (c). Role of cyclic adenosine monophosphate (cAMP) in glycogen synthesis and degradation
 - (d). Pyruvate Kinase
- Q6. The precursor of all the steroid hormones is *cholesterol*, where the initial step in the pathway is the conversion of cholesterol to *pregnenolone* by the enzyme desmolase. 3β -hydroxysteroid dehydrogenase then converts pregnenolone to *progesterone*. Draw the three structures named in *italics* and suggest the result of an inherited disease which involves a deficiency of one or the other enzyme. Discuss the functions of the prostaglandins in an animal.
- Q7. State the two major purposes achieved by the enzymes of the phosphogluconate pathway. Give the names of all the enzymes and products starting with glucose-6-phosphate.
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END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY FIRST SEMESTER EXAMINATION – JUNE 2004

VMB 341 – VETERINARY PHYSIOLOGY

TIME: THREE HOURS

INSTRUCTIONS: ANSWER ANY FIVE QUESTIONS

1. Contrast and compare between somatic and autonomic nervous systems.
2. The importance of a healthy liver of a ruminant cannot be over emphasized. Discuss.
3. (a) Name two tissues that are commonly used in the laboratory physiological experiments to test drugs.
(b) Describe the effects of acetylcholine and adrenaline on these tissues.
4. Discuss the physiology of the retina and give the visual pathways.
5. (a) What is symbiosis
(b) Discuss the digestion of cellulose in the ruminant.
6. Describe the peripheral and central chemoreceptors in terms of their location, and their importance in controlling ventilation.
7. (a) Draw and explain the various phases of the action potential in a purkinje cell/ventricular myocardial cell.
(b) Explain the significance of the plateau in the action potential.
8. Explain the effects of dietary protein and amino acids on immune function.

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

SCHOOL OF VETERINARY MEDICINE

UNIVERSITY FIRST SEMESTER EXAMINATIONS- JUNE/JULY 2004

GENERAL VETERINARY PATHOLOGY (VMP 411)

TIME: THREE HOURS

SECTION A: Answer All Questions in this Section.

1.
 - a) Define degeneration
 - b) Briefly describe the different types of degeneration.
 - c) What are the consequences of degeneration?

2.
 - a) What is Disseminated Intravascular Coagulation (DIC)?
 - b) Describe the causes of Disseminated Intravascular Coagulation.
 - c) Describe the common causes of Oedema.

3.
 - a) List four factors that may lead to atrophy and mention one of the causes of cerebellar atrophy.
 - b) What is teratology? Name manifestations of deviant development.

SECTION B: Answer Question One and Any Other two Questions in this Section

1. Write short notes on the following
 - a) Haemosiderin
 - b) Calcification
 - c) Granulation tissue
 - d) Polycythemia
 - e) Hypoplasia
 - f) Hyperplasia

2.
 - a) Define necrosis
 - b) Describe the different types of necrosis.
 - c) What are the consequences of necrosis?

3.
 - a) Briefly describe the sequence of vascular changes in acute inflammation.
 - b) Describe the major features and forms of purulent inflammation.

4.
 - a) What is leukemia?
 - b) What are mixed tumors and describe the contents of a mixed tumor.
 - c) How do tumors spread and state the properties that enhance metastasis.

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA
UNIVERSITY FIRST SEMESTER EXAMINATION – JUNE/JULY 2004
VETERINARY BACTERIOLOGY AND IMMUNOLOGY (VMP 431)

Time : **Three (3) hours**

Answer : **All the questions**

All questions carry equal marks

SECTION I: IMMUNOLOGY

Q1. The immune system is a complex body system involved in the defence against various foreign agents. Discuss the two arms of immunity under the following headings:

- a) Synergistic interactions between innate and adaptive immunity.
- b) Clonal Selection Theory.
- c) T cell development and main function.
- d) Active immunity

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

- a) Colostrum
- b) Alternative pathway of complement activation
- c) Immunoglobulin μ
- d) Phagocytosis
- e) Autoimmunity
- f) Mast cells
- g) Differences between B and T lymphocytes

SECTION II: BACTERIOLOGY

Q1. With the help of a diagram, outline the function of each component of the eukaryotic cell.

Q2. Briefly comment on **any five (5)** of the following :

- a) Endotoxins
- b) Components of bacteria growth media
- c) Bacterial cytoplasmic membrane
- d) Bacterial spore
- e) Autotrophic bacteria
- f) Stationery phase of bacterial growth curve
- g) Bacterial generation time

Q3. Ruminants are among the most susceptible animals to anthrax. Discuss Anthrax under the following headings:

- a) Characteristic genus description/identification of anthrax aetiological agent.
- b) Natural habitat of anthrax aetiological agent.
- c) Laboratory diagnosis of anthrax aetiological agent.
- d) Pathogenesis of anthrax.

