THE UNIVERSITY OF ZAMBIA

SCHOOL OF VETERINARY MEDICINE

FIRST SEMESTER EXAMINATIONS – AUGUST 2003

1.	Veterinary Anatomy and Physiology 1	-	VMB 211
2.	Veterinary Anatomy	-	VMB 311
3.	Veterinary Histology	-	VMB 321
4.	Veterinary Biochemistry 1	-	VMB 331
5.	Veterinary Physiology	-	VMB 341
6.	Veterinary Parasitology	-	VMP 441
7.	Veterinary Pharmacology	-	VMB 451
8.	Veterinary Clinical Pathology	-	VMD 511
9.	Infectious Diseases of Livestock	-	VMD 521
10.	Veterinary Epidemiology	-	VMD 531
11.	Clinical Veterinary Medicine III	-	VMC 611
12.	Theriogenology II	-	VMC 631
13.	Veterinary Preventive Medicine	-	VMD 641
14.	Veterinary Public Health (Practical)	-	VMD 651
15.	Veterinary Public Health	-	VMD 651

THE UNIVERSITY OF ZAMBIA

SCHOOL OF VETERINARY MEDICINE
DEPARTMENT OF BIOMEDICAL SCIENCES

FIRST SEMESTER EXAMINATIONS - AUGUST 2003

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) Intercalated discs (1 mark)
ii) Extramedullary haematopoiesis (1 mark)
iii) A neurone (1 mark)
iv) An Erythro (2 mark)

2. Outline and briefly describe the following:

i) three (3) developmental theories of haematopoiesis (5 marks)
ii) three (3) major cellular junctions (3 marks)
iii) five (5) cytoplasmic inclusions (5 marks)
iv) four (4) types of collagen fibres (2 marks)
v) any three (3) supporting cells of the central nervous system (3marks)

3. Briefly outline the

i) Major differences between mitosis and meiosis (4 marks)
ii) Classification of glands (3 marks)
iii) three (3) patterns of lamellae (3 marks)

4. With the aid of a simple and well-labelled diagram illustrate:

i) Major components of a typical cell (4 marks)
ii) A cross section view of the marrow in long bone (4 marks)
iii) A detailed Sarcomere composition (4 marks)

5. Briefly discuss pre-natal and post-natal haematopoiesis (10 marks)

SECTION B –GROSS ANATOMY

6. I) What are paranasal sinuses? *(1 mark)*

ii) What are the boundaries of the maxillary recess? *(1 mark)*

iii) Where is the opening of the maxillary recess into the nasal cavity? *(1 mark)*

iv) Give a detailed account of pleural reflections. *(7 marks)*

7. I) Name the bone of the thigh. *(1 mark)*

ii) Describe the important features of this bone. *(5 marks)*

iii) What joints does it form proximally and distally and with which bones? *(3 marks)*

iv) Name one muscle and its action on a named joint above. *(1mark)*

8. I) Outline the pattern of blood flow through the heart. *(2 marks)*

ii) List any four (4) structures that pass through the diaphragm. *(2marks)*

iii) Name any five (5) vessels that arise from the abdominal aorta and the structures or areas they supply. *(5marks)*

iv) Define the term ligamentum arteriosum. *(1mark)*

9. I) State the number of ribs in the dog. What bony structures articulate with the first rib at the; *(3marks)*

a) vertebral end

b) sternal end

ii) Describe the composition and arrangement of the rectus sheath at the cranial part of the abdomen in the dog. *(3marks)*

iii) State the point of origin and insertion of the internal oblique abdominal muscle. What is its source of innervation? *(3marks)*

iv) Differentiate between the superficial and deep inguinal rings. *(1marks)*

10. I) In one sentence define the following *(2marks)*

a) metaphysis

b) oval fossa

c) tracheal muscle

d) femoral triangle

ii) Classify the following joints according to uniting medium. *(2marks)*

a) pelvic symphysis

b) joint between the shafts of the radius and ulna bones

c) costo-chondral joints

d) distal interphalangeal joints

iii) Give a brief description of the carpal joint. *(5marks)*

iv) Name one muscle that has an action on the carpal joint. What is the action?

(1marks)

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

THE UNIVERSITY OF ZAMBIA

SCHOOL OF VETERINARY MEDICINE
DEPARTMENT OF BIOMEDICAL SCIENCES

FIRST SEMESTER EXAMINATIONS - AUGUST 2003

VMB 311

VETERINARY ANATOMY

TIME: THREE (3) HOURS

INSTRUCTIONS: ATTEMPT ONLY FIVE (5) QUESTIONS

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1. Trace the course of the vagus nerve from the neck to its final destination in ruminants noting the structures it innervates and important relations.

2. Describe in detail the anatomy and arrangement of the structures that constitute the ventral abdominal wall of the bovine. What are the important features of its innervation, which are relevant in regional anaesthesia?

3. Describe the structure, position, blood supply and innervation of the bovine penis. Briefly explain the important anatomical changes occurring during erection in this species.

