

THE UNIVERSITY OF ZAMBIA
UNIVERSITY EXAMINATIONS
SCHOOL OF VETERINARY MEDICINE

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THE UNIVERSITY OF ZAMBIA

UNIVERSITY EXAMINATIONS - OCTOBER, 1993

VMB 210

VETERINARY ANATOMY AND PHYSIOLOGY

ANATOMY

PAPER I

TIME: THREE HOURS

INSTRUCTIONS: ATTEMPT ONLY FIVE (5) QUESTIONS

1. Describe the important anatomical features of the stifle joint. What movements does it permit? What muscles produce these movements?
2. Write concise notes on:
 - (a) cartilaginous joints
 - (b) the extensors of the carpus and digits in the dog
 - (c) the rectus sheaths.
3. What are the parts of the small intestine in the dog? Describe their general topographical arrangement. What are the main blood vessels supplying the small intestine?
4. Write concise notes on:
 - (a) the urinary bladder
 - (b) the laryngeal cartilages
 - (c) the teeth of the dog
5. Give an account of the female reproductive tract in the bitch.
6. Draw a diagram of a transverse section through the spinal cord and a typical spinal nerve. Describe the functional composition and distribution of a typical spinal nerve.

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY EXAMINATIONS - OCTOBER, 1993

VMB 210

PAPER II

GENERAL HISTOLOGY AND PHYSIOLOGY

TIME: THREE HOURS

INSTRUCTIONS: ANSWER ALL QUESTIONS
ILLUSTRATE YOUR ANSWERS WITH DIAGRAMS IF POSSIBLE

1. The nuclear envelope encloses the vital part of a mammalian cell. Describe the ultrastructure and the function of this nuclear envelope and of all the different elements enclosed by it.
2. Give the histological characteristics of striated skeletal muscle and explain the mechanism of contraction.

or

Describe the different parts of a growing long bone (macroscopically and histologically) and explain endochondral bone formation.

3. Write short notes on four of the following:
 - (a) B - lymphocytes
 - (b) Oligodendrocytes
 - (c) Transitional epithelium
 - (d) Adipose tissue
 - (e) Glycocalyx
 - (f) Pseudo - eosinophils
 4. Name the plasma proteins of blood and mention briefly the functions of these proteins.
 5. Write short notes on the following in skeletal muscles:
 - (a) Tetanic contractions
 - (b) 'Treppe' or "Staircase" phenomenon
 - (c) Twitch contraction
 - (d) Refractory period
 - (e) Sarcomere
 6. Describe briefly the changes in membrane permeability and ionic movements in nerves related to excitation, electrotonic potential, action potential and conduction.
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END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY EXAMINATIONS - OCTOBER, 1993

VMB 211

VETERINARY EMBRYOLOGY

TIME: THREE HOURS

INSTRUCTIONS: ANSWER ALL QUESTIONS
ALL QUESTIONS CARRY EQUAL MARKS
ILLUSTRATE YOUR ANSWER WITH DIAGRAMS WHERE POSSIBLE

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1. Write concise notes on the type of placentation, implantation, fetal membranes and length of gestation of two (2) of the following species:
 - cat
 - pig
 - cow

 2. (a) What is the organ critical period during embryonic development? Name and explain the possible causes of development abnormalities.

(b) Describe the process of fertilisation.

 3. Describe the origin and development of three (3) out of four (4) of the following:
 - (a) the spinal cord
 - (b) the permanent kidney
 - (c) the internal ear
 - (d) the pancreas

 4. A. Write short notes on four (4) out of five (5):
 - (i) chalones
 - (ii) circulatory changes at birth
 - (iii) derivatives of the somites
 - (iv) development of the epidermis
 - (v) primitive external body form
B. Explain briefly the meaning of four (4) out of five (5):
 - (i) odontotomatata
 - (ii) entropion
 - (iii) achondroplasia
 - (iv) freematinism
 - (v) hydrocephalus
-

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY EXAMINATIONS - OCTOBER, 1993

VMB 315

VETERINARY HISTOLOGY

TIME: THREE HOURS

INSTRUCTIONS: ANSWER ALL QUESTIONS
ALL QUESTIONS CARRY EQUAL MARKS
ILLUSTRATE YOUR ANSWERS WITH DIAGRAMS WHERE POSSIBLE

1. ANSWER TWO (2) OUT OF THREE (3)
 - A. Describe and compare the histological structure of the walls of an elastic artery and a muscular artery.
 - B. Describe histologically a complete cross section of the spinal cord and indicate the functional importance of the different parts.
 - C. Describe the microscopic structure of the thyroid gland.
 2. The ruminant forestomach has different compartments, each with specific characteristics and functions. Compare these compartments histologically and functionally.
 3.
 - A. Give a histological account of the urinary passages of a male dog.
 - B. A cow was in oestrus one week ago and was successfully inseminated. What histological picture would you expect in:
 - (i) the ovaries
 - (ii) the uterine wall?
 4. Write short notes on five (5) of the following:
 - (a) spleen
 - (b) pneumocyte type 2
 - (c) cardiac skeleton
 - (d) corpuscle of Malpighi
 - (e) Brunner's glands
 - (f) Purkinje cells
 - (g) elastic cartilage
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END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY EXAMINATIONS - OCTOBER, 1993

VMB 330

VETERINARY BIOCHEMISTRY

TIME: THREE HOURS

INSTRUCTIONS: ANSWER FIVE QUESTIONS
ALL QUESTIONS HAVE EQUAL VALUE

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1. Describe the importance of globulins in the plasma of a mammal.
 2. Describe the breakdown of glucose to lactic acid in the muscle of a mammal. Describe how the energy released in the form of adenosine triphosphate is stored in the muscle, and how this energy is used in the process of muscle contraction.
 3. Write short notes on the following:
 - (a) Enzyme specificity
 - (b) Competitive inhibitors of enzymes
 - (c) Regulatory enzymes
 - (d) The effect of pH on an enzyme
 4. Describe the role of messenger ribonucleic acid, including where it is synthesized and where it is used.
 5. Describe the urea cycle for the excretion of nitrogen in a mammal. Describe how this is linked to the degradation of proteins in the body cells, and how the urea is excreted.
 6.
 - (a) Describe the synthesis of palmitic acid (C16:0) from acetyl CoA in a liver cell.
 - (b) Arachidonic acid (C 20:5,8,11,14) is required in the diet. Explain why it is required and describe its function in the animal body.
 7. Discuss the importance of iron in the body and describe the structures of some of the molecules it is involved in.