Q4. Write informative notes on **any five (5)** of the following ;

- a) *Eschericia coli* pathogenicity
- b) Mycolic acid
- c) Toxigenic Clostridia
- d) Component 'C'
- e) Pathogenicity of members of genus *Mycoplasma*
- f) Differences between *Erysipelothrix rhusiopathiae* and *Listeria monocytogenes*
- g) *Staphylococcus hyicus* subspecies *hyicus*

GOOD LUCK!!!!



THE UNIVERSITY OF ZAMBIA

UNIVERSITY 2004 FIRST SEMESTER EXAMINATIONS - JUNE 2004

**VMB 451
VETERINARY PHARMACOLOGY**

INSTRUCTIONS:

1. Time three (3) hours
 2. Answer **FIVE (5)** questions only.
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- 1). As a qualified veterinary surgeon you have diagnosed heamonchosis in sheep and pneumonic pasteurellosis in cattle:
 - i). Discuss the different drugs that can be used against *Haemonchus contortus* in sheep [10 marks].
 - ii). Discuss important properties of major classes of drugs that can be used to treat pasteurellosis in cattle [10 marks].
- 2). Giving specific examples briefly discuss the following:
 - a). General anaesthetics [5 marks].
 - b). Anti fungal drugs [5 marks].
 - c). Drugs acting on the autonomic nervous system [10 marks].
- 3). Discuss in detail drugs that are used to treat
 - a). Peptic ulcers [5 marks].
 - b). Diarrhoea [5 marks].
 - c). Dry and unproductive cough [5 marks].
 - d). Theileriosis [5 marks].
- 4). Suppose you are asked to help in the translocation of wild animals of different species from one game park to another in a restocking exercise.
 - a). Briefly discuss game capture drugs including their modes of action and side effects [10 marks]
 - b). Outline the general requirements of an ideal game capture drug [5 marks].
 - c). Describe long acting neuroleptics or taming drugs [5 marks].

- 5). Write short notes on:
- a). Dissociative anaesthetics [5 marks]
 - b). Neuroleptanalgesics [5 marks]
 - c). Ectoparasiticides [5 marks]
 - d). Disinfectants [5 marks]
- 6). Describe the mechanism and site of action of the following diuretic drugs [15 marks].
1. Mannitol
 2. Acetazolamide
 3. Hydrochlorothiazide
 4. Spironolactone
 5. Frusemide

Give one clinical use of each of the above listed diuretics [5 marks].

END OF EXAMINATION
Good luck!!

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

**2004 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 answer to each question in a separate answer book
4. **ALL** questions carry equal marks

SECTION A

1. Mr. Nekoosa has visited your clinic and is complaining that his herd of cattle has been showing a lot of gastrointestinal problems.
 - (i) Collect the past and immediate history from this farmer as a start of your clinical examination.
 - (ii) How would you proceed with the clinical examination?

2. You are assisting in the small animal clinic on a very busy Sunday morning. A client has come and the clinic manager has asked you to assist him handle, restrain and collect blood samples from the patients.
 - (i) Discuss in detail how you would handle and restrain a German shepherd dog and a cat the client has brought.
 - (ii) How would you collect blood from these patients?

3. Skin is the first organ to give you a sign of abnormality in many diseases.
 - (i) What important skin qualities do you consider during your skin examination?
 - (ii) How does skin regulate temperature?
 - (iii) How would you collect samples to confirm a skin disease?

SECTION B

4. Describe in detail how you would take heart and pulse rates in cattle and horses. Also give the physiological ranges and factors that affect the pulse rate in the two animal species.
5. Discuss the relationship between the respiratory insufficiency, hypoxia and respiratory failure. Describe the types of respiration in horses, cattle, sheep and goats?
6. Write short notes on **four** of the following:
 - (i) Pruritus
 - (ii) Blood sampling in cattle and sheep
 - (iii) Eczema
 - (iv) Alopecia
 - (v) Hyperthermia
7.
 - (i) How would you classify shock?
 - (ii) Describe the pathophysiology and clinical signs of shock.

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA
UNIVERSITY FIRST SEMESTER EXAMINATIONS – JUNE 2004
VMD 511
VETERINARY CLINICAL PATHOLOGY