4. Give a detailed description of the intestines in ruminants noting their form, position and chief relations.

5. Describe the forearm of the bovine under the following headings
   (i) osteology
   (ii) cutaneous innervation

6. Describe the peritoneal cavity in detail.

7. Write short notes on the following structures in ruminants

(i) obturator nerve

(ii) jungular groove

(iii) cervix

(iv) kidney

END OF EXAM-GOOD-LUCK

THE UNIVERSITY OF ZAMBIA
UNIVERSITY FIRST SEMESTER EXAMINATIONS-AUGUST 2003

VMB 321
VETERINARY HISTOLOGY

TIME: THREE (3) HOURS

INSTRUCTION: ANSWER ANY FIVE (5) QUESTIONS. ALL QUESTIONS CARRY EQUAL MARKS.

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1. The ovarian cycle can be described as all the processes starting from the recruitment of a primordial ovarian follicle through its development to maturity, ovulation and formation of the corpus luteum. The cyclic events during the ovarian cycle are accompanied by well-synchronised cyclic transformation of the histological layers of the female reproductive tract caused by fluctuations in blood sex steroid hormones. Discuss.

2. (i) List all the possible types of capillaries that can be found in a micro-circulation.
   (ii) Describe in detail the microscopic structure of the capillary that is found in the hepatic lobule microcirculation.
   (iii) Differentiate between (a) an arteriole and a venule and (b) an arteriole-venous shunt and a portal system.

3. Discuss the entire process of spermatogenesis explaining how this is accomplished in the semineferous tubule.

4. (i) List all the components of (a) the conducting division and (b) the respiratory division of the mammalian respiratory system stating the histological layers of each component.
   (ii) Describe in detail the type of epithelium found in the nasal cavity stating the function(s) of the most important histological features.

5. (i) Use a well-labelled diagram to describe the microscopic structure of a lymph node stating the significance of the most important components, and
   (ii) Differentiate between a primary lypmatic organ and a secondary lymphatic organ stating the function of each.

6. Use short notes to differentiate between the following paired terms:
   (i) Neurohypophysis and adenohypophysis, (ii) Chromophobes and chromophils, (iii) juxtaglomerular apparatus and mesangial cells.

7. Give a histological and functional differentiation between the following paired terms: (i) Enterocytes and goblet cells (ii) primary oocyte and primary ovarian follicle (iii) glomerulus and nephron (iv) stratum basale and stratum corneum of the epidermis (v) fungiform papillae and vallate papillae.

THE UNIVERSITY OF ZAMBIA
SCHOOL OF VETERINARY MEDICINE
DEPARTMENT OF BIOMEDICAL SCIENCES
University First Semester Examinations – August 2003
VMB 331
Veterinary Biochemistry I

Time: Three (3) hours
Answer both questions in Section A.
Answer any two (2) questions and question 5 in Section B.

SECTION A

Question # 1

Determine the pathway of aerobic degradation of sucrose and compare its efficiency with that of anaerobic degradation of sucrose. Justify your answer with relevant equations.

Question # 2

(a) Give three major differences between myoglobin (Mb) and haemoglobin (Hb).
(b) Briefly explain the Bohr effect.
(c) For the following set of questions, write TRUE or FALSE. If false, explain why in 3 sentences maximum:
(i) β oxidation of fatty acids always leads to acetyl CoA;
(ii) A cationic exchange resin contains positively charged groups;
(iii) A tripeptide contains three polypeptide bonds;
(iv) The Michaelis-Menten constant of some enzymes may be altered by the presence of allosteric metabolites structurally unrelated to the substrate;
(v) The Michaelis-Menten constant represents the substrate concentration at which the reaction rate is equal to the maximum velocity.

SECTION B

Question # 3

Write notes on the following:

(i) Structure and function of amylopectin.
(ii) Differences between hexokinase and glucokinase.
(iii) Regulation of glycogen synthesis.

Question # 4

Describe the primary, secondary and tertiary structures of globular proteins. What are the major structural differences with fibrous proteins.

Question # 5

The initial velocity of an enzyme was measured in the absence of an inhibitor and in the presence of inhibitor A and inhibitor B. In each case, the inhibitor was present at 10 μM and the following data was obtained.

Substrate Concentration (mM)	Initial Velocity (M/sec x 10^7)		
	Uninhibited	Inhibitor A	Inhibitor B
0.333	1.65	1.05	0.794
0.400	1.86	1.21	0.893
0.500	2.13	1.43	1.02
0.666	2.49	1.74	1.19
1.00	2.99	2.22	1.43
2.00	3.72	3.08	1.79

(i) Plot the reciprocal of the [S] against the reciprocal of the initial velocity for the uninhibited reaction, reactions with inhibitor A and the inhibitor B.
(ii) Determine the K_M and V_{max} values of the enzyme without inhibition, and with the two inhibitors present.
(iii) Describe the type of inhibition imposed by inhibitors A and B.