8. (a) Lactose is only synthesised in the mammary gland. Give its structure and function.
- (b) The following experiment was carried out to determine the lactose concentration in milk.
- (i) 20 cm³ of milk was centrifuged at 4°C for 15 minutes, 5 cm³ of cream disc was removed.
- (ii) 1 cm³ of fat free milk was placed in a 100 cm³ flask and 2 cm³ of 0.33M H₂SO₄ was added. The mixture was made up to the mark and allowed to stand for 5 minutes. It was then filtered into a conical flask.
- (iii) 1 cm³ of filtrate was transferred to a boiling tube in duplicate and diluted to 2 cm³ with water. 2 cm³ of alkaline copper reagent was added and heated in a boiling water bath for 8 minutes. 4 cm³ of phosphomolybdic acid reagent was added and the solution was made up to exactly 25 cm³.
- (iv) A set of standards was prepared as follows from a solution containing 1 mg of lactose /cm³. The absorption was read in a spectrophotometer at 630nm.

Tube No.	Vol. Lactose Soln. (cm ³)	Vol. H ₂ O (cm ³)	ABS.
0	0.0	2.0	0.02
1	0.2	1.8	0.13
2	0.4	1.6	0.25
3	0.6	1.4	0.36
4	0.8	1.2	0.49
Milk sample A	2.0	-	0.27
Milk sample B	2.0	-	0.28

- (c) Using a graphic and appropriate dilution calculations, calculate the concentration of lactose in fat free milk and in the original milk sample as g/dm³.

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY EXAMINATIONS - OCTOBER, 1993

VMB 425

VETERINARY PHARMACOLOGY

TIME: THREE HOURS

ANSWER: FIVE (5) OF THE FOLLOWING QUESTIONS.
ALL QUESTIONS HAVE EQUAL VALUE. READ THE RUBRIC CAREFULLY.

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1. There are many ways in which drugs can interact within the body. Discuss how drug biotransformation and how plasma protein binding can produce such interactions.
 2. Write short notes on the following:-
 - (a) coccidiostats
 - (b) furosemide
 - (c) metoclopramide
 3. Discuss diminazene and isometamidium with particular reference to their uses in treatment and prophylaxis of trypanosomiasis in cattle.
 4. Discuss the approach you would take to treat a calf with acute bacterial diarrhoea.
 5. Write short notes on:-
 - (a) xylazine
 - (b) antihistamines
 - (c) atropine
 6. Compare and contrast heparin and the coumarin group of drugs. Indicate the uses to which these drugs are put.
 7. Discuss acetylpromazine giving emphasis to its uses in clinical veterinary practice.
 8. List the classes of mediators of inflammation giving examples for each class and for each class discuss their role in inflammation.

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY SUPPLEMENTARY/DEFERRED EXAMINATIONS - DECEMBER, 1993

VMB 425

VETERINARY PHARMACOLOGY

TIME: THREE HOURS

ANSWER:

FIVE (5) OF THE FOLLOWING QUESTIONS.
ALL QUESTIONS HAVE EQUAL VALUE.
READ THE RUBRIC CAREFULLY.

1. Discuss the sulphonamide group of drugs, emphasising their role in veterinary medicine.
 2. Describe the mode of action of the following groups of drugs:
 - (a) Penicillins
 - (b) Muscle relaxants
 - (c) Thiazide diuretics
 3. As a single handed veterinarian you need to anaesthetise a dog for suturing a wound.
 - (a) List the choice of anaesthetics you could use
 - (b) Discuss briefly the pharmacology of one from your list
 4. Discuss ivermectin with reference to its clinical applications.
 5. Write short notes on:-
 - (a) Buparvaquone
 - (b) Digoxin
 - (c) Diminazene
 6. Briefly discuss analeptic drugs (medullary stimulants) and their uses.
 7. Bloat is one of the major upsets in ruminal function. Discuss how you would treat ruminal tympany and frothy bloat.
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END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY EXAMINATIONS - OCTOBER, 1993

VMC 510

VETERINARY MEDICINE I

TIME: THREE HOURS

ANSWER: ALL QUESTIONS IN SECTION A. SECTION B ANSWER THREE QUESTIONS.

SECTION A

1. Comment briefly on every part of the following clinical findings. Do not try to give a diagnosis as there is no logical link between the symptoms.

You are called to examine a dairy cow that has not been eating and producing well for about one month. Temperature: 40°C; Pulse rate: 90/minute; Respiratory rate: 62/minute. Visible mucous membranes are cyanotic (bluish). During examination of the oral cavity you notice a fetid smell and the presence of a significant amount of grass stuck between the teeth and jaw.

Auscultation of the thorax: Vesicular sound clearly audible, no bronchial sounds.

External examination of the abdomen reveals bulging of the left paralumbar fossa. Two ruminal contractions are counted per 2 minutes but during simultaneous auscultation on the dorsal part of the last rib no crackling sound can be heard during these contractions.

No sounds are audible during auscultation of the right abdominal wall.

2. Discuss the physiopathological mechanisms of the different causes of acute diarrhoea in the dog and describe how they will influence the type of treatment used.
3. A farmer reports that some cattle have died after eating pods from trees. A search of the area rules out Mububa poisoning (*Albizia versicolor*). Surviving animals vary from normal to those in respiratory distress - surprisingly these later have pink mucous membranes. Autopsy of dead animals shows that they have bright red blood despite the dyspnoea, and there is a smell of almonds about the carcass.

Discuss treatment of the cases and the rationale for treatment.

SECTION B

4. Discuss the differential diagnosis of milk fever in cattle.
5. What are the major causes and clinical signs of respiratory disease in the dog?
6. Write a short note on the aetiology and clinical signs of parvovirus in the dog.
7. Write a note on the aetiology and treatment of intermittent or recurrent colic in the horse.