Time: 3 hours
Total Marks: 100 marks
Instructions: Answer all questions

1. Bone marrow evaluation is commonly indicated when abnormalities are observed in the peripheral blood picture that suggest a pathologic condition involving the marrow. When evaluating the bone marrow, six parameters are commonly observed. List the parameters that are commonly examined and briefly explain each of them **(20 marks)**.
2. Explain in detail how you would carry out a differential white cell (WBC) count. Please include the following in your explanation:
 - a). Sample collection **(1 mark)**.
 - b). Sample preparation **(2 marks)**.
 - c). Specimen examination methods **(5 marks)**.
 - d). Actual calculation of the differential count **(10 marks)**.
3. You have been appointed to establish and run a large scale commercial laboratory. Briefly explain how you would carry out or enforce the following:
 - a). Quality control **(5 marks)**.
 - b). Quality assurance **(5 marks)**.
 - c). Training **(5 marks)**.
 - d). Laboratory safety **(5 marks)**.
4. What is anaemia **(4 marks)**?
Using examples, explain the causes, pathogenesis and the distinguishing peripheral blood features of the following forms of anaemia:
 - a). Acute haemorrhagic anaemia **(4 marks)**.
 - b). Acute haemolytic anaemia **(4 marks)**.
 - c). Chronic haemorrhagic anaemia **(4 marks)**.
 - d). Aplastic anaemia **(4 marks)**.
5. Briefly answer the following questions:
 - a). What do you understand of the term 'Exfoliative Cytology'? Explain the benefits of this tool in veterinary diagnostic medicine **(10 marks)**.
 - b). Enumerate the cytological findings of neoplastic cells **(5 marks)**.
 - c). What is the difference between a transudate and an exudates **(5 marks)**?

End of Examination

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

**2004 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 answer to each question in a separate answer book
4. **ALL** questions carry equal marks

SECTION A

1. ~~X-rays are harmful.~~

- a) Discuss the basic rules of surgery.
- b) How do these basic rules affect the outcome of a surgical procedure?

2. Describe in detail the indications and procedure of the following.

- a) Zygomaticotemporal nerve block in a cow
- b) Auriculopalpebral nerve block in a cow
- c) Epidural analgesia in the porcine
- d) Retrobulbar block in the bovine

3. A 15-year old Siberian Husky belonging to Mr Mazuka has been treated by you for about four months for haemangiosarcoma affecting the kidneys. The condition has deteriorated such that on a recent chest radiograph you notice metastasis of this cancer in the lungs. According to your knowledge, very little can be done now for this dog which is in excruciating pain, breathless most of the time and less useful to the owner.

- a) What is your informed advice/counsel to the owner who has a sentimental attachment to the dog, but does not want it to suffer so much pain.
- b) Is there any intervention you would undertake and what is it called?
- c) List the criteria you would use to choose a specific method of intervention.
- d) Discuss any five considerations of the intervention in (c) which are relevant to this case.

SECTION B

4.
 - a) What are the major sources of contamination of a wound?
 - b) How do you prevent this contamination in (a) above?
 - c) What choices are there to sterilize various articles.
 - d) Briefly describe the different sterilisation indicators.

5. Discuss why sedation with local analgesia may be better to use in repairing an umbilical hernia, than general anaesthesia in a Landrace-cross 4-year old boar. Describe also the precautions you need to take before general anaesthesia in porcine.

6.
 - a) Why is pre-anaesthetic evaluation important in Veterinary Anaesthesiology?
 - b) Why are pre-anaesthetic medications used? Discuss any two premedicants used at UNZA Veterinary Clinic.
 - c) Discuss in detail considerations of anaesthesia for caesarian section in small animals.
 - e) Briefly compare and contrast the use of Pentobarbitone and Ketamine Hydrochloride in canine anaesthesiology.

7. Write short notes on any **four** of the following
 - a) Available methods of achieving haemostasis in veterinary surgery.
 - b) Properties of an ideal suture material
 - c) Classification of surgical gut (catgut) and its relevance to surgical procedures.
 - d) The use of consent form in Veterinary Medicine
 - e) Types and uses of four non-absorbable suture patterns

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY FIRST SEMESTER EXAMINATION-JUNE 2004

(VMD 521)

INFECTIOUS DISEASES OF LIVESTOCK

TIME: 3 HOURS
TOTAL: 60 MARKS
INSTRUCTIONS: ANSWER ALL QUESTIONS

1. Discuss the aetiology, transmission, clinical signs and control of the following protozoan diseases:
 - (a) Cowdriosis (Heartwater) [6 Marks].
 - (b) Anaplasmosis (Gall sickness) [8 Marks].
 - (c) Babesiosis (Redwater) [6 Marks].

2. Discuss the following:
 - (a) Aetiology and epidemiology of Haemorrhagic septicaemia (3 Marks)
 - (b) Pathogenesis and diagnosis of *Mycobacteria bovis* (4 Marks).
 - (c) Aetiology and epidemiology of Senkobo (streptothricosis) in Zambia (3 Marks).
 - (d) Specimen collection, preservation, storage and diagnosis of brucellosis (5 Marks).