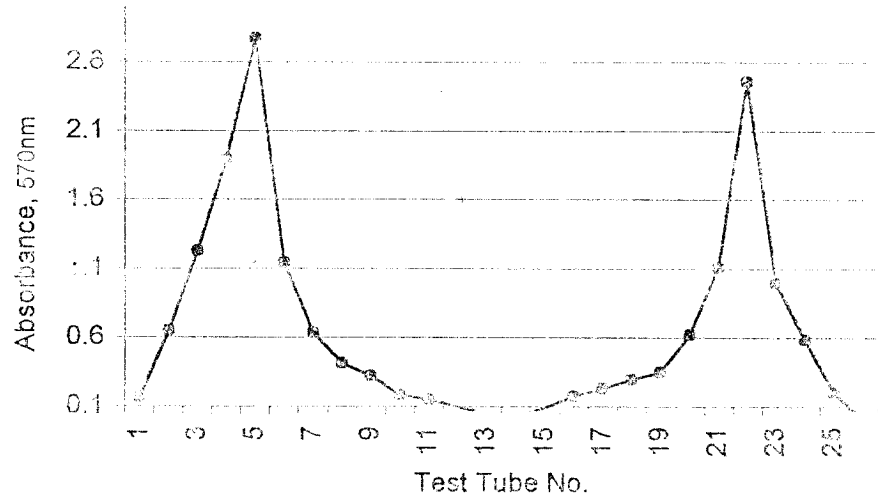
Question # 6

Discuss in detail the mechanism of oxidative phosphorylation.

Question # 7

(i) Describe the theory of the separation of amino acids by ion exchange chromatography.
(ii) A dipeptide containing only glutamic acid and aspartic acid was dissolved in 2 M hydrochloric acid and made up with citrate buffer (50 mM pH 3.5). The resulting mixture of amino acids was placed on a cationic ion-exchange chromatography column. Buffers at pH 3.5, pH 4.5 and pH 6.0 were used to elute the amino acids. Equal fractions were collected and the absorbance at 570 nm measured. The following results were obtained.

Fig. Graph of absorbance against test tube number of neutral and acidic tubes.



(i) Draw the ionic forms of glutamic acid and aspartic acid occurring at pH 6.0.
(ii) Which would come off the column first, explain why.

	pKa_1	pKa_2	pKa_3
Glutamic acid	2.19	9.67	4.25
Aspartate	1.88	9.60	3.65

The End

THE UNIVERSITY OF ZAMBIA

SCHOOL OF VETERINARY MEDICINE

FIRST SEMESTER EXAMINATIOS AUGUST, 2003

VMB 341

VETERINARY PHYSIOLOGY

TIME: **THREE (3) HOURS**

ANSWER: ANY FIVE QUESTIONS

1. How does the ruminant differ from the monogastric animal with regard to carbohydrate digestion?

2. Compare and contrast the properties of cardiac muscle and Skeletal muscle. Define Starling's law of the heart.

3. Write short notes on the following:
   a) Enterohepatic circulation
   b) Cyanosis
   c) Vital capacity of the lungs
   d) Thalamus
   e) Deglutition

4. Discuss the functions of the liver.

5. Discuss the physiology of the retina and give the visual pathways.

6. What is symbiosis? Give two examples of symbiotic microorganisms in the gastro-intestinal tract of the herbivore and explain how they benefit their host.

7. Explain how O_2 is carried in blood . Discuss the factors that may influence the haemoglobin affinity to oxygen.

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY FIRST SEMESTER EXAMINATION – AUGUST 2003

VETERINARY BACTERIOLOGY AND IMMUNOLOGY (VMP 431)

Time : **Three (3) hours**

Answer : **All the questions**

All questions carry equal marks

SECTION I: IMMUNOLOGY

Q1. Mr Chilala had problems of anthrax on his farm and was advised to treat any sick animals with penicillin. The local veterinarian later advised Mr Chilala to protect surviving animals by annual vaccination against anthrax.

a) Outline the first line of defence a cow has against anthrax.

b) Discuss the main defence mechansisms during the initial and subsequent re-infection with *Bacillus anthracis*.

c) The immunogen against anthrax (Sterne's Bacterin) is an attenuated *Bacillus anthracis*. What are its advantages ?

d) How does a calf born at Mr Chilala's farm get protected against anthrax ?

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

a) Perforins

b) Adjuvant

c) Immunoglobulin alpha

d) Secondary lymphoid organs

e) Dendritic Cells

f) Immunity against worms

g) Immunoglobulin Fab region

SECTION II: BACTERIOLOGY

Q1. Using examples, discuss the physical conditions required for propagation of bacteria.

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

a) Bacterial flagella

b) Differential media

c) Bacterial cell wall

d) Exotoxins

e) Plasmids

f) Ziehl Neelsen Stain

g) Hyaluronidase

Q3. Salmonellosis is a major threat to poultry industry in Zambia. Discuss the genus *Salmonella* under the following headings:

a) Characteristic genus description/identification.

b) Laboratory media for *Salmonella* isolation.

c) *Salmonella* Pathogenicity.

d) Laboratory differentiation of genus *Salmonella* from genus *Proteus*.

Q4. Write short notes on **any five (5)** of the following :

a) *Mycoplasma mycoid subspecies mycoid*

b) Milk Ring test

c) Characteristics of members of the 'HAP' group

d) *Corynebacterium pseudotuberculosis*

e) CAMP test

f) 'String of Pearl's reaction'

g) Histotoxic *Clostridia*

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GOOD LUCK ! ! ! !