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY SUPPLEMENTARY/DEFERRED EXAMINATIONS - DECEMBER, 1993

VMC 510

VETERINARY MEDICINE I

TIME: THREE HOURS

ANSWER: ALL QUESTIONS IN SECTION A. SECTION B ANSWER THREE QUESTIONS

SECTION A

- I. You examine a puppy that has been presented to you with a sudden onset of vomiting. The vomiting is not related to feeding and the temperature is within normal range.
- What conditions/diseases would you consider?
 - What would be your management/treatment programme?
 - Give the stages of vomiting.
- II. Describe briefly the clinical signs of the following conditions:
- Ketosis in cattle
 - Iron deficiency in pigs
 - Iodine deficiency in sheep
 - Vitamin E/Selenium deficiency in cattle
- III. Compare and contrast pharmacodynamic and clinical aspects of lead and arsenic and describe treatment of both toxicoses.

SECTION B

- IV. How would you describe changes in the following parameters in a dog that is in a state of shock? Give reasons for these changes.
- Pulse rate and/or volume
 - Respiration
 - Temperature
 - Capillary refill time
- V. How would you confirm a rabies diagnosis in (a) a live dog and in (b) a dead dog?
- What control methods would you apply in an endemic area?

- VI. List all the abdominal organs which are normally palpable during a rectal examination of an adult cow and describe the characteristics which may be used to identify them.
- VII. Name two conditions which may cause regurgitation in cattle. Describe the clinical signs and how you would proceed to differentiate them.

END OF EXAMINATION

VETERINARY SURGERY 1

TIME: THREE HOURS

ANSWER: ALL QUESTIONS IN PART A, ANSWER ONLY 3 OF THE 4 QUESTIONS IN PART B.

PART A

1. State 3 radiographic signs for each of the following:
 - (a) Hydrothorax
 - (b) Cardiomegally
 - (c) Diaphragmatic hernia
 - (d) Osteomyelitis
 - (e) Primary bone neoplasia
 - (f) Ascites
 - (g) Peritonitis
 - (h) Intestinal obstruction

2. (a) Describe step by step how you would manage a case of cardiac arrest during anesthesia.

- (b) Describe how you would produce a paravertebral analgesia in a very fat bull.

- (c) Why are cattle not good candidates for general anesthesia.

3. (a) Describe or sketch the location for surgical approach to the canine thorax for the correction of the following:
 - (i) Patent ductus arteriosus
 - (ii) Thoracic oesophagus for foreign body removal
 - (iii) Lung lobectomy
 - (iv) Diaphragmatic hernia

- (b) For successful thoracotomy operations, what would you need to do before, during or after the operation.

PART B

ANSWER ONLY 3 OF THE 4 QUESTIONS.

4. (a) How are x-rays generated.
- (b) Name the basic components of an x-ray machine.
- (c) Name the properties of x-rays that make it suitable for diagnostic imaging
- (d) Describe or sketch the structure of an x-ray film.
- (e) List the basic radiographic densities
- (f) What chemical makes up a "developer" and "fixer" solutions for X-rays.
- (g) Why do we need to protect or limit exposure to x-rays.
- (h) Name the ways in which bone will react to disease and how these reactions are shown radiographically.
- (i) Distinguish between arthritis and degenerative joint disease.
5. You are anesthetising a 19kg dog for operation. You have administered two thirds of the calculated dose of sodium pentobarbitone intravenously.
- (a) Describe how you will systematically assess the stage of anesthesia of this patient.
- (b) Assuming the dog is in plane II, stage III, describe the signs you will find in each of the tests carried out in (a) above.
- (c) Suppose, you are presented with this patient and all you have is thiopentone sodium and halothane. Describe how you would anesthetize this patient for a major operation.

6. A 3 year old Collie was presented to the Small Animal Clinic. 7 days after an injury. The owner reported that, the dog came in bleeding from the mouth after a short run on the day in question. On physical examination the dog was dull and pyrexia.
- (a) What areas of the dog would you emphasize on clinical examination and what other clinical signs would you likely find?
 - (b) What would be your differential diagnosis?
 - (c) What tests would you require to arrive at the final diagnosis?
 - (d) How would you manage this case?
7. (a) What would be the advantage of dehorning.
- (i) Young cattle
 - (ii) Adult cattle
- (b) What complications would be associated with dehorned cattle and how could these be managed?
- (c) Briefly describe how you would dehorn an adult bull.

END OF EXAMINATION

VMC 520

VETERINARY SURGERY I

TIME: THREE HOURS

INSTRUCTIONS:

ANSWER ALL QUESTIONS IN SECTION A
ANSWER 3 OUT OF 4 QUESTIONS IN SECTION B.

SECTION A

1. (a) Define the term pre-medications in the context of anaesthesiology.
- (b) Name the groups of drugs used for premedications in animals giving one example in each group.
- (c) Discuss the specific indications and contra - indications for the use of each group of anaesthetic pre-medicants listed in (b) above.
2. (a) Discuss the steps you would take to prepare surgical instruments and drapes for an aseptic operations in a horse.
- (b) You had carried out a hernia operations in a dog under conditions you fear are not aseptic. Describe the signs you expect this animal to exhibit as a result of this 5-15 days post operation.
3. (a) What points would you consider in the evaluation of a bone lesion for a radiographic report?
- (b) What signs will a dog with disc disease manifest **CLINICALLY**?
- (c) What radiographic signs will indicate evidence of a disc disease in dogs?
- (d) Define discospondylitis and comment on the radiographic signs associated with the disease.
- (e) Describe the radiographic appearance of an aggressive bone lesion.
- (f) differentiate radiographically signs of acute joint disease from those of chronic joint disease.