3. An outbreak of a highly contagious disease of domestic pigs in the Ngoma game management area bordering the Kafue National Park has been reported. Observations made by the local Veterinary Assistant indicate that the affected animals show signs of pyrexia, loss of appetite, superficial hemorrhages and cyanosis. The incubation period is estimated to be 5 – 7 days. Affected animals injected with penicillin and oxytetracycline are not responding to treatment. As District Veterinary Officer (DVO) for Namwala, you are requested to carry out a comprehensive investigation and provide the following details:
 - (a) Clinical signs observed and pathological findings (4 Marks).
 - (b) What is your tentative diagnosis? (3 marks).
 - (c) Aetiology of the suspected disease (2 Marks).
 - (d) Epidemiological factors that could have led to the spread of the outbreak into your district (3 Marks).
 - (e) Type of specimen collected as well as a brief description of preservation and storage methods used (4 Marks).
 - (f) Outline recommendations for (i) on farm control and preventive measures (ii) short term and long-term control/preventive measures for the district and Province (4 Marks).

4. Cases of sudden death have been reported from a ranch keeping domestic and wild animals on the same premise. The affected animals show signs of blood oozing from the natural orifices. The farm keeps, among other species, zebra, donkeys, cattle, pigs and several antelope species. Dogs have been reported to have scavenged the carcasses of animals that died on the game ranch. You are asked to carry out an investigation and provide the following information
 - (a) What is your tentative diagnosis? (4 Marks).
 - (b) Discuss the clinical signs of the disease in domestic and wild animals with special reference to zebras, dogs, pigs, and antelopes (4 Marks).
 - (c) Describe the mode of transmission and clinical signs of the disease in humans (3 Marks).
 - (d) Outline the biosafety measures that should be followed by the farmer and the disease control team when carrying out control measures (4 Marks).
5. Discuss in detail the aetiology, epidemiology, clinical signs and differential diagnosis of Malignant Catarrhal fever (10 Marks).
6. Discuss the aetiology, epidemiology, clinical signs and gross pathology of contagious bovine pleural pneumonia in Zambia (10 Marks).
7. The manager of a large cattle ranch has requested you to design a program for the control of ticks and tick-borne diseases for his farm. How would you go about it in chronological order? (10 Marks).

END OF EXAM.

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

2004 ACADEMIC YEAR FIRST SEMESTER
FINAL EXAMINATIONS

VMC 611: CLINICAL VETERINARY MEDICINE III

TIME: THREE HOURS

INSTRUCTIONS:

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

SECTION A

1. Primary diseases of the liver seldom occur in farm animals. Describe in detail the relationship between the following clinical indicants and hepatic dysfunction:
 - (i) Abdominal pain.
 - (ii) Fecal abnormality.
 - (iii) Edema.
 - (iv) Encephalopathy.
 - (v) Jaundice.
 - (vi) Bleeding.

2. A cousin to your friend is having problems with his sows shortly after farrowing. After following up the case you discover that the affected sows had fever (40-41° C) usually within three days postpartum. Normally all the piglets die.
 - (i) What is your diagnosis?
 - (ii) Explain in detail the clinical manifestation of the disease
 - (iii) Suggest measures you would take to manage the condition and to minimize losses.

3. A 5-year-old German Shepherd dog weighing 52kg is presented to your clinic with a problem of not eating for 2 days, depression and lameness involving the left forelimb and right hind limb of a month's duration. On taking the temperature, which you find to be 40.1° C, you notice malodor and severe head shaking. On close examination, of the left ear, you notice a purulent discharge, deformed ear canal and a lot of wax in the canal. The elbow and stifle joints of all limbs are painful and swollen.
 - (i) What is your problem list?
 - (ii) What is your tentative diagnosis?
 - (iii) List your diagnostic plan.
 - (iv) Outline your medical treatment.
 - (v) If your treatment in d) fails to resolve the problem(s) list what your surgical options would be.

SECTION B

4. Discuss in detail the problem of hearing loss in both cats and dogs in terms of occurrence, Clinical manifestation, differential diagnoses and diagnostic approaches.
5. Outline the vaccination schedule for the following diseases in cats and dogs:
 - (i) Panleukopenia (feline enteritis), Respiratory disease and rabies in cats.
 - (ii) Distemper, Hepatitis, Respiratory disease (Kennel Cough), Leptospirosis, Parvo and Rabies in dogs.
6. During a class discussion, you heard different opinions on the similarities and differences of lactating mastitis, summer mastitis and mastitis metritisagalactia. Put the discussion in an orderly manner taking into account:
 - (i) Etiology and pathogenesis.
 - (ii) Clinical signs and diagnosis.
 - (iii) Treatment.
7. Write brief notes on the following with particular emphasis on clinical signs, differential diagnoses and treatment:
 - (i) Systemic lupus erythematosus (SLE).
 - (ii) Canine rheumatoid arthritis.
 - (iii) Masticatory myositis.