UNIVERSITY OF ZAMBIA

UNIVERSITY FINAL EXAMINATIONS – AUGUST 2003

VMP 441 VETERINARY PARASITOLOGY

TIME: Three (3) hours
ANSWER: All questions in all sections

SECTION A – PROTOZOOLOGY

1. Describe the basic structure of the subgenus trypanasoma and how you can differentiate *Trypanasoma vivax* and *Trypanasoma congolense* under the light microscope.

2. Protozoan species reproduce through various processes. Give a description of **ALL** of the following:
   a. Binary and multiple fission
   b. Schizogony
   c. Conjugation
   d. Budding

SECTION B - HELMINTHOLOGY

1. The genera of *Trichostrongylus* and *Schistosoma* belong to different phyla due to differences in morphology.
   (i) Discuss what morphological differences lead to classification of the two phyla.
   (ii) Using the specific example of the genera in question, describe their morphological characteristics.
   (iii) How do these genera compare and differ to genera of *Taenia*?

2. Write short notes on **ANY FOUR** of the following:
   a. Colylophoron
   b. Parasitism
   c. Platyhelminthes
   d. Incidental host
   e. Characteristic difference between male and female *Ascaris*.

Please turn over

SECTION C - ENTOMOLOGY

1. Describe the differences in morphology, habits and habitats of insects of veterinary significance belonging to the suborder Nematocera and those belonging to the suborder Cyclorrhapha, giving examples.

2. Write short notes on **ANY FOUR** of the following:
   a. Mallophaga
   b. Morphological differences between Ixodidae and Argasidae
   c. Siphonaptera
   d. Direct damage caused by arthropods to animal hosts
   e. The significance of insect cuticle

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY 2002/2003 FIRST SEMESTER SUPPLEMENTARY EXAMINATIONS - AUGUST 2003

VMB 451
VETERINARY PHARMACOLOGY

INSTRUCTIONS:

1. Time three (3) hours
2. Answer **FIVE (5)** questions only.

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1. Discuss in detail:

   a). Five (5) parameters obtained from a one compartment open pharmacokinetic model with a single rapid intravenous (i/v) injection [10 marks].

   b). Drugs acting on the neuromuscular junction [10 marks].

2. With the aid of a table outline the planes of surgical anaesthetic stage III [20 marks].

3. Discuss in detail two (2) chemotherapeutic agents for trypanosomiasis control in Zambia [20 marks].

4. Give the mode of action of two (2) examples of drugs that are clinically used for treating diseases due to the following etiologic agents [20 marks]:

   i). *Theileria parva*
   ii). *Anaplasma marginale*
   iii). *Babesia bigemina*
   iv). Coccidia
   v). Superficial fungi or dermatophytes

5. Giving appropriate examples, briefly discuss the mode of action, side-effects and uses of the following drugs [20 marks];

   i). Acetylpromazine
   ii). Xylazine
   iii). Loperamide
   iv). Lignocaine
   v). Halothane

6. Assume you are a veterinary surgeon in charge of a district in Zambia. List the spectrum of activity, disadvantages and mode of action of the following drugs [20 marks].

i). Phenoxymethylpenicillin (Penicillin V)
ii). Oxytetracycline
iii). Sulphamethazine + trimethoprim combination
iv). Ciprofloxacin
v). Streptomycin

END OF EXAMINATION
Good luck!!

THE UNIVERSITY OF ZAMBIA

UNIVERSITY 1ST SEMESTER EXAMINATIONS – AUGUST 2003
(VMD 511)
VETERINARY CLINICAL PATHOLOGY

TIME	**:**	**3 HOURS**
TOTAL MARKS	**:**	**40**
INSTRUCTIONS	**:**	**ANSWER ALL QUESTIONS**

Question 1

Describe in detail how to conduct a Fibrinogen ~~Determination~~ test and briefly explain under which conditions this parameter is recommended. (8)

Question 2

Briefly describe the following and their significance: (8)

a. Nucleated RBCs in peripheral blood
b. Erythrocyte Sedimentation Rate (ESR)
c. Polycythemia
d. Quality Control

Question 3

Blood transfusion is a very important clinical intervention in dogs. In detail, can you describe its indications, immunological considerations, choice of a donor and collection procedure and finally the administration procedure of the blood. (8)

Question 4

A white blood cell (WBC) differential count gives the proportional representation of each of the WBCs in the total WBC count. The components of the total WBCs include: Neutrophils, Eosinophils, Basophils, Lymphocytes and Monocytes. Briefly describe the function and morphological characteristics of each of these WBC components. (8)

Question 5

a. Write the different locations in the body where cytology can be used as aid to diagnosis of certain diseases (3)

b. Write the characteristics of exfoliated neoplastic cells in a cytological preparation under microscopy (2)

c. Write the merits and demerits of exfoliative cytological diagnosis (3)

End of examination

THE UNIVERSITY OF ZAMBIA

FIRST SEMESTER EXAMINATIONS-AUGUST 2003

VMC 511 CLINICAL VETERINARY MEDICINE 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. You have been requested to carry out clinical diagnostic work in a forty sow pig-herd presenting with scours. Discuss in detail how you would proceed to identify the source of the problem in the affected unit.

