

THE UNIVERSITY OF ZAMBIA

SCHOOL OF VETERINARY MEDICINE EXAMINATION PAST PAPERS 2014

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**THE UNIVERSITY OF ZAMBIA
INSTITUTE OF DISTANCE EDUCATION**

DIPLOMA IN LIVESTOCK MANAGEMENT IN THE TROPICS

FIRST YEAR END OF YEAR EXAMINATION

COURSE : DHM 121 MODULE 5 PRINCIPLES OF LIVESTOCK NUTRITION

DATE : FRIDAY 15TH AUGUST, 2014

DURATION : 3 HOURS

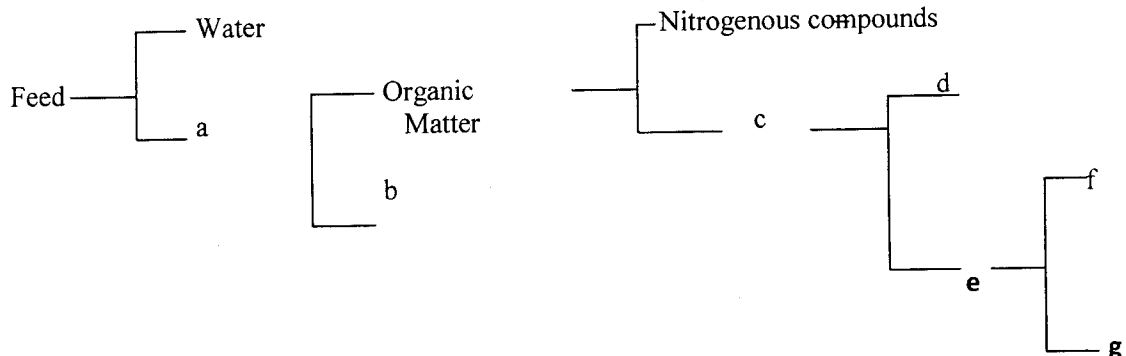
INSTRUCTIONS: ANSWER ANY FIVE QUESTIONS

1. a) The proximate analysis of a sample of maize (corn) indicates the following figures (in % of FM):

| | | | |
|-----------------|-----|-------------------------|-----|
| - moisture | 14% | - ashes | 1% |
| - crude protein | 9% | - ether extract | 4% |
| - crude fibre | 2% | - nitrogen-free-extract | 70% |

- What is the percentage of DM of this maize?
- What is the percentage of OM?
- What is the percentage of carbohydrates?
- How many grammes of crude protein (CP) are there in 1 kg of maize?
- How many grammes of DM are there in 1kg of maize?
- What is the difference between Crude Protein and Ether Extract (10 marks).

- b). Fill in the missing spaces a, b c, d, e, f and g (10 marks)



2. Formulate dairy meal containing 19%CP using Maize bran with 11%CP and Sunflower cake with 22%CP. Please show all calculations. (20 marks).
3. Nutrition is the most important feature in an animal's environment and, as such cannot be ignored. At the same time, feed is also the most important expensive item in animal production. Knowledge of how to apply nutrition principles and feeding aspects will pay off in better meat and milk animals, faster and more efficient gains, and more efficient utilisation of feed supplies.
 - a). When an animal has no underlining disease mention and explain the signs associated with poor nutrition (14 marks).
 - b). What are the consequences of this poor nutrition to the farmer (6 marks).
4. The structure of functions of the digestive tract are largely dependent on the type of food and the animal's feeding habits.
 - a). Describe the structure of the digestive system of the ruminant (9 marks).
 - b). What are the three major functions of the digest tract (6 marks)
 - c). Describe the digestion of proteins in ruminants (5 marks).
5. Urea-molasses multi-nutrient blocks (UMMB) are a convenient and inexpensive method of providing a range of nutrients required by both the rumen microbes and the animal, which may be deficient in the diet. The main justification for using the blocks depends on their convenience for packaging, storage, transport and ease of feeding. Provide answers to the following questions.
 - a). Why molasses - urea mixtures? (5 marks).
 - b). Why Blocks? (5 marks).
 - c). What other ingredients are used in the Urea-molasses blocks and what are the characteristics of the components (10 marks).
6. Ruminant species occupy an important niche in modern agriculture because of their unique ability to digest certain foodstuffs, especially roughages, efficiently. Ruminants can convert roughages, unsuitable for man, into useful products such as meat and milk. In future, the direct demands for grain by human beings will make efficient utilization of roughages increasingly important. However a large number of digestive disorders occur in ruminants that hinder ruminants from effectively converting the roughages into the useful products.
 - a). What are digestive disorders? (4 marks).
 - b). Mention and explain the different types of digestive disorders (8 marks).
 - c). How they can be avoided/prevented and treated (8 marks).