SECTION B

4. (a) Name causes of generalised heart enlargement in dogs and cats. Give radiographic signs suggestive of this condition.
- (b) Differentiate between bronchial disease and alveolar disease as seen radiographically.
- (c) State the radiographic signs of pleural effusion. How much fluid will be present in a medium sized dog to warrant presence of radiographic signs?
- (d) List the radiographic signs of diaphragmatic hernia and suggest a differential diagnosis for this condition.
5. Discuss the various approaches to the canine abdomen for the following
- (a) cystotomy
- (b) Nephrectomy
- (c) diaphragmatic herniorrhaphy
- (d) typhlectomy
6. Describe in details the anesthetic procedure you would use in the following conditions
- (a) Amputations of the tail in a 2 year old breeding bull.
- (b) Surgical corrections of a displaced abomasum in a cow.
- (c) An exploratory laparotomy in a seven years old bitch
- (d) Castration of 4 weeks old calves.
- (e) De-horning an adult Ram.
7. (a) Classify suture materials into two major groups giving 3 examples of each group.
- (b) Give four (4) examples of tissues on which each group may be used. Give reasons why the suture materials may be used on such tissues.
- (c) What are the main disadvantages of cat gut?
- (d) Give six properties of an ideal suture material

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY EXAMINATIONS - OCTOBER, 1993

VMC 535

VETERINARY REPRODUCTION AND OBSTETRICS

TIME: THREE HOURS

ANSWER: FIVE (5) OF THE FOLLOWING QUESTIONS.
ALL QUESTIONS HAVE EQUAL VALUE.

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1. Describe the clinical behavioural, endocrinological and morphological genital tract changes associated with oestrus in the cow and discuss their importance to fertility and infertility in dairy herds.
 2. A farmer wishes to synchronise oestrus in his herd for a breeding programme. Discuss the methods available for synchronising oestrus in cattle.
 3. Write short notes on the following:
 - (a) the physiological initiation of parturition
 - (b) the "signal" for maintenance of the corpus luteum of early pregnancy
 - (c) comparative placentation
 4. Describe techniques available for pregnancy diagnosis in:
 - (a) the cow
 - (b) the mare
 - (c) the sow
 5. Discuss semen evaluation in the bull giving a description of factors to be examined and common abnormalities.
 6. Outline the endocrinological and cytological events occurring during the oestrous cycle of the bitch and describe how they can be used to improve fertility in this species.
 7. Compare and contrast pregnancy in the ewe and nanny goat (doe).

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY EXAMINATIONS - OCTOBER, 1993

VMC 610

VETERINARY MEDICINE II

TIME: THREE HOURS

ANSWER: ALL QUESTIONS IN SECTION A. SECTION B ANSWER THREE QUESTIONS

SECTION A

1. A farmer reports to you that his young beef cattle are dying. Death occurs 12 to 48 hours after he notices acute lameness and marked depression. Some of the animals observed before death developed a cold and painless swelling of either the hip, shoulder, chest or back; at palpation emphysema could sometimes be felt.
 - (a) What is your diagnosis and differential diagnosis?
 - (b) How do you confirm this tentative diagnosis and treat the affected animals?
 - (c) What is your farmer to do in this outbreak situation and after the situation is under control?
2. In 1993 African swine fever spread in Zambia.
 - (a) What are the clinical signs of this disease?
 - (b) What does the postmortem picture look like and how can you confirm the diagnosis of African swine fever?
 - (c) Give your differential diagnosis.
3. What is canine infectious hepatitis?
 - (a) Describe its causative agent.
 - (b) Discuss its clinical signs,
 - (c) Treatments and
 - (d) Prevention methods.

SECTION B

4. What causes gastric trychostrongylosis in ruminants? Your account of the aetiology should be comprehensive. How does the clinical picture present in sheep? How would you deal with an outbreak at a commercial farm?
5. There are confusing reports coming from Petauke. One farmer says many cattle are dying from anaplasmosis, but the area Veterinary Assistants say it is East Coast fever that is killing the animals.

Discuss the differential diagnosis of these two conditions.

6. Describe the most commonly used means of controlling ascites formation in liver cirrhosis. What is or are the possible complication(s) of these treatments?

How does one monitor the complication(s) in practice?

7. Compare the clinical signs, treatment and control of:
 - (a) Photosensitization and urticaria.
 - (b) Dermatomycosis and dermatophilosis.

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY EXAMINATIONS - OCTOBER, 1993

VMC 620

VETERINARY SURGERY II

TIME: THREE HOURS

ANSWER: ALL QUESTIONS IN PART A, PART B ANSWER ONLY 3 OF THE 4 QUESTIONS.

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1. (a) How will you manage an open fracture of 3 days duration prior to surgical treatment?

(b) Briefly discuss the complications associated with these open fractures following treatment. Outline how you would manage each complication.
 2. A horse nods its head when walking. How would you find out which of the forelimbs the horse is lame on?
 3. A six year old Dachund is presented with a history of in-steady gait, occassional weakness of the hindlimb, and in ability to get up especially in the morning. The owner reported that the dog had yelped loudly as if in pain a day before the above clinical signs were noticed.

(a) What conditions would you suspect?

(b) What clinical and radiological examinations would you carry out to differentiate between these conditions.

(c) How would you treat one of the conditions in (a) above?

PART B

ANSWER ONLY 3 OF THE 4 QUESTIONS

4. (a) Describe the predisposing factors to otitis externa

(b) What clinical signs would you expect to observe in a dog suspected to have otitis externa, otitis media/interna?

(c) A dog was presented with continuing ear disease after lateral wall resection (LWR) drainage procedure. What are the reasons for failure of LWR and what would be your next step in treating this case?

5. (a) Discuss the features which will qualify a fracture to be recommended for external immobilisation
- (b) Describe the technique for
 - (i) Tension band wiring.
 - (ii) Lag Screwing.
- (c) Describe how you would manage a mandibular fracture in an adult dog.
6. (a) List your differential diagnosis for abnormal respiratory sounds in horses.
- (b) Describe in detail how you would surgically manage a horse with a named dysfunction of the vocal cord(s).
- (c) What is the prognosis of the above case?
7. (a) What are the complications that could be expected in cows following caesarian section?
- (b) What particular precautions would you take to reduce or eliminate these complications?

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY SUPPLEMENTARY/DEFERRED EXAMINATIONS - DECEMBER, 1993

VMC 620

VETERINARY SURGERY II

TIME: THREE HOURS

INSTRUCTIONS:

ANSWER ALL QUESTIONS IN SECTION A
ANSWER 3 QUESTIONS IN SECTION B

SECTION A

1. Describe in details how you would examine a horse for lameness diagnosis.
2. (a) Define the term hernia and give a detailed classification of hernias.
(b) Describe how you would treat a ventral hernia with a very large hernia ring in a 2 year old cat.
3. Discuss the complications associated with ovariohysterectomy in dogs. How may these complications be managed?