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA
UNIVERSITY FIRST SEMESTER EXAMINATION-
JUNE/JULY -2004

VMD 531

VETERINARY EPIDEMIOLOGY

TIME: **THREE HOURS**

TOTAL MARKS: **100**

ANSWER: **ALL QUESTIONS**

1. (a) In a trial, that was conducted 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 five 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	5.6	4.4	4.7	5.1	4.5	4.1	4.2	6.3	5.3
5.2	4.5	5.1	5.6							

Showing detailed calculations, work out the following for each group:

- (i) The arithmetic mean (2 marks).
(ii) The confidence interval (7 marks). $t_{(n-1, 1-\alpha/2)} = 2.060$
(iii) Using the above statistics, compare and contrast between the two groups (3 marks).
- (b) Mr Jacobs, a farmer in Makeni area who has a beef herd of about 860 animals, calls you to visit his farm. When you arrive at the farm on Tuesday, you find that 55 animals are sick. You examine the herd, collect samples and give treatment according to your tentative diagnosis. You go back to the farm on Thursday the same week. You find that 10 animals are dead and that there have been 40 new cases of the disease from the last time you visited the farm on Tuesday.

From the above information, calculate the following:

- 1.1 The prevalence on your first visit (Tuesday) (1 mark)
- 1.2 The incidence rate between Tuesday and Thursday (3 marks)
- 1.3 The mortality rate (3 marks)
- 1.4 The case fatality. (1 mark)

20 points

- 2 (a) Assume that the prevalence of Salmonella among broilers is 5% if the bacteria is present. We want to be 95% sure of detecting Salmonella if it is present in the flock. In a house of $N = 10,000$ birds, there are about 500 detectable cases. What would be the sample size required to detect salmonella in this flock? (5 marks)
- (b) Suppose that we actually tested 100 birds in the question above and found them to be all negative, what would be the maximum number of infected birds in the flock? (5 marks)
- (c) You are an employ of a NORAD Project in Southern Province of Zambia. Your task is to eradicate Brucellosis in traditionally managed cattle in the Province. In the area where you are, the eradication programme has been going on for several years. The diagnostic test you have available has a sensitivity of 95% (0.95) and specificity of 90% (0.9).
- i) In order to get an updated estimate of the prevalence of the disease, you test a random sample of 1000 animals, and you find that 13% of the animals are test positive. What estimate can you then give for the true prevalence (P) in the population? (5 marks)
 - ii) The predictive value of a test will change as the prevalence of the disease in the population changes. What will the predictive value of a positive test be if the true prevalence in the population is 10%? (5 marks)
- (d) In order to eradicate brucellosis you will have to come back and test the same farm several times during the control programme. Given that we have a herd of 1000 animals of which 100 have brucellosis. Given also that you have a test with sensitivity of 95% and specificity of 90%, and that the sensitivity and specificity remain constant from testing to testing. Given further that the test positive animals are slaughtered, and that they are replaced with non-infected cattle that are kept separately and thus neither infected nor tested
- (i) How many rounds of testing (i.e. visits to the farm) are likely to be made before all brucella-infected cattle have been slaughtered? (5 marks)
 - (ii) How many false positives (brucella free cattle) will be slaughtered by the end of the exercise? (3 marks)
 - iii) Is the assumption above that sensitivity and specificity remain constant from testing to testing a reasonable one? Explain why / Why not. (2 marks)

30 points

- 3 (a) Write short notes on the three agent determinants of disease. (3 marks)
- (b) Name and briefly describe the methods of disease transmission. (3 marks)
- (c) Differentiate between a common source and a propagating disease epidemic. (3 marks)
- (b) Briefly describe two causes of bias in observational studies. (3 marks)

12 points

T B R C C

- 4 (a) What do you understand by association? Name and briefly describe the types of Association. (3 marks)
- (b) When trying to establish a causal association, five (5) principles should be considered. Briefly describe these principle. (5 marks)
- (c) There is a lot of arguments as to whether smoking is a risk factor for lung cancer. You interview about 5530 people and ask them as to whether they smoked and whether they had been diagnosed with lung cancer. Below are the results of your study.

	Lung Cancer +	Lung Cancer -	Total
Smoking +	13	2163	2176
Smoking -	5	3349	3354
Total	18	5512	5530

The test statistic at 5% significance level (0.05) is 3.84

- (i) Is this an observational or experimental study? Defend your answer. (1 mark)
- (ii) What is the actual name of this study? (1 mark)
- (iii) Using the chi-squared test, find out if there is an association between smoking and lung cancer. (6 marks)
- (iv) Calculate the following and interpret each result
- The odds ratio (3 marks)
 - The attributable rate (3 marks)
 - The attributable fraction (3 marks)