END

THE UNIVERSITY OF ZAMBIA
University of Zambia End of Year Examination - August 2014
Agricultural Statistics (DHM 1022)

Instructions

1. This examination consists of two (2) pages. Please read the instructions and each question carefully before you start writing.
 2. It is essential that you indicate your student ID number on every answer booklet.
 3. You should attempt to answer all questions and indicate the number of booklets handed in.
 4. All questions carry equal marks.
 5. Time allowed : 3 hours
-

Question 1

Below is data of birth weights (in kgs) of 10 piglets recorded from a piggery in Mazabuka district.

1.2, 1.7, 1.8, 1.3, 1.4, 1.7, 1.5, 1.4, 1.1, 1.4.

- a) From the data above, calculate the mean, the mode and the median (6marks)
- b) Draw a histogram of the weights of these newly borne piglets (5 marks)
- c) Calculate the simple range and the standard deviation of the data above (9 marks)

Question 2

The Zambia National Farmers Union (ZNFU) wants to know which breed of dairy cattle it should promote for the production of butter and cheese in Zambia. Such an ideal breed should have a high fat content in the milk. You are given two sets of data (7 in each group) to compare in terms of fat content (in %) between Friesian and Jersey cows as follows:

| Friesian | Jersey |
|----------|--------|
| 5.2 | 6.7 |
| 4.6 | 5.5 |
| 4.6 | 4.9 |
| 4.9 | 5.1 |
| 3.9 | 4.9 |
| 2.5 | 5.7 |
| 4.6 | 4.9 |

- a) From the data above, calculate the 95% confidence interval of the difference in milk fat content between the two breeds (10 Marks)
- b) Carry out a significance test to determine if there is a significant difference in milk fat content between the two breeds and make an appropriate recommendation to ZNFU. Use $\alpha = 0.05$. (10 Marks)

Question 3

Define the following terms (4 marks each):

- a) Data
- b) Explanatory variable
- c) Response variable
- d) Significance level
- e) Statistical power

Question 4

A farmer had 10 Friesian cows on his farm and kept a record of their milk production. Below is record of milk yield in litres recorded on one particular day.

10.2, 12.0, 10.5, 5.2, 9.5, 6.3, 13.1, 13.5, 12.5, 10.7,

- a) Calculate the mean, median and mode (8 Marks)
- b) It is known that an ideal Friesian cow produces about 14 litres of milk, would you say that these are ideal Friesian cows in terms of milk production (use $\alpha = 0.05$) (12 Marks).

Question 5

Describe in detail, the various ways that can be used to summarise data (20 Marks)

TABLE IV: CUMULATIVE t-DISTRIBUTION

This table gives selected critical values of Student's *t*-distribution. Entries in the table are values of *t_p* where

$$p = \mathcal{P}(T \leq t_p),$$

where *T* has Student's *t*-distribution with *v* degrees of freedom. The table covers values of *p* = 0.9, 0.95, 0.97, 0.99, and 0.995 and *v* = 1(1)30(10)100, 120, 200, ∞. For *v* = ∞ the critical values are actually those of the standard normal distribution.