2. Write short notes on four of the following topics:
   a. Examination of the oral cavity in a horse and a cow.
   b. Blood sampling in cattle and pigs.
   c. Examination of ruminal content.
   d. Examination of urine.
   e. Measuring pulse rate in ruminants.

3. a. Describe the difference between primary and secondary skin lesions.
   b. Describe 5 (five) of the following skin lesions:
      i. Nodule.
      ii. Pustule.
      iii. Excoriation
      iv. Comedone.
      v. Macule
      vi. Tumor.
      vii. Fissure.

SECTION B

4. Mammals maintain their internal deep body temperature independent of that of their environment within very narrow limits.

   i. Explain how the mammals manage to regulate their temperature within such narrow margins.

   ii. What is the difference between hyperthermia and pyrexia (include in your answer causes and mechanisms to these syndromes).

   iii. Name and discuss briefly four types of fever.

5. Describe how you would carry out a proper clinical examination of the abdomen in the canine.

6. When auscultating the lung in respiratory diseases, describe the difference sounds you are likely to detect.

7. Compare and contrast milk fever (parturient paresis) and Ketosis (acetominaemia, or slow fever) in dairy cows taking into account etiology, pathogenesis, clinical signs and treatment.

THE UNIVERSITY OF ZAMBIA

UNIVERSITY 1ST SEMESTER EXAMINATIONS – AUGUST 2003
(VMD 521)
INFECTIOUS DISEASES OF LIVESTOCK

TIME	:	**3 HOURS**
TOTAL MARKS	:	**40**
INSTRUCTIONS	:	**ANSWER ALL QUESTIONS**

Question 1
Write short notes on any four of the following: (6)
a. Pathogenesis and clinical signs of Rinderpest
b. Clinical signs of infectious bovine rhinotracheitis
c. Pathogenesis and clinical signs of Rift Valley Fever
d. Diagnosis and differential diagnosis of Malignant Catarrhal Fever virus
e. Transmission and control of Foot and Mouth Disease

Question 2
Discuss the epidemiology, clinical signs and differential diagnosis of Rift Valley Fever. (4)

Question 3
Discuss the epidemiology, pathogenesis and clinical signs of bovine viral diarrhoea – mucosal disease. (4)

Question 4
Describe and discuss the aetiology, transmission, pathogenesis and clinical signs of the following protozoan diseases:
a. Babesiosis (5)
b. Cowdriosis (4)
c. Anaplasmosis (4)

Question 5
Discuss the aetiology, transmission and control of Contagious Bovine Pleuropneumonia. (5)

Question 6
Describe the transmission, pathogenesis and control of anthrax in a traditional set-up. (4)

Question 7
Discuss the transmission, predisposing factors and control of mastitis in a dairy herd. (4)

End of examination

THE UNIVERSITY OF ZAMBIA

FIRST SEMESTER EXAMINATIONS AUGUST 2003

VMC 521 VETERINARY SURGERY 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

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SECTION A

Question One

a) What are the main causes of persistent apnoea when using muscle-relaxing agents?
b) How would you treat such a case of persistent apnoea?
c) Describe the anaesthetic regime you would employ in a horse requiring surgery incorporating a muscle-relaxing agent.

Question Two

a) Discuss the role of local analgesics in the diagnosis of equine lameness including site preparation and possible complications.
b) Write short notes on the following:
   i) Podotrochlear nerve block
   ii) Infra-orbital nerve block **OR** abaxial sesamoidean nerve block
   iii) Bovine four point block

Question Three

Discuss in detail (under specific headlines), surgical team and operating procedure factors that affect the healing process of surgical incisions.

1.../2

SECTION B

Question Four

a) What are the common sources of infection in operative surgery?
b) Discuss their relative importance and indicate the precautions that may be taken against them.

Question Five

Write short notes on four of the following:

a) Nosocomial infections
b) Surgical drains
c) Catgut
d) Cautery as a method of achieving haemostasis
e) Properties of an ideal suture material

Question Six

a) Discuss in detail, how you would go about with your pre-anaesthetic evaluation of a six-month-old Boran calf presented to you for general anaesthesia to repair a cleft palate.
b) What anaesthetic protocol would you use for the above case?
c) Discuss the design (anatomy) of a surgical suture needle, and further discuss the full classification of such a needle.

Question Seven

a) Discuss the importance and execution of anaesthetic monitoring in a modern veterinary hospital.
b) Management of equine 'proud flesh.'

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END OF EXAMINATION !!

THE UNIVERSITY OF ZAMBIA

UNIVERSITY FIRST SEMESTER EXAMINATION - AUGUST 2003

(VMD 531)

VETERINARY EPIDEMIOLOGY

TIME : THREE HOURS
ANSWER : ALL QUESTIONS

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1 (a) You wish to determine whether piglets fed on a formulated brand of milk will gain more weight than those fed on their dam's milk. You have 52 piglets and 26 are randomly allocated to the Group A (fed on their dam's milk) and the other 26 are randomly allocated to Group B (fed on the formulated brand of milk). Below are the live body weights of piglets in the two groups taken after 5 weeks of feeding.