25 points

- 5 (a) Define monitoring / surveillance. What are the objectives of monitoring / surveillance. (3 marks)
- (b) Name and briefly describe two (2) non-government sources of data for monitoring / surveillance (2 marks)
- (c) Briefly describe the following terms: i) Disease outbreak ii) Outbreak investigation (2 marks)
- (d) You are the District Veterinary Officer for Mongu District. You receive a report that cattle in a village 20 km from your station are dying in large numbers. So far five herds within the neighbourhood are affected. What are the major questions you will have to answer as you investigate this disease outbreak? Outline the steps you will have to follow as you investigate this disease outbreak. (6 marks)

13 points

END OF EXAMINATION

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

**2004 ACADEMIC YEAR FIRST SEMESTER
FINAL EXAMINATIONS**

VMC 621: OPERATIVE VETERINARY 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

SECTION A

1. X-rays are harmful.
 - (i) What precautions are taken routinely to protect the personnel working in an X-ray unit from irradiation?
 - (ii) Certain organs and tissues are more sensitive to X-rays than others, which organs and tissues are more susceptible and why?
 - (iii) What do you understand by the terms contrast and definition?
 - (iv) What is the value of using contrast medium in radiography?

2. You are presented with a bull that has a swelling close to the insertion of the retractor penis muscle near the distal flexure of the sigmoid.
 - (i) What is your tentative diagnosis?
 - (ii) List your differential diagnoses.
 - (iii) With the aid of line/sketch drawings, discuss in detail how you would surgically manage this case.

3. You are presented with a male four-year old domestic short hair cat. The owner tells you that the cat is constipated because it goes to its litter box frequently, strains and only produces a few drops of urine. The patient is now inactive, dull and anorexic. On abdominal palpation, a large, firm mass in the caudal abdomen is felt. The mucous membranes are injected.
 - (i) What is your diagnosis?
 - (ii) List your differential diagnoses.
 - (iii) Briefly outline any further tests you would carry out.
 - (iv) Briefly outline how you would manage this patient.
 - (v) The patient is returned to you several times in the year for the same problem. Describe the procedure you would carry out to manage this problem.

4. A prized adult male Rhodesian Ridgeback belonging to the University of Zambia Vice Chancellor is brought to the UNZA Veterinary Clinic with the following history:
Over a period of two weeks, the dog had been exhibiting frequent attempts to urinate, sometimes producing only a fine stream of urine or only a few drops tinged with blood. For the past two days, the dog has been recumbent, anorexic, depressed and vomiting. On examination, mucous membranes are injected. Abdominal palpation reveals a mass in the abdomen and is confirmed to be an enlarged urinary bladder on radiology.
- (i) Give a detailed account of your management of this case.
 - (ii) Outline indication(s) of any procedure(s) you may perform in (i).
 - (iii) Discuss the post-operative management with the owner and advise him appropriately.

SECTION B

5. A cow is presented to you with a primary complaint of being seen in labor but without a calf present in the maternal birth canal. The cow has been straining now for more than 24 hrs. On examination, your hand cannot penetrate the cervical os.
- (i) What is your tentative diagnosis?
 - (ii) How would you confirm your diagnosis?
 - (iii) In detail, discuss how you would surgically manage this case (include pre-op' considerations, anaesthesia, surgical procedures, post-op' care/possible complications).
6. The Livestock Officer at Katemo farm is asking for your advice on how to go about dehorning cattle and goats because the farmer always asks him for this service.
- (i) What are the indications of dehorning in both cattle and goats?
 - (ii) Taking into account the techniques used in local anaesthesia, discuss in detail two methods of dehorning and two methods of disbudding.
 - (iii) What complications would you anticipate and how would you avoid them?
7. Write short notes on any **four** of the following:
- (i) Classification of wounds.
 - (ii) Types and medical treatment of uroliths.
 - (iii) Scrotal ablation and castration in a dog.
 - (iv) Types of urethrostomies and their indications.
 - (v) Comparing and contrasting rumenostomy and rumenotomy.

END OF EXAMINATION

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

2004 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

SECTION A

1. Mr. D. Hunt keeps a few horses at his farm West of Lusaka. One day, he calls you to examine one of the mares that aborted a week ago and was serviced by a stallion 10 months ago. Since abortion, the mare has not been seen eating and is very depressed. On physical examination, you notice that the mare is dyspneic, all the mucous membranes are congested, serous nasal discharge and a fever.

- (i) What is your tentative diagnosis?
- (ii) What is your differential diagnosis?
- (iii) How would you confirm your diagnosis?
- (iv) How would you control/prevent this disease from recurring?

2. Mr. A. Makumba is a prominent dairy farmer in Mazabuka. He has a total of 100 cows and uses artificial insemination for breeding. After an evaluation of the herd fertility, the following results were obtained:

Calving interval	485 days
Calving to conception interval	170 days
Calving to first service	185 days
Conception rate to all services	48%
Abortion rate	10%
Fertility index	50%

- (i) Taking consideration of the above findings, discuss in detail the fertility status of this farm
- (ii) What advice would you give to the farmer?