| df, <i>v</i> | p | | | | |
|--------------|-------|-------|--------|--------|--------|
| | 0.900 | 0.950 | 0.975 | 0.990 | 0.995 |
| 1 | 3.078 | 6.314 | 12.706 | 31.821 | 63.657 |
| 2 | 1.886 | 2.920 | 4.303 | 6.965 | 9.925 |
| 3 | 1.638 | 2.353 | 3.182 | 4.541 | 5.841 |
| 4 | 1.533 | 2.132 | 2.776 | 3.747 | 4.604 |
| 5 | 1.476 | 2.015 | 2.571 | 3.365 | 4.032 |
| 6 | 1.440 | 1.943 | 2.447 | 3.143 | 3.707 |
| 7 | 1.415 | 1.895 | 2.365 | 2.998 | 3.499 |
| 8 | 1.397 | 1.860 | 2.306 | 2.896 | 3.355 |
| 9 | 1.383 | 1.833 | 2.262 | 2.821 | 3.250 |
| 10 | 1.372 | 1.812 | 2.228 | 2.764 | 3.169 |
| 11 | 1.363 | 1.796 | 2.201 | 2.718 | 3.106 |
| 12 | 1.356 | 1.782 | 2.179 | 2.681 | 3.055 |
| 13 | 1.350 | 1.771 | 2.160 | 2.650 | 3.012 |
| 14 | 1.345 | 1.761 | 2.145 | 2.624 | 2.977 |
| 15 | 1.341 | 1.753 | 2.131 | 2.602 | 2.947 |
| 16 | 1.337 | 1.746 | 2.120 | 2.583 | 2.921 |
| 17 | 1.333 | 1.740 | 2.110 | 2.567 | 2.898 |
| 18 | 1.330 | 1.734 | 2.101 | 2.552 | 2.878 |
| 19 | 1.328 | 1.729 | 2.093 | 2.539 | 2.861 |
| 20 | 1.325 | 1.725 | 2.086 | 2.528 | 2.845 |
| 21 | 1.323 | 1.721 | 2.080 | 2.518 | 2.831 |
| 22 | 1.321 | 1.717 | 2.074 | 2.508 | 2.819 |
| 23 | 1.319 | 1.714 | 2.069 | 2.500 | 2.807 |
| 24 | 1.318 | 1.711 | 2.064 | 2.492 | 2.797 |
| 25 | 1.316 | 1.708 | 2.060 | 2.485 | 2.787 |
| 26 | 1.315 | 1.706 | 2.056 | 2.479 | 2.779 |
| 27 | 1.314 | 1.703 | 2.052 | 2.473 | 2.771 |
| 28 | 1.313 | 1.701 | 2.048 | 2.467 | 2.763 |
| 29 | 1.311 | 1.699 | 2.045 | 2.462 | 2.756 |
| 30 | 1.310 | 1.697 | 2.042 | 2.457 | 2.750 |
| 40 | 1.303 | 1.684 | 2.021 | 2.423 | 2.704 |
| 50 | 1.299 | 1.676 | 2.008 | 2.403 | 2.678 |
| 60 | 1.296 | 1.671 | 2.000 | 2.390 | 2.660 |
| 70 | 1.294 | 1.667 | 1.994 | 2.381 | 2.648 |
| 80 | 1.293 | 1.665 | 1.990 | 2.374 | 2.638 |
| 90 | 1.291 | 1.662 | 1.987 | 2.369 | 2.632 |
| 100 | 1.290 | 1.661 | 1.984 | 2.364 | 2.626 |
| 120 | 1.289 | 1.658 | 1.980 | 2.358 | 2.617 |
| 200 | 1.286 | 1.653 | 1.972 | 2.345 | 2.601 |
| ∞ | 1.282 | 1.645 | 1.960 | 2.326 | 2.576 |



**THE UNIVERSITY OF ZAMBIA
INSTITUTE OF DISTANCE EDUCATION**

DIPLOMA IN LIVESTOCK MANAGEMENT IN THE TROPICS

END OF YEAR SECOND EXAMINATION

COURSE : DHM 2021 MODULE 13 FARM BUSINESS MANAGEMENT

DATE : 11TH AUGUST 2014 09:00HOURS

DURATION : 3 HOURS

INSTRUCTIONS: ANSWER ANY FIVE QUESTIONS

1. The primary purpose of the enterprise budget is to estimate the costs and returns and subsequently the profit of a particular enterprise on per unit basis. What is the meaning of the following terms used in enterprise budgeting (please give examples);
 - i. Revenue (5 marks).
 - ii. Variable costs (5 marks).
 - iii. fixed costs (5 marks).
 - iv Interest (5 marks).

2. Women cooperative Society in Chongwe want to venture into broiler production in September this year. They will start by keeping 200 broilers. They collected the following information concerning broiler production
 - Cost of day old chicks K4/chick
 - Feed Required
 - Broiler starter 4 x 50 kg bags each bag costs K150
 - Broiler Grower 6 x 50kg each bag costs K130
 - Broiler finisher 6 x 50 kg each bag costs K125
 - Cost of labour K300 per month
 - Number of workers 1
 - Cost of water K10 (per batch)
 - Cost of litter K95 (per batch)
 - Drugs and disinfectants K80 (per batch)
 - Electricity K50 (per batch)
 - Interest 10%
 - DIRTI K135

The chickens will be raised over a period of 6 weeks and it will take 2 weeks to sell all the chickens at K32 per chicken. Only 5 chickens are expected to die during the rearing period

From the information given above

- i. prepare the enterprise budget for the Women cooperative Society (10 marks).
- ii. What will be the break even price of the chickens (5 marks).
- iii. Advise the women whether they should go ahead with this enterprise (5 marks).