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							

Summary statistics for Group B are, mean 4.71, standard error o.1793

Calculate for Group A showing calculations:

(i) The mode
(ii) The median
(iii) The arithmetic mean
(iv) The 95% confidence interval
(v) Using the student's t-test, find out whether the weights of piglets fed on the formulated milk were significantly different from that of those fed on the dam's milk. ($t_{(n-1,\,1-\alpha/2)} = 2.0086$)

(b) As a follow-up to a disease report received on the 22 of April, 2001, you visit the affected farm on 23rd of April to investigate and collect specimen. You revisit the farm exactly a month later to report back your findings and provide recommendations on possible control measures. You have the following basic data:

Total herd size on 23rd April was 800
Number of sick animals on the same day was 30
Number of animals becoming sick between 23rd April and 23rd May is 100
Number of deaths from Disease during the same period is 20.

Calculate

(i) The attack rate
(ii) Incidence rate for the specified period
(iii) Prevalence rate on 23rd April. How do you call this rate?
(iv) Mortality rate
(v) Case fatality rate

20 points

2 An area with a total cattle population of 20, 000 is thought to have CBPP with a probable prevalence of 30%.

(a) Determine the sample size required to estimate the prevalence with a bound on error of estimation of 5% and a confidence level of 95%.

(b) What would be the sample size required to detect at least 1 animal with CBPP in this population at 95% confidence level?

(c) Consider all pregnant women in Lusaka as a cohort with a common starting point. All pregnant women are tested for toxoplasmosis at the start of pregnancy. Only those who are negative to this first test will be followed up for further testing (because they are the only ones considered being at risk). There are about 25 000 pregnant women with a true prevalence of about 20%. The available screening test has a sensitivity and specificity of 99%, and it is assumed that these remain the same during the whole pregnancy period.

(i) Make a 2 × 2 table showing the expected situation after the first testing.
(ii) Calculate the predictive value of a positive and negative test after this first testing.

After 3 months (1 / 3 of pregnancy) the test negatives are tested again.

(iii) Make a new table showing the expected situation for those who were test negative in the first testing.
(iv) What is the predictive value of a positive test now? Explain why it is not the same as that of the first testing.
(v) Those that have sero-converted i.e. tested negative in the first testing but not in the second testing, will be treated against the infection. How many false positives will be treated?

(vi) Is the assumption that the sensitivity and specificity of the diagnostic test will remain the same during the whole pregnancy period valid? Briefly explain the reasons for your answer.

30 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 describe what an epidemic, endemic and sporadic disease situation is. What is the ecological significance of each on of these in terms of the host agent relationship?

(c) Briefly describe two causes of bias in observational studies.

12 points

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

(b) When trying to establish a causal association, five (5) principles should be considered. Briefly describe these principles.

(c) There are 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.
(ii) What is the actual name of this study?
(iii) Using the chi-squared test, find out if there is an association between smoking and lung cancer.

(iv) Calculate the following and interpret each result
The odds ratio
The attributable rate
The attributable fraction

25 points

5 (a) Define monitoring / surveillance. What are the objectives of monitoring / surveillance.

(b) Briefly describe the considerations that must be taken into account when designing a monitoring program.

(c) At any level, effective surveillance will depend on a number of considerations. Briefly describe these considerations.

(d) State the three major questions that you must answer when conducting an outbreak investigation.? What are the general objectives of investigating an outbreak?

13 points

THE UNIVERSITY OF ZAMBIA

FIRST SEMESTER EXAMINATIONS-AUGUST 2003

VMC 611 CLINICAL VETERINARY MEDICINE III

TIME: THREE HOURS

INSTRUCTIONS:

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

SECTION A

1. You are presented with a 7 year old dog, which has of late become progressively exercise intolerant. The owner says the dog has been coughing for some time now especially at the beginning of exercise or early in the morning. On clinical examination, the dog is bright and the respiratory rate is normal (20/min). On auscultation of the chest, adventitious lung sounds are heard.

   a). What is your diagnosis?

   b). List your differential diagnoses.

   c). How would you confirm your diagnosis in a).

   d). Outline your medical management of this case.

2. a). Briefly discuss the various clinical indicants on which the clinical diagnosis of liver diseases can be based on.

   b). Describe in detail how you would differentiate jaundice without impairment of bile flow and jaundice with impairment of bile flow.

   c). What general treatment options would you employ in the treatment of liver diseases?

3. Mr. Zambalala has reported to your reception a condition in pigs with the following clinical signs, anorexia, high fever (41.5°C), labored respiration

especially after rising to drink or after disturbance. Cyanosis and death follow in some animals.

a). What is your diagnosis?

b). Expand on the clinical and pathological findings you expect to find.

c). *Compare and contrast this condition with similar conditions.*

SECTION B

4. Describe the etiology, pathogenesis, clinical signs, diagnosis, treatment and control of Infectious Canine Hepatitis.

5. There are a number of pathognomic symptoms in most Central Nervous System disorders.

a). Discuss in detail four (4) of these.

b). What therapeutic principles do you need to follow when considering treatment of CNS conditions?