SECTION B

4. A 2 year goat was treated for a mid-shaft femoral fracture by an open fixation technique.. Three days later it was noticed that the animal was knuckling on the foot when it stood or walked
 - (i) What conditions do you suspect?
 - (ii) How would you further investigate this case?
 - (iii) What prognosis would you give to this case and why?
 - (iv) What treatment would you recommend?
5. (a) Differentiate between FENESTRATION AND LAMINECTOMY
(b) Name one condition that may be managed by each technique in (a) above

- (c) Briefly describe how you would manage a case of emphyema of the frontal sinus in a horse.
6. (a) Outline the causes of AURAL HAEMATOMA in dogs
- (b) How would you manage a 10 days old aural haematoma in a dog?
7. Describe in details
- (a) the anaesthetic technique you would use in anaesthetising a cow which is very vicious for an exploratory laparotomy
- (b) the surgical management of a confirmed case of traumatic reticulitis in a cow
- (c) the complications associated with ventral laparotomy approach in animals.

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY EXAMINATIONS - OCTOBER, 1993

VMC 635

VETERINARY REPRODUCTION AND OBSTETRICS

TIME: THREE HOURS

INSTRUCTIONS: THE EXAMINATION IS TO BE DIVIDED INTO TWO PARTS. IN THE FIRST PART THE STUDENTS HAVE TO ANSWER ALL THREE QUESTIONS. IN THE SECOND PART B, THEY CHOOSE THREE QUESTIONS OUT OF 5.

PART A

ANSWER ALL 3 QUESTIONS

1. How would you evaluate the breeding soundness of a bull, used in breeding programmes in a dairy enterprise. Include all parameters one should consider while performing clinical, physical, external, internal and laboratory examinations.
2. You are asked to evaluate the fertility and reproduction status in a piggery.
 - (a) List all the criteria to be taken into account.
 - (b) What are the normal values of these parameters?
 - (c) Describe how and why these parameters can vary from the normal.
3. A bitch is brought to your surgery. By taking a detailed anamnesis (history) you receive the following information: The Alsatian bitch is 3 years old. She has never been seriously ill, and is fully vaccinated. She had one operation about 5 years ago for an intestinal intussusception, from which she recovered without any complications. She was in heat 5 weeks ago. The owner has notice a slight change in behaviour 2 weeks ago. Her temperature has been normal since then, but is today slightly below normal (why? explain). The animal is nulliparous and has been treated with progestagens to prevent oestrous. The last treatment was administered 8 months ago.

Further clinical and laboratory examination reveal the following:

- (a) Alopecia
- (b) Temperature subnormal
- (c) Anaemia and leucocytosis (shift to the left)
- (d) Ulceration on the buccal mucosae
- (e) Swollen vulva
- (f) Vaginal discharge. The owner only noticed this a couple of times and thought this was normal as the bitch was in oestrous.

The discharge was not copious and was one day chocolate brown and the next day yellow and of a thicker consistence.

- (i) What is your diagnosis?
- (ii) Describe the pathogenesis of all the symptoms described in the anamnesis and the clinical and laboratory examination.
- (iii) Describe the possible complication of this condition
- (iv) Give ALL treatments.

PART B

ANSWER 3 OF THE 5 QUESTIONS.

4. When examining the management records kept on the production and reproduction data, in a dairy herd, a frequent observation is the occurrence of irregular cycling cows. The cycles of these animals are either too long or too short.

List and describe the aetiology, pathogenesis and treatment of all causes which can alter the length of the oestrous cycle in the cow.

5. Mastitis is too often considered as a problem of an individual animal. Most dairy farms and management units however suffer from mastitis as a 'herd-problem' rather than individual cases of mastitis. This is especially the case in farms where we see regular cases of clinical mastitis.

Write an essay on 'Mastitis as a herd problem in dairy institutions', with particular emphasis on: detailed anamnesis (history), diagnosis and severity of the problem, prognosis, specific therapy and preventive and management measures.

6. Mares often fail to conceive. List these conditions in the mare which can prevent conception.

Describe every disease entity separately.

7. Mastitis in the sow is not common. There is however one particular form of mastitis which is often seen and diagnosed together with other clinical diseases.

Describe the syndrome in the sow in which other diseases coincide with mastitis.

8. It is common in sheep to manipulate the oestrous cycle. The following interventions are common practice. Explain following techniques:

- (a) Oestrous induction: When can it be done, in which age groups
Describe the different techniques for different age groups.
- (b) Oestrous synchronization: Describe the different techniques.
- (c) Increase the number of ovulations: Describe the different techniques.

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY EXAMINATIONS OCTOBER, 1993

VMD 511

VETERINARY EPIDEMIOLOGY AND ECONOMICS

TIME: THREE HOURS

ANSWER: 4 QUESTIONS INCLUDING QUESTIONS 1 AND 4.

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1. (a) What is a test and when is a serological procedure a diagnostic test? (10 marks)
- (b) In serological tests of viral infections a minimum of a four fold rise in titre is required in order to diagnose a current infection;
- (i) Explain the biological basis for the necessity to show a rise in titre. (10 marks)
- (ii) Why is a simple rise in titre criterion not enough? (10 marks)
- (c) Vaccination may in addition to protecting the vaccinated individual, protect unvaccinated animals. Briefly explain how the latter may occur. (20 marks)
- (d) A suspected outbreak of a fast moving disease is reported to you. The disease is a notifiable one, etiologically there are 3 non-cross protecting serotypes and vaccines for each serotype are available in a strategic vaccine bank. Indicate how you would investigate and control the outbreak. (50 marks)
2. (a) Differentiate between simple random sampling and cluster sampling. (10 marks)
- (b) For each of the above sampling methods:
- (i) Give an example of a situation in which you as a practitioner may apply the method in Zambia. (20 marks)
- (ii) Outline the procedure you would use to obtain a sample. (40 marks)
- (c) For samples of size n , comment on, the expected relative magnitudes of the standard errors obtained using the two methods in (a) and reasons for this difference. (20 marks)
- (d) How would one equalise the standard errors above (c). (10 marks)