3. We usually purchase fixed assets because they are helpful to us in the production of farm produce. However their use in the production process over time causes them to depreciate and this depreciation is considered as an expense in farm business because it is a direct result of our use of the asset in farm production.
 - a). What is depreciation and what are the two types of depreciation (8 marks).
 - b). Mention and explain the methods used to calculate Depreciation (12 marks).
4. Farm records are power tools which are very helpful to us in decision making because they enable us to identify the strong and weak points of the farm business.
 - a). Identify the different types of farm records, their use and purpose (9 marks).
 - b). Explain the types of accounting systems (5 marks).
 - c). The balance sheet has the following features: (i) Current Assets, (ii) Fixed Assets and (iii) Liabilities. Explain the meaning of these features and give examples of each feature (6 marks).
5. The success or failure of a farm business rests primarily on its management. If the available resources are not utilized effectively then the farm business will definitely fail.
 - a). Define farm management (5 marks).
 - b). Explain the scope of farm management (5 marks).
 - c). What are the general functions of farm management (5 marks).
 - d). The selection of alternatives that we are going to analyze is the third step in forward planning in management. If our farm business is going to be successful in forward planning, there is need for us to carefully analyze the alternatives that are available. What are the factors that hinder success when identifying other business alternatives? (5 marks).
6. Farming is a business that requires us to make decision in a risk environment every day. The consequences of our decisions are generally not known to us at the time we are making decisions. When we invest our money in capital investments we expect to get more than was invested in the project but sometimes this is not the case. The outcome from our decisions may be worse off than what we had expected. The sources of risk in agriculture are many
 - a). Identify and explain the sources of risks (8 marks).
 - b). Describe the strategies that can be used to reduce risks and uncertainty (12 marks).

THE END

THE UNIVERSITY OF ZAMBIA
SCHOOL OF VETERINARY MEDICINE
INSTITUTE OF DISTANCE EDUCATION

DHM 2232 (BOVINE REPRODUCTION) END OF YEAR EXAMINATION

DATE: AUGUST 2014

TIME: THREE (3) HOURS

INSTRUCTIONS: Answer all questions in section A and select 2 questions in section B.

Section A, answer all questions

1) 20 marks

- (i) Explain your understanding of the meaning of the following four positive signs of pregnancy in a cow
 - a. Fetal membrane slip (2.5 marks)
 - b. Amniotic vesicle (2.5 marks)
 - c. Placentomes (2.5 marks)
 - d. Fetus (2.5 marks)
- (ii) Explain your understanding of the following additional suggestive signs of pregnancy
 - a. Fluctuation (2.5 marks)
 - b. Bulge anterior to the cervix (2.5 marks)
 - c. Asymmetry with enlargement (2.5 marks)
 - d. Fremitus (2.5 marks)

2) 20 marks

- (i) What are the three stages of parturition and how long does each take? (5 marks)
- (ii) Name the five reasons for dystocia (5 marks)
- (iii) Briefly explain the rules of thumb to interfere in dystocia cases i.e.
 - a. For heifers (5 marks)
 - b. For cows (5marks)

3) 20 marks

- (i) Write short notes on the three (3) stages of a cow's reproductive cycle
- (ii) Describe fourteen (14) important management activities that should be done in order to keep a lactating (milking) and pregnant cow in good body condition and high milk production with minimum loss of body condition.

Section B, select two questions

1. Discuss in detail:

- a) The criteria for selecting replacement heifers and the different mating options
 - b) Calf rearing methods and general calf management practices
- (20 marks)**

2. Discuss in detail:

- a) Importance of reproduction
- b) The anatomy and physiology of the male and female reproductive system of the cow.

3. Write detailed notes to demonstrate your understanding of the following :

- a) Estrus cycle in the cow
- b) Spermatogenesis in the bull

4. Discuss in detail the following:

- a) The process of parturition and how you would recognise the time when parturition is about to occur
 - b) The stages of parturition?
 - c) The problems of parturition?
-

END OF EXAMINATION

UNIVERSITY OF ZAMBIA

SCHOOL OF VETERINARY MEDICINE

GENERAL PATHOLOGY (DLD 1111) EXAMINATION – 11TH AUGUST 2014

INSTRUCTIONS:

Time: Three (3) hours

Answer all questions

Answer each question in a separate answer booklet

Q1. Define five (5) of the following terms

- (a) Pathology (2 marks)
- (b) Functional changes (2 marks)
- (c) Morphological changes (2 marks)
- (d) Pathogenesis (2 marks)
- (e) Diagnosis (2 marks)
- (f) Aetiology (2 marks)
- (g) Histopathology

Q2. Write briefly on any two (2) of the following:

- (a) Reversible injury (5 marks)
- (b) Irreversible injury (5 marks)
- (c) Inclusion bodies (5 marks)
- (d) Photosensitization (5 marks)