6. A 9 month old Irish Setter is presented in a comatose state 1 hour after having eaten a meal of chicken. The owner reports that the dog is often dull, depressed, and aimlessly paces after food. It occasionally shows episodes of head pressing, and periodically vomits and is polydipsic. Biochemical screening on admission reveals ALP, 245iu/l, ALT, 22iu/l, urea, 2.1mmol/l, creatine, 80μmol/l.

a). What is your tentative diagnosis and how would you manage the neurologic signs?

b). What additional tests would you perform to confirm your diagnosis.

c). How would you manage this case?

c). During the post-operative recovery period the dog begins to show signs of hypovolemic shock. What is the most likely explanation of this complication.

7. a). Explain in detail the factors involved in pneumonia in sheep.

b). Discuss the clinic, pathogenesis, treatment and control of pasteurellosis in sheep herd.

THE UNIVERSITY OF ZAMBIA

FIRST SEMESTER EXAMINATIONS-AUGUST 2003

VMC 621 VETERINARY OPERATIVE SURGERY 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

Question One

You are presented with a twelve-year-old gelding with a history of stranguria, dysuria, apparent hind limb lameness and penile protrusion. Ultrasonography of the bladder reveals three hyperechoic irregularly shaped floating masses in cloudy urine. The masses are approximately 4-5 cm in diameter. Urinalysis reveals a mild bacteria count and crystals in the urine. When attempting to catheterise the urethra, the catheter only goes in up to the ischial arch.

a) What is your complete diagnosis of this case?
b) With appropriate line or sketch drawings, describe how you would surgically manage this case (include pre-op' considerations, anaesthesia, surgical procedures, post-op' care/possible complications).

Question Two

A twelve-month-old Shar pei is presented to you for elective castration:

a) Describe the clinical examination before castration.
b) What anaesthesia would you use and why?
c) Describe the actual castration (surgical) technique.
d) What do you understand by 'closed' and 'open' castration?

Question Three

a) List the options available for managing dorsal displacement of the soft palate (DDSP) in the horse.
b) You are presented with a cat with an obstructed urethra due to Feline Urologic Syndrome (FUS). With the aid of line/sketch drawings, discuss the surgical management of the case.

1.../2

SECTION B

Question Four

With the aid of line/sketch drawings, write short notes on three of the following:

a) Unilateral canine arytenoids lateralization
b) Surgical management of flail chest
c) Canine ventral rhinotomy
d) Bovine cystotomy and catheterisation

Question Five

a) List options available to the veterinarian for teaser bull preparation.
b) You are presented with an eighteen-month-old ox with severe blunt trauma of the distal 20 cm of the penis, which occurred five days prior to presentation. Initial clinical examination reveals ventral abdominal swelling and that the *corpus cavernosum, corpus spongiosum* and urethra are severely damaged and necrotic.
    i) What clinical signs would you expect in this particular animal?
    ii) With the aid of line/sketch drawings, discuss in detail how would you surgically manage this case.

Question Six

a) Describe in detail, the surgical technique you would use to manage neoplasia involving the cornea, upper and lower eyelids and the nictitans membrane in one eye of a breeding Simmental bull. (include site preparation, anaesthetic technique and post-operative care).
b) What are the indications and briefly outline how you would carry out a third eyelid flap in a cow.

Question Seven

Write short notes on **four** of the following:

a) Bovine tracheostomy
b) Total tracheal ring prosthesis
c) Lacroix (Hinx) procedure
d) Equine ovariectomy
e) Caslick's operation

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END OF EXAMINATION !!!

THE UNIVERSITY OF ZAMBIA

FIRST SEMESTER EXAMINATIONS-2003

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 ANY THREE QUESTIONS IN SECTION B.
3. WRITE THE ANSWER TO EACH QUESTION IN A SEPARATE ANWER BOOK.
4. ALL QUESTIONS CARRY EQUAL MARKS.

SECTION A

1. Anoestrus in the bovine may have a detrimental effect on fertility.
   (a) List 5 causes of bovine anoestrus.
   (b) Briefly discuss the factors that lead to anoestrus in respect of each cause you have listed above.
   (c) How would you treat/manage the various causes listed above?
   (d) What recommendations would you give to farmers with respect to the causes listed above for prevention and control of bovine anoestrus?

2. A farmer keeping 50 ewes intensively invites you to investigate a problem on his farm. The history is that few of his ewes have aborted in late gestation, and some have still births or weak lambs. You examine the placenta closely and notice numerous grey-white foci, 1-3 mm in diameter on the cotyledons.

(a) What is your tentative diagnosis?

(b) Explain the epidemiology and pathogenesis of this condition.

(c) What further investigations would you carry out in order to confirm your tentative diagnosis?

(d) What are your differential diagnoses?

(e) How would you manage, treat and prevent this condition?