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

**2004 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

SECTION A

1. Mr. D. Hunt keeps a few horses at his farm West of Lusaka. One day, he calls you to examine one of the mares that aborted a week ago and was serviced by a stallion 10 months ago. Since abortion, the mare has not been seen eating and is very depressed. On physical examination, you notice that the mare is dyspneic, all the mucous membranes are congested, serous nasal discharge and a fever.

- (i) What is your tentative diagnosis?
- (ii) What is your differential diagnosis?
- (iii) How would you confirm your diagnosis?
- (iv) How would you control/prevent this disease from recurring?

2. Mr. A. Makumba is a prominent dairy farmer in Mazabuka. He has a total of 100 cows and uses artificial insemination for breeding. After an evaluation of the herd fertility, the following results were obtained:

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Conception rate to all services	48%
Abortion rate	10%
Fertility index	50%

- (i) Taking consideration of the above findings, discuss in detail the fertility status of this farm
- (ii) What advice would you give to the farmer?

3. A Holstein-Friesian bull aged 28 months was kept at Malasha farm. The farmer wants to use the bull for breeding. However, prior to the introduction of this bull to breeding, he would like to know if it is fertile or not since it seems its libido is very good. Therefore, you carry out a Breeding Soundness Examination and the following were your findings:

Scrotal circumference	30 cm
Volume (semen)	5 ml
Concentration (million/ml)	500
Motility	60%
Pathological sperm heads	15%
Unripe spermatozoa	15%
Simple bent tails	20%

- (i) In view of your findings, discuss in detail the fertility status of this bull
- (ii) Would you recommend this bull for breeding or not? Give reasons.

SECTION B

4. A lack of oestrus is the most important single cause of mare infertility.

- (i) Discuss in detail the causes of lack of oestrus in the mare.
- (ii) What treatment and preventive measures can you carry out to control lack of oestrus in the mare?

5. A dairy farmer invites you to see one of his 4-year old cows that calved 80 days ago but has not been seen on heat. You arrive at the farm and notice that the animal is in good condition. Upon examination of the uterus and the ovaries, you notice that both the left and right ovaries were smooth. The left ovary measured approximately 3x2x2 cm while the right ovary measured 6x5x5 cm with a fluid filled structure measuring 3.5 cm in diameter with a wall thicker than a normal follicle. A plasma progesterone assay reveals a concentration of 1.8 ng/ml.

- (i) What is your tentative diagnosis?
- (ii) Describe the risk factors and causes leading to this condition.
- (iii) What would be your differential diagnosis?
- (iv) Describe other diagnostic procedures that would help you reach a definitive diagnosis.
- (v) What would be the best way to treat this condition?

6. a. A farmer invites you to help treat a goat that has not been seen on heat for 4 months, not seen mating and has abdominal distention. You carry out a progesterone assay and find that progesterone levels are elevated.

- (i) What is your tentative diagnosis?
- (ii) Describe the cause/pathogenesis of this condition.
- (iii) What is the best way to treat/manage this condition?

- b. Abortion in the Angora goats is a long-standing problem and is thought to be non-infectious.

- (i) Discuss in detail why the Angora goat is susceptible to this kind of abortion.
- (ii) What preventive measures can be carried out?

7. Write short notes on the following:

- (i) Hormonal termination of pregnancy in a bitch.
- (ii) Immunological approaches to contraception in a bitch.
- (iii) Hormonal suppression of oestrus in a bitch.
- (iv) Induction of oestrus in a bitch.
- (v) Endocrinology of pregnancy in a bitch.

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY SECOND SEMESTER EXAMINATIONS – JUN/ JULY 2004

VMD 641

VETERINARY PREVENTIVE MEDICINE

TIME: THREE HOURS

ANSWER : ALL QUESTIONS

- Q.1. a) Define Veterinary Preventive Medicine (VPM). Which other subject shares this definition and why?
b) Name and briefly describe the evolutionary phases of Livestock Production Systems.
c) How do the individual systems relate to livestock disease occurrence?
d) How is the livestock movement control enforced generally and in Zambia particularly? **12 points**
- Q.2. a) What are the requirements of an ideal vaccine? Briefly discuss the advantages and disadvantages of mass immunisation.
b) Briefly discuss factors influencing the animals' response to vaccination.
c) Define and classify Environmental Hygiene. What is Environmental Control and how is it executed?
d) What is disinfection? Briefly describe disinfection methods. **10 points**
- Q.3. a) Briefly define and describe the Test and Slaughter Method.
b) What is Depopulation and under what circumstances is it put into use.
c) Briefly describe Strategic Treatment as a disease management strategy.
d) List the issues involved in planning disease control programmes. **12 points**
- Q.4. a) State in general terms the primary objectives and goals of a herd health programme.
b) Briefly state the criteria for the selection of participating farmers. Briefly define performance targets and shortfalls.
c) What are the main causes of reproductive inefficiency in the dairy herd and how would you get rid of them?
d) Briefly how would you assess the mastitis status of the dairy herd? **11 points**
- Q.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 swineherd? **12 points**
- Q.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 points**