Q3. (a) Define inflammation (2 marks)

- (b) List all the cardinal signs of acute inflammation (5 marks)
- (b) Give one undesirable effect of inflammation (1 mark)
- (d) Give two (2) differences between acute and chronic inflammation (2 marks)

Q4. Define five (5) of the following terms

- (a) Haemorrhage (2 marks)
- (b) Hyperaemia (2 marks)
- (c) Oedema (2 marks)
- (d) Thrombosis (2 marks)
- (e) Embolism (2 marks)
- (f) Infarction (2 marks)
- (g) Heart failure cells (2 marks)

Q5. Define five (5) of the following terms

- (a) Hyperplasia (2 marks)
- (b) Hypertrophy (2 marks)
- (c) Hypoplasia (2 marks)
- (d) Atrophy (2 marks)
- (e) Metaplasia (2 marks)
- (f) Aplasia (2 marks)
- (g) Agenesis (2 marks)

Q6. (a) Define three (3) of the following terms

- (i) Neoplasia (2 marks)
 - (ii) Malignant (2 marks)
 - (iii) Metastasis (2 marks)
 - (iv) Carcinogen (2 marks)
- (b) Give two (2) indicators of malignancy (2 marks)
- (c) Give two (2) intrinsic causes of neoplasia (2 marks)

Q7. (a) Define three (3) of the following

(i) Virulence (2 marks)

(ii) Tropism (2 marks)

(iii) Genetic resistance to disease (2 marks)

(iv) Immune resistance (2 marks)

(b) Give two (2) host barriers to infection, and causes of their breakdown. (4 marks)

END OF EXAMINATION.

THE UNIVERSITY OF ZAMBIA
SCHOOL OF VETERINARY MEDICINE
IDE - FINAL EXAMINATIONS AUGUST 2014

DLD 1411: GENERAL PARASITOLOGY

TIME: THREE (3) HOURS

ANSWER: ALL QUESTIONS IN ALL THE SECTIONS

SECTION 1: GENERAL PARASITOLOGY (25 marks)

1. Briefly define the following terms (*6 marks*):
 - a. Helminth
 - b. Arthropod
 - c. Protozoa

2. Briefly define the following terms (*9 marks*)
 - a. Biological vector
 - b. Mechanical vector

3. With examples, **CLEARLY EXPLAIN** why we study parasitology?
(*10 marks*).

PLEASE TURN OVER

SECTION 2: ENTOMOLOGY (25 marks)

4. In Entomology, what are the following terms/phrases referring to? (10 marks)
- a. Integument of insects
 - b. Holometabolous insects
 - c. Malpighian tubules
 - d. Mechanical transmission of pathogens
 - e. Direct damage of arthropods
5. With examples briefly explain the following: (6 marks)
- a. Ovoviviparity in insects
 - b. Multivoltine cycle
 - c. Social hormones in insects
6. In your Entomology lessons, some of the arthropods you were taught about belong to the order Siphonaptera. List four (4) important features characteristic of organisms belonging to the order (Siphonaptera) and give one (1) example of these arthropods (in the order Siphonaptera)

SECTION 3: HELMINTHOLOGY (25 marks)

8. Describe the basic morphology of a tapeworm and list the types of larval tapeworms you know. (10 marks)
9. List the five types of flukes that you know (5 marks)
10. List at least five (5) morphological features that you can use to identify nematodes (5 marks)
11. What is an Echinostome? (2 marks)
12. Define the following terms (5 marks):
- a. Alae
 - b. Proglottid
 - c. Strobila
 - d. Tegument
 - e. Papillae

PLEASE TURN OVER

SECTION 4: PROTOZOOLOGY (25 marks)

6. Trypanosomes belong to the Phylum Sarcomastigophora, clearly **INDICATE** how you can go about distinguishing the different species which cause Nagana in cattle in African (**6 marks**)
7. Clearly **DEFINE** any **FIVE** of the following terminologies (**10 marks**)
 - a. Protozoa
 - b. Schizogony
 - c. Apicomplexa
 - d. Salivaria transmission
 - e. Merogony
 - f. *Theileria parva* species
8. Briefly **EXPLAIN** the following: (**9 marks**)
 - a. Mechanical transmission of protozoa (**6 marks**)
 - b. Why there is no successful vaccine for trypanosomes (**3 marks**)

END OF EXAMINATION

**THE UNIVERSITY OF ZAMBIA
SCHOOL OF VETERINARY MEDICINE
FINAL EXAMINATIONS (AUGUST 2014)**

DLD 2211 (IMMUNODIAGNOSTICS) **2201**

TIME: THREE (3) HOURS

ANSWER: ALL QUESTIONS. THE MARKS ARE INDICATED IN PARENTHESIS.