3. Being the most renowned equine Theriogenologist in Southern Africa, the Southern African Equine Practioners Association found it befitting to invite you to talk on sexually transmitted diseases in the equine. The theme of your talk is **'Important venereal diseases in the horse, their clinical manifestation and medical management'**. Briefly discuss the pertinent points of your talk to these practitioners.

SECTION B

1. Mrs Kafwafwa brings in her 8 years old domestic short hair intact queen, named Clara to your Clinic with the following complaint: The cat is off food but drinking a lot of water and this morning Mrs Kafwafwa found vomitus in the cage.

(i) What is your tentative diagnosis?

(ii) What is/are the predisposing factor(s)?

(iii) What test(s) will you conduct to confirm your diagnosis?

(iv) How would you manage this condition?

2. A pig farmer calls you to investigate why a high number of his sows have suddenly started farrowing a high number of mummified fetuses.

   (i) What diseases would you suspect?

   (ii) How would you differentiate these diseases?

   (iii) What measures would you employ to arrest this condition?

   (iv) What recommendations would you give to the farmer?

3. A total of 100 dairy heifers from Zangolo farm in Chisamba were inseminated by Mr Banda, a well trained A.I. technician. However, all the heifers aborted in the first 3 months of gestation.

   (i) What diseases would you suspect?

   (ii) How would these diseases be differentiated?

   (iii) In light of your suspicions in (i) above, do you think these heifers should be re-bred?

   (iv) What measures would you take to prevent future early abortions due to your suspicions in (i) above?

4. Briefly discuss the diseases of the prostate in the dog, their clinical manifestation and medical management.

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

UNIVERSITY OF ZAMBIA

UNIVERSITY 1st SEMESTER EXAMINATIONS - AUGUST 2003
(VMD 651)
VETERINARY PUBLIC HEALTH

Time : **3 Hours**
Total Marks : **100 Marks**
Instructions : **Answer all three questions in section A and any two in B**

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Section A:
Answer all questions in this section

Question 1

With the help of examples compare any five of the following:

1) *Vibrio cholerae* and shellfish intoxications. (4 Marks)
2) Disposal of anthrax carcasses and consumer rejected chickens from a shop (4 Marks)
3) Emetic and diarrheal pathogenic food poisoning bacteria (4 Marks)
4) *Clostridia pefringens* and *Staphylococcus aureus* food poisoning (4 Marks)
5) Ciguatera intoxication and mycotoxigenic fungi (4 Marks)
6) *Mycobacterium bovis* and Brucella infections in milk safety (4 Marks)
7) Control of viral and parasitic food borne diseases (4 Marks)

Question 2

Briefly describe pathological lesions and location sites of any five of the following disease conditions that may be encountered during postmortem meat inspection.

1) Bovine cysticercosis (4 Marks)
2) Contagious bovine pleuralpneumonia (CBPP) (4 Marks)
3) Tuberculosis (4 Marks)
4) Anthrax (4 Marks)
5) Hydatidosis (4 Marks)
6) Fasciolosis (4 Marks)

Station 3

Presented before you is part of the results from a laboratory in a milk factory for 4 milk samples labeled A, B, C, and D.

i. Name the test. (2 marks)
ii. Read the results of the test and give your interpretation. (4 marks)
iii. Briefly describe the principle behind this test and its significance? (4 marks)
iv. Describe your possible line of action after getting a positive result on this test. (2 marks)

Station 4

Presented before you are results of a milk test from four quarters of a diary cow.

i. Name the test? (2 marks)
ii. Read the results and give your interpretation. (4 marks)
iii. Briefly describe the principle behind this test and its significance? (4 marks)
iv. What other methods can you use in the absence of this test? (2 marks)

End of the examination

Question 3

1) What are indicator organisms in food microbiology? (4 Marks)
2) Briefly discuss two indictor organisms used to monitor meat and milk safety and justify their use. (4 Marks)
3) Describe classification of food intoxication conditions (4 Marks)
4) Describe the procedure for antemortem inspection (4 Marks)
5) Make two lists of milk-borne zoonoses and meat-borne zoonoses separately in the order of their importance (4 Marks)

SECTION B:
Answer any two in this Section

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Question 4

1) Define the term "HACCP" and outline its basic principles (4 Marks).
2) Assuming you are a Production Manager of a big commercial farm that owns beef cattle and a slaughter and processing unit (meat product). Describe in detail how you would implement a HACCP programme in these two units paying particular emphasis on preventing microbiological hazards (16 Marks)

Question 5

1) What are the objectives of meat inspection? (2 Marks)
2) Explain in detail how you would proceed to examine a cattle herd presented for slaughter at an abattoir. (10 Marks)
3) Briefly describe four important milk-borne zoonotic diseases paying particular attention to etiology, epidemiology, prevention and control (8 marks)

Question 6

1) Describe the problems that impede implementation of pragmatic food safety programmes particularly "food of animal origin" in Zambia (10 Marks)
2) Explain in detail the role that small-scale dairy producers, commercial dairy processors and consumers can play in implementing milk hygiene (10 Marks)

End Of The Examination