3. (a) Differentiate between an observational study and an experiment with respect to the role of the investigator. (10 marks)
- (b) Compare and contrast Cohort and case-control studies by considering
- (i) sampling strategies (10 marks)
 - (ii) appropriate measures of the strength of association. (10 marks)
 - (iii) suitability for studying causation of rare conditions (10 marks)
- (c) (i) Randomisation and replication are necessary features of which study design? (5 marks)
- (ii) What purpose does each serve? (15 marks)
- (d) In a vaccine trial 460 animals were used, 160 cases were recorded- 20 in the vaccinated group. A placebo (dummy) vaccine was administered to 220 animals. Show whether the vaccine was effective (Number the main steps you will use and for each step indicate its purpose and interpret the results accordingly.) (40 marks)
4. (a) What do the following terms mean: marginal cost, marginal revenue and marginal product? (15 marks)
- (b) In milk production considering labour as the variable input, show what you would expect to happen to the marginal cost, marginal revenue and marginal (physical) product when a dairy herd is affected by foot and mouth disease (FMD). (15 marks)
- (c) List the losses that may be attributed to FMD on such a farm assuming that an infected premise will be placed under quarantine for 3 months. (15 marks)
- (d) Assuming FMD is endemic in an area and a special control project is set up:
- (i) Give 5 examples of fixed costs and Give 5 examples of variable costs that you would expect to be encountered. (15 marks)
 - (ii) In such a project is the ratio between fixed and variable costs important?. Briefly defend your answer. (10 marks)

(iii) In such a project show how you would calculate the annual cost of a durable item which has a salvage value (15 marks)

(e) Further more assuming competitive market for milk, explain with the aid of a diagram (or diagrams) the impact of a successful control program on milk price, consumers and producers. (15 marks)

5. In Zambia an outbreak of African Swine Fever (ASF) is controlled by the slaughter pigs on infected premises and all pigs within a defined area and intensive quarantine is imposed for a period stipulated by law.

(a) Under such circumstances, if one has to devise the actual control programme is the analysis a cost-benefit analysis or a cost-effectiveness analysis? Explain. (25 marks)

(b) If farmers are compensated for the market value of slaughtered animals does the compensation cover all costs incurred by the farmers? Explain. (20 marks)

(c) (i) In financial analysis compensation is a cost to the government, what will it be an example of in economic analysis (10 marks)

(ii) If the sale price of a slaughtered pig was K20 000 and the farmer was paid K20 000 as compensation, calculate the economic cost to society. Explain the principle you use. (25 marks)

(d) The policy of slaughter and quarantine gives no choice as to the strategies to be employed. As such we have no economic problem by definition. Do you agree? Comment. (20 marks)

END OF EXAMINATION

VMD 511 FORMULAE SHEET

NOTE: Formulae directly based on definitions will be supplied by the candidates themselves.

1. $n = (4pq)/L^2$

2. $n = (4\text{variance})/L^2$

3.
$$S^2 = \frac{\sum x^2 - \frac{(\sum x)^2}{n}}{n-1}$$

4. $S.e = s/\sqrt{n}$

5. $95\%CI = X \pm 2s.e.$

6.
$$\chi^2 = \frac{n(\text{Iad-bcl} - .5n)^2}{(a+b)(c+d)(a+c)(b+d)}$$

where Iad-bcl is the absolute value of the difference.

For an alpha level of .05 the χ^2 statistic value is 3.84 given 1 degree of freedom.

7. $AF = (RR-1)/RR$ or $(OR-1)/OR$ Note Efficacy = "AF"

THE END

THE UNIVERSITY OF ZAMBIA

UNIVERSITY EXAMINATIONS - OCTOBER, 1993

VMD 530

VETERINARY CLINICAL PATHOLOGY

TIME: THREE HOURS

ANSWER: ALL QUESTIONS

MARKS: 60

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1. Following are description of organ function tests. If it is correct, mark it with 'O', and if it is not correct, mark it with 'X' on the answer books provided.
- (a) Jaundice occurs when the free bile pigments cannot be eliminated by the liver in the normal manner and accumulate in the blood and tissues. Jaundice, therefore, is one of the indicators of hepatic disorder or heavy haemolysis.
 - (b) Aspartate aminotransferase is a liver specific enzyme, and its increase in serum means the activation of protein synthesis in the liver.
 - (c) Proteinuria is observed in kidney function disorder. Especially, proteinuria without the red blood cells or inflammatory cells often means the abnormal glomerular filter permeability and/or abnormal tubular reabsorption of filtered proteins.
 - (d) Since the serum alkaline phosphatase activity in horses is not related to age, it is not necessary in the activity reading to consider the age of patient horses.
 - (e) In the urinalysis, color, appearance, specific gravity and sediments are the important factors indicating the kind and localization of functional disorder.
 - (f) The greatest specific activity of alanine aminotransferase in all animals is in the liver. It is a well established, sensitive, liver specific indicator of damage.
 - (g) When bovine serum assay shows the increase in BUN and creatinine concentrations and the decrease in albumin concentration, we should judge it an acute hepatitis.

- (h) Serum amylase activity is an indicator for the acute pancreatitis. Since the serum amylase is calcium-dependent metalloenzyme, EDTA and citrated plasma are inappropriate for amylase assay.
- (i) In the diagnosis of neuromuscular disorders, creatinine kinase, aspartate aminotransferase and lactate dehydrogenase activities in the serum are determined. Among them, however, CK activity analysis is most widely used and evaluated.
- (j) In most microbial infections cerebrospinal fluid is turbid and xanthochromic, but it is unusually clear in fungal infection.
2. Give 6 subjects of urinalysis with reagent-strip, and describe in detail their importance in diagnosis.
3. Describe the left shift(s) in neutrophils. What diseases can you suspect if they are found in blood films?
4. Write the clinical signs and haematological features in haemolytic anaemia.
5. What do you understand by diagnostic cytology? What are the different means of specimen collection of the above technique. Describe the different cytological findings in fluid accumulations.
6. (a) What are the different stains presently used in cytology.
- (b) Describe the use of exfoliative cytology in the clinical diagnosis of different types of neoplasia.