Q1. A dairy farmer complains of frequent cases of late pregnancy abortions and other forms of infertility among his cows

- a. What condition would you suspect? (2 mark)
- b. What test would you use to confirm this disease in the laboratory? (2 mark)
- c. Explain the principal, procedure and interpretation of this test (11 marks)

Q2. What immunodiagnostic test would you use for the diagnosis of the following diseases?

- a. Haemorrhagic septicaemia (2 mark)
- b. African swine fever (2 mark)
- c. Anthrax (2 mark)
- d. Avian influenza (2 mark)
- e. Tuberculosis (2 mark)

Q3. Compare and contrast between the procedure and result interpretation For Haemagglutination inhibition test and Serum Neutralization test (10 marks).

Q4. Briefly describe the appearance of a positive test for each of the following:

- a. Double immunodiffusion test (5 marks)
- b. Haemagglutination test (5 marks)
- c. ELISA (5 marks)
- d. Fluorescent antibody test (5 marks)

Q5. A poultry farmer complains of high mortality rates in his broiler flock and suspects newcastle disease. Using illustrations, describe the principal, procedure and interpretation of the test (s) you can use to confirm that disease (15 marks)

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA
SCHOOL OF VETERINARY MEDICINE
FINAL EXAMINATIONS (AUGUST 2014)

DLD 2342: APPLIED DIAGNOSTIC MICROBIOLOGY

TIME: THREE (3) HOURS

ANSWER: **ALL** QUESTIONS IN ALL THE SECTIONS

1. Write your answers in the spaces provided
 2. The last **30 Minutes** will be given to you to re-examine some specimens you were in doubt.
-

SECTION 1: BACTERIOLOGY

1. Examine **Specimen A** on the slide.

- a. Identify **Specimen A** to genus level

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- b. Give three reasons for your identification

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- c. List at least two (2) other tests that you can use to confirm the diagnosis of the above organism

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2. Examine **Specimen B** provided on the slide

- a. Identify specimen B to genus level

.....

- b. Give reasons for your identification

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- c. List at least **two (2)** other tests that you can use to confirm the diagnosis of the above organism:

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.....

3. Examine **Specimen C**

- a. What is the shape and staining characteristic of the bacterial specimen?

.....

- b. Give at least **two (2)** examples of bacteria with such a shape and staining characteristic?

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4. Examine **Specimen D**

- a. What is the shape and staining characteristic of the bacterial specimen provided?

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- b. Give at least **two (2)** examples of bacteria that can be cultured using the provided instrument?

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5. Observed plate marked E and answer the following.

- a. What is the name of the test being used to diagnose a disease condition?

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- b. Give at least two (2) examples of bacteria that can diagnosed using this technique.

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SECTION 2: VIROLOGY

6. a. Briefly describe how you would isolate Newcastle disease virus from an infected chicken.....

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b. How would you differentiate Newcastle disease virus from influenza A virus?

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7. a. What sample would you use for the diagnosis of rabies?

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b. Briefly describe the procedure involved in the diagnosis of this disease (rabies).....

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COMPUTER NUMBER: _____

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SECTION 3: MYCOLOGY

- 8. Examine specimen G** under the microscope. The specimen was obtained from a dog which had skin lesions and then cultured in the laboratory.
- a. Using well-labelled illustrations, record your microscopic examination.
-
-
-
-
-
- b. What is the name of the staining solution used to facilitate microscopic examination of **Specimen G**?
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-
- c. Identify Specimen G. Give justification for your diagnosis.
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-
- 9. Examine the mounted slide of culture of fecal samples from scouring piglets.**
- a. Using well-labelled illustrations, record your microscopic examination.
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b. What is the name of the test used?

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c. Describe the procedure for carrying out this test in the laboratory.

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d. Based on the given clinical history and your microscopic observations, identify the causative agent of this condition.

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10. Examine the **culture plate H** and Specimen J under the microscope. The specimen was obtained from calf lungs during a post-mortem and cultured in the laboratory.

a. Identify Medium H used for propagation of the culture.

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b. Briefly outline the conversional culture conditions (temperature, duration) for propagating such organisms on such a medium,

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c. Using a well-labelled illustrations, record your microscopic examination

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d. Identify **Specimen J**. Give justification for your diagnosis.