- Q.7. a) List three important avian viral neoplastic diseases.
- b) Discuss one (1) of the diseases you listed in a) under the following headings: etiology, epidemiology, transmission, clinical signs, pathology and control measures.
 - c) Salmonellosis is a disease of both economic and public health significance which commonly affects poultry flocks. Assuming you are the general manager of a big breeder farm that also owns a hatchery and processing plant. Discuss salmonellosis paying particular emphasis on etiology, transmission, clinical signs, diagnosis and control measures.
 - d) Flock health is one of the cardinal factors of success in the poultry business. Explain in detail how poultry farmers (small scale and commercial) can achieve sound flock health. **17 points**

- Q.8. a) Discuss the role that wildlife plays in the transmission of the following diseases:
- (i) Malignant catarrhal fever
 - (ii) Anthrax
 - (iii) Tuberculosis or
 - (iv) Rabies
- b) Discuss any three diseases of farmed ostrich.
 - c) Discuss the main causes of mortality in farmed crocodile hatchlings. **14 points**

END OF EXAMINATION



UNIVERSITY OF ZAMBIA
FIRST SEMESTER EXAMINATION
JUNE - JULY 2004.

VETERINARY PUBLIC HEALTH.
(VMD 651)

Time : 3 Hours

Total Marks : 100 Marks

Instructions: Answer all questions in section A & any 2 in Section B.

Section A: Answer all Questions in this Section.

Question 1.

With the help of examples compare and contrast the following:

- (a) Intradietetic and intravital food poisoning (5 Marks).
- (b) Bacteria naturally present in an aquatic environment and those derived from pollution of an aquatic environment (5 Marks).
- (c) Technologies used to control contaminants and those used to prevent re-contamination during and after food processing (5 Marks).
- (d) Control of *Clostridia botulinum* and *Clostridia perfringenes* foodborne intoxications (5 Marks).

Question 2.

- (a) Briefly discuss the public health risk factors of chemical residues or contaminants (5 Marks).
- (b) Write short notes on the minimum acceptable levels for chemical residues (5 Marks).
- (c) Outline the ideal properties for a microorganism to be chosen as an indicator organism (5 Marks).
- (d) Outline the conventional methods of dressing cattle, goat and sheep carcasses at a small sized abattoir and a slaughter slab (5 Marks).

Question 3.

Discuss the food sources, pathogenesis and clinical signs of any two of the following foodborne diseases.

- (a) Paralytic shellfish poisoning (10).
- (b) Aflatoxin intoxication (10).
- (c) Shigellosis (10).
- (d) Ciguatera intoxication (10).

SECTION B: Answer any two questions in this section

Question 4.

Chemical residues or contaminants in food of animal origin are important in Public Health.

- (a) List down the major classes of contaminants or residues of public health concern (5 Marks).
- (b) Briefly outline the measures to be taken in order to avoid drug or chemical residues in food of animal origin (5 Marks).
- (c) Explain what is meant by the “cascade” rule and give the sequence followed in this rule (5 Marks).
- (d) Discuss the public health risk factors of organochlorides as environmental contaminants (5 Marks).

Question 5.

- (a) Assuming you are the General Manager of Parmalat Zambia Ltd, a company with various dairy farms, a number of small scale contract dairy producers and a processing plant located in the nations’ capital. Explain using HCCP principles how you would improve milk and milk product(s) hygiene in your company (5 Marks).
- (b) Write on preservation technologies that render food safe and keep contamination levels under control (5 Marks).
- (c) Write on the composition and quality characteristics of milk and explain the factors that may render milk adulteration (5 Marks).
- (d) Outline the procedure followed when processing poultry (5 Marks).

Question 6.

- (a) State the objective(s) of meat hygiene (5 Marks).
- (b) Outline the factors that influence the occurrence of meat borne zoonoses (5 Marks).

c) Briefly discuss any four of the following diseases paying particular emphasis on transmission, epidemiology, prevention and control (5 Marks).

- (i) Brucellosis.
- (ii) Toxoplasmosis
- (iii) Botulism
- (iv) Porcine cysticercosis
- (v) Anthrax.

(d) You are the Public Health Veterinarian at Keembe abattoir in charge of the meat inspection unit. How would you implement the meat hygiene objectives and consequently improve human well being (5 Marks).

END OF EXAMINATION.