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY EXAMINATIONS - OCTOBER, 1993

VMD 611

PREVENTIVE VETERINARY MEDICINE

TIME: THREE HOURS

ANSWER: FIVE QUESTIONS ONLY AND MUST INCLUDE QUESTION NO.6

1. Define preventive Veterinary Medicine and discuss briefly the principles of preventive medicine (Disease Control). (20 marks)
2. What do you understand by the term disinfection? (20 marks)

Name any five chemical disinfectants commonly used in Veterinary Medicine and discuss briefly their practical application.
3. What do you understand by the following? Describe briefly. (20 marks)
 - (a) Test and slaughter/selective slaughter
 - (b) Strategic treatment and chemoprophylaxis
 - (c) Disease Eradication
 - (d) Quarantine
 - (e) Depopulation
4. Define the following:
 - (a) Performance targets and shortfalls on a dairy farm. (5 marks)
 - (b) How you would assess the mastitis status on a dairy farm? (5 marks)
 - (c) How you would control mastitis in a lactating herd? (10 marks)
5. (a) Discuss the role of wildlife in the epidemiology of the following livestock diseases:
 - (i) Malignant Catarrhal fever
 - (ii) Tuberculosis
 - (iii) Rinderpest
 - (iv) African swine fever
(b) Discuss the advantages and disadvantages of game ranching over livestock farming. (10 marks)

THE UNIVERSITY OF ZAMBIA

UNIVERSITY EXAMINATIONS - OCTOBER, 1993

VMD 612

VETERINARY EXTENSION AND JURISPRUDENCE

TIME: THREE HOURS

ANSWER: FIVE QUESTIONS ONLY AND MUST INCLUDE QUESTIONS NO.6

MARKS: 100

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1. What is a wound? Classify and describe in detail the different types of veterolegal wounds giving examples. How will you differentiate between ante-mortem wounds and post-mortem wounds? (20 marks)
 2. What is euthanasia? Describe different methods giving advantages and disadvantages. What principles you would like to follow when advocating an euthanasia of a horse as veterinary surgeon? (20 marks)
 3. Write an essay on examination of blood stains emphasising its significance in jurisprudence. (20 marks)
 4. Describe in detail the organisation of department of veterinary and tsetse control services in Zambia. Write the duties and responsibilities of a government veterinary surgeon and its relationship to the public. (20 marks)
 5. Describe in detail the role of an extension worker at different levels for the uplift of the rural peoples. What are the personal qualities to be essential for a good extension worker? (20 marks)
 6. Write short notes on any five of the following. (20 marks)
 - (a) Formal and Non-formal Education
 - (b) Mass Media
 - (c) Self-help Schemes
 - (d) Game Management Area
 - (e) Veterinary Surgeons Act
 - (f) Stock Disease Act

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY EXAMINATIONS - OCTOBER, 1993

VMD 630

VETERINARY PUBLIC HEALTH

TIME: THREE HOURS

ANSWER: ALL QUESTIONS OF SECTION A (NO. 1, 2, 3, 4)
AND ANY ONE OUT OF QUESTIONS OF SECTION B
(NO. 5, 6). ALL QUESTIONS CARRY EQUAL MARKS.

SECTION A

1. (a) Discuss the disadvantages of antibiotic residues in milk.
(b) Indicate how you can control milk-borne diseases.
2. Define the term "Zoonosis". Give the classification ^{of} zoonosis according to the life cycle of the causal agent.
3. (a) List down at least nine objectives for conducting antemortem inspection procedures.
(b) Describe the general postmortem inspection procedures carried out at meat inspection and indicate the importance of each procedure mentioned.
4. Describe the test for a water sample to determine its sanitary quality. What should be the standard parameters for safe drinking water.

SECTION B

5. Discuss the significance and procedure of conducting phosphatase test of milk. Also discuss the cultural method for isolation of *Mycobacterium tuberculosis* from milk.
6. Discuss the public health significance of infections due to *Bacillus anthracis*. Advise on the disinfection of a contaminated abattoir with *Bacillus anthracis*.

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY EXAMINATIONS - OCTOBER, 1993

VMP 410

VETERINARY PATHOLOGY

TIME: THREE HOURS

ANSWER: ALL QUESTIONS.

SECTION A

GENERAL PATHOLOGY

1. Define necrosis and describe its different types.
2. Give a brief description of each of the following terms:
 - (a) infarction
 - (b) ischaemia
 - (c) metaplasia
 - (d) atrophy
 - (e) hyperplasia
3. Define inflammation and describe the following types of exudative inflammation:
 - (a) serous
 - (b) fibrinous
 - (c) purulent
 - (d) haemorrhagic

SECTION B

SPECIAL PATHOLOGY

1. Describe the pathogenetic mechanism of canine nodular cirrhosis
2. Write short notes on the pathology of each of the following diseases:
 - (a) rabies
 - (b) bovine trypanosomiasis
 - (c) ovine haemonchosis
 - (d) lumpy skin disease
 - (e) foot and mouth disease
3. Describe the four successive morphological changes in the pathogenesis of fibrinous pneumonia.