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END OF EXAMINATION *

THE UNIVERSITY OF ZAMBIA
SCHOOL OF VETERINARY MEDICINE
IDE - FINAL EXAMINATIONS AUGUST 2014

DLD 2431: DIAGNOSTIC PARASITOLOGY

TIME: THREE (3) HOURS
ANSWER: ALL QUESTIONS IN ALL THE SECTIONS
ANSWER: EACH SECTION SEPARATELY

SECTION A: HELMINTHOLOGY (50 marks)

1. You have just been employed as a laboratory technician at a private hospital in Nchelenge district of Luapula province. You receive a report that there is an outbreak of a certain disease at Ntoto basic school where pupils are reported to have urine tinged with blood.
 - (a) What disease would you suspect? **(4 marks)**
 - (b) Give a species name of the parasite causing this disease condition. **(5 marks)**
 - (c) What samples would you get in order to arrive at a correct diagnosis? **(2 marks)**
 - (d) Describe how the pupils were infected with this disease **(10 marks)**
 - (e) This disease can only be controlled and not eliminated. Why is it difficult to eliminate this disease? **(4 marks)**

2. You have been invited by a meat inspector in Mongu to assist in the diagnosis of some of the parasitic diseases that may be encountered during meat inspection at Mongu abattoir. During the inspection, the inspector condemns whole carcass of cattle due to what seem to be whitish spots disseminated throughout the carcass.
 - (a) What would be your diagnosis? **(4 marks)**
 - (b) Name and classify the parasite causing this condition **(6 marks)**.
 - (c) One of the farmers would like to know how his cattle got the infection. What would you tell him? **(10 marks)**
 - (d) If this problem was in a pig, what would be your diagnosis? **(5 marks)**

PLEASE TURN OVER

SECTION B: PROTOZOOLOGY (50 Marks)

3. You have just been appointed a veterinary assistant in Choma district of Southern province in Zambia. Farmers are complaining that their cattle which went feeding in the Kafue flood plains are dying with swellings in their necks and frothing from their mouth:
- a) What can be your tentative diagnosis (5 Marks)
 - b) What procedure(s) would you take to confirm your diagnosis (10 Marks)
 - c) What control measures would you put in place to avoid further losses of cattle (10 Marks)
4. Clearly **OUTLINE** the diagnostic methods used in protozoology indicating their sensitivity and specificity (25 Marks)

SECTION C: ENTOMOLOGY (50 Marks)

5. Some insects of the order diptera and suborder Nematocera have been responsible for the transmission of some diseases of veterinary and medical importance.
- (a) Give an example of such an insect (in the order diptera and suborder Nematocera) (5 marks)
 - (b) Briefly explain the life cycle of the insect in 'a' (10 marks)
 - (c) How would you control the insect in 'a' above? (10 marks)
6. Theileriosis has led to serious economic losses in cattle in Zambia.
- (a) What arthropod is responsible for the transmission of theileriosis? (5 marks)
 - (b) Briefly explain the life cycle of the arthropod in 'a' above (10 marks)
 - (c) How would you control the arthropod in 'a' above? (10 marks)

PLEASE TURN OVER

END OF EXAMINATION

**THE UNIVERSITY OF ZAMBIA
SCHOOL OF VETERINARY MEDICINE
FINAL EXAMINATIONS (AUGUST 2014)**

DLD 2502 (LABORATORY MANAGEMENT)

TIME: THREE (3) HOURS

ANSWER: **ALL** QUESTIONS. THE MARKS ARE INDICATED IN PARENTHESIS.

Q1. Briefly describe the process of reporting of test results in the laboratory and its significance (**10 marks**).

Q2. Give **one (1)** example of a sample type that you would collect when you suspect the following conditions/diseases

- a. Tuberculosis (**2 marks**)
- b. Salmonellosis (**2 marks**)
- c. Coccidiosis (**2 marks**)
- d. Trypanosomiasis/Sleeping sickness (**2 marks**)
- e. Newcastle disease (**2 marks**)

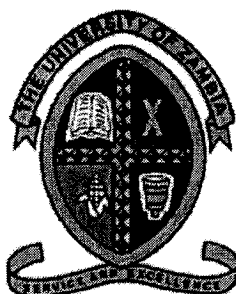
Q3. Describe the detailed and systematic procedure for sample collection, preservation and transportation in a suspected case of East Coast Fever i.e. corridor disease or theileriosis (**10 marks**).