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY EXAMINATIONS - OCTOBER, 1993

VMP 430

VETERINARY VIROLOGY AND IMMUNOLOGY

PAPER I

TIME: THREE HOURS

ANSWER: ALL QUESTIONS

SECTION I

VETERINARY VIROLOGY

1. Describe the key differences between viruses and bacteria.
2. Explain the principle of complement-fixation test.
3. Discuss the immunization against viral diseases.
4. Explain the following:
 - (a) Haemagglutinin
 - (b) Cytopathic effect
 - (c) Budding of virus

SECTION II

VETERINARY IMMUNOLOGY

1. Give a brief description on the following:-
 - (a) Opsonin and opsonization
 - (b) Membrane attack complex (MAC)
 - (c) differences between type I and type IV hypersensitivity reactions.
2. Encircle the most correct answer in the following
 - A. The cell which cannot present the antigenic information to T cells is
 - (i) Macrophage
 - (ii) B cell
 - (iii) Neutrophil
 - (iv) Dendritic cell

B. Major immunoglobulin class or subclass in cow colostrum is

- (i) IgG1
- (ii) IgG2
- (iii) IgM
- (iv) IgA

C. Chicken B cells differentiate in

- (i) Thymus
- (ii) Bone marrow
- (iii) Spleen
- (iv) Bursa of Fabricius

D. Function of Fab fragment of IgG

- (i) Neutrophil binding site
- (ii) Antigen binding site
- (iii) Complement binding site
- (iv) Macrophage binding site

E. T cell marker is

- (i) CD2 (Sheep red blood cell rosettes, E rosettes)
- (ii) Fc receptor (EA rosettes)
- (iii) C3b receptor (EAC rosettes)
- (iv) Surface immunoglobulin

F. The main function of gamma-interferon

- (i) B cell activation
- (ii) B cell differentiation
- (iii) Macrophage activation
- (iv) Mast cell activation

3. Fill in the blanks:

(a) When a virus infects a cell, certain of the viral antigens are metabolized to peptide that are then bound by class _____ MHC molecule and presented to CD8 cytotoxic (killer) T cells.

(b) _____ antibody normally exists as a pentamer with a molecular weight of approximately 900,000. This antibody is prominent in early immune responses to most antigens.

_____ antibody is the predominant immunoglobulin class in the mucosal immune system.

- (c) Two major pathways of complement activation operate in plasma. _____ pathway requires no antibody, it provides an immediate host defence mechanism that operates in the absence of prior sensitization.
- (d) Type I hypersensitivity results from _____ antibody response to an antigen (allergen). The antibody binds to the surface of _____ cells occur, with the release of pharmacological mediators of inflammation. Type _____ hypersensitivity is characterized by the sensitization of the population of T cells. This reaction occurs over a 24 to 72 hour period.
- (e) Antigen is defined by its antibody. Two contact area with an antibody is called _____. An antigen or molecule which generated an immune response is called an immunogen. However _____ which is not immunogenic on its own but will react with preformed antibody.
- (f) Injection of CBA mouse cells into newborn A strain mice suppresses their ability to immunological reject a CBA graft in adult life. This phenomenon is called _____
-

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY EXAMINATIONS - OCTOBER, 1993

VMP 430

VETERINARY BACTERIOLOGY AND MYCOLOGY

PAPER II

TIME: THREE HOURS

ANSWER: ALL QUESTIONS

-
1. Certain strains of Pasteurella multocida cause an important disease of cattle in Zambia. What is your bacteriological diagnostic approach to suspected bovine pasteurellosis cases?
 2. (a) Name 12 different genera under the family enterobacteriaceae.
(b) Describe in detail the isolation and identification of Salmonella pullorum from a poultry flock.
 3. Transformation, conjugation and transduction are three mechanisms by which gene transfer can be accomplished in bacteria.
(a) Describe each of these mechanisms in detail.
(b) Describe the veterinary importance of plasmids.
 4. (a) Name five primary fungal pathogens associated with abortion in animals.
(b) Describe the isolation and identification of important dermatophytes.

OR

- (a) Name five different species of Brucella.
 - (b) Describe two serological tests used in the diagnosis of brucellosis.
 - (c) Give a description on laboratory culturing of Brucella abortus.
5. Write short notes on any four of the following:
- (a) antibiotics
 - (b) camp test
 - (c) aflatoxicosis
 - (d) tuberculin test
 - (e) satellitism

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY EXAMINATIONS - OCTOBER, 1993

VMP 440

VETERINARY PARASITOLOGY

TIME: THREE HOURS

ANSWER: ALL QUESTIONS IN ALL THE SECTIONS.

SECTION A

PROTOZOOLOGY

1. Assume you are the Veterinary Officer in Monze where a farmer approaches you for help on his suspected case of Theileriosis.
 - (a) What would be your first steps in assisting him?
 - (b) What measures would you advise him to take?
2. Define the following terms:
 - (a) Zoonosis
 - (b) Conjugation
 - (c) Endopolygeny
 - (d) Metacyclics
 - (e) Pseudocysts

SECTION B

HELMINTHOLOGY

1. Briefly outline the life cycle of Fasciola gigantica and describe its pathogenicity and diagnosis. Discuss the control measures of its final host.
2. Write the routes of infection of helminths giving an example for each route.

SECTION C

ENTOMOLOGY

1. Write and discuss the veterinary importance of acarine ectoparasites of domestic animals, giving examples.
2. Write short notes on all of the following:
 - (a) Veterinary significance of the family Culicidae.
 - (b) Tunga penetrans.
 - (c) Psoroptes caniculi.
 - (d) Vectors of Trypanosoma cruzi.

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

UNIVERSITY SUPPLEMENTARY/DEFERRED EXAMINATIONS - DECEMBER, 1993

VMP 440

VETERINARY PARASITOLOGY

THEORY PAPER

TIME: THREE HOURS

ANSWER: ALL QUESTIONS IN ALL SECTIONS

SECTION A

PROTOZOOLOGY

1. If your Veterinary Assistant asked you to explain what is meant by *Salivaria* and *Stercolaria* trypanosomes.
 - a. What would you tell him?
 - b. With the help of a diagram, briefly outline the life cycle of *Trypanosoma brucei*.
2. Define the following terms;
 - a. Schizont
 - b. Trophozoite
 - c. Polyogeny
 - e. Sporozoites

SECTION B

HELMINTHOLOGY

1. Briefly outline the morphological differences of trematodes, cestodes and nematodes. give one example for each group and discuss their veterinary significance.
2. Write short notes on all of the following:
 - a. Host specificity
 - b. Larva migrans
 - c. *Lymnaea natalensis*
 - d. Milk spots

SECTION C

ENTOMOLOGY

1. Write an essay on the non-chemical methods of controlling Glossina spp. citing their advantages and disadvantages.
2. Write brief notes on all of the following
 - a. Vectors of Dipylidium caninum
 - b. Sarcoptes scabiei
 - c. Veterinary significance of Simulium spp.
 - d. Vectors of Anaplasma marginale.

END OF EXAMINATION