Q4. Write brief and informative notes on the following:

- a. Laboratory Code of Conduct (**5 marks**)
- b. Risk assessment of microbiological agents (**5 marks**)
- c. Sterilization of waste and materials (**5 marks**)
- d. Storage of chemicals in the laboratory (**5 marks**)

Q5. Compare and contrast between Biosafety levels two (2) and four (4) (**10 marks**)

END OF EXAMINATION



THE UNIVERSITY OF ZAMBIA
INSTITUTE OF DISTANCE EDUCATION

DIPLOMA IN LIVESTOCK MANAGEMENT IN THE TROPICS

FIRST YEAR END OF YEAR EXAMINATION

COURSE : DLM 1011 MODULE 1 ANIMAL/LIVESTOCK MANAGEMENT
DATE : MONDAY 11TH AUGUST, 2014. 09:00HRS TO 12:00HRS
DURATION : 3 HOURS
INSTRUCTIONS : ANSWER ANY FIVE QUESTIONS.
ALL QUESTIONS CARRY EQUAL MARKS
ANSWER EACH SECTION IN SEPARATE SET OF ANSWER BOOKLETS

SECTION A

1. To be efficient and profitable, livestock operations require good and simple management practices that will be followed.
 - a). Define livestock management? (6 marks).
 - b). What are the important management practices that should be carried out in livestock enterprises (10 marks).
2. It is very important to have appropriate skills in livestock management in order to ensure profitability in the operation of the livestock enterprises.
 - a). Define skills in relation to management of a livestock (4 marks).
 - b). Explain the different types of general basic skills required to manage a herd (6 marks).
 - c). Describe the specific types of skills needed for the various types of herd management (10 marks).
3. A variety of livestock management tools and solutions available on the market today make it possible for farm staff and managers to get complete control of their herds and thus expedite decision making, save time and money and enhance the overall performance of their farm through automation.
 - a). Define what an automated production systems is and give examples (5 marks).
 - b). Describe most important features of the automatic system (5 marks).
 - c). Discuss benefits as well as the problems associated with automated systems (10 marks).

SECTION B

- 4 Livestock development in Western and much of the North-Western Provinces is hampered by epidemics resulting in restrictions of livestock movements and their products. Contagious bovine pleuropneumonia (CBPP) is one such a disease that has resulted in trade restrictions on livestock and livestock by-product.
 - a. What is the causative agent for this disease? **(2 marks)**
 - b. Outline the major clinical signs of CBPP in both adults and young cattle. **(6 marks)**
 - c. Describe the post-mortem signs you would expect to see in cattle dying from CBPP. **(6 marks)**
 - d. Describe how you would control this disease. **(6 marks)**
- 5 Chemotherapy (treatment) is one of the methods used to control livestock diseases in veterinary practice. Write short but concise notes on the following:
 - a. Routes of administration of antimicrobial agents. **(4 marks)**
 - b. Spectrum of action of antimicrobial agents (Give one examples for each spectrum of action). **(4 marks)**
 - c. Mode of action of antimicrobial agents (Give one example for each mode of action). **(8 marks)**
 - d. Factors considered when treating animal. **(4 marks)**
- 6 When you are going to control diseases there are things you should do. Some may work for certain diseases while others may not. Others may need a combination. Each of these methods may depend on the disease epidemiology. Briefly describe the following disease control strategies. **(4 marks each)**
 - a. Livestock movement control
 - b. Depopulation
 - c. Vaccination
 - d. Chemoprophylaxis
 - e. Quarantine

THE END

THE UNIVERSITY OF ZAMBIA
SCHOOL OF VETERINARY MEDICINE
IN CONJUNCTION WITH

INSTITUTE OF DISTANCE EDUCATION (IDE)

**DLM 1112 (LIVESTOCK ANATOMY AND REPRODUCTION) END OF YEAR
EXAMINATION**

DATE: JULY/AUGUST 2014

TIME: THREE (3) HOURS

INSTRUCTIONS: Answer **all** Questions in Section A, and **any two** questions in Section B

Section A

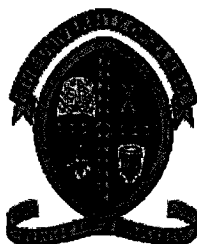
1. (i) What is a cell organelle? What is a cell inclusion? Give two examples of cell organelles and one example of a cell inclusion. (5 marks)
(ii) What is the cell membrane? Name four functions of the cell membrane. (5 marks)
(iii) What is cell division? Name all the phases of mitosis. In one sentence, state the difference between mitosis and meiosis. (5 marks)
(iv) What are cell junctions and how do they help to form tissues? Name three types of cell junctions. (5 marks)
2. With the aid of a sketch diagram discuss the hormonal profile interactions of the following hormones in regulating the estrous cycle in cattle: Estrogen, GnRH, LH, FSH, Progesterone and Inhibin. It is also important to discuss the source, target organ and functions of each of the above mentioned hormones. (20 marks)
3. Following milk production or secretion, the milk is then temporarily stored in structures of the udder.
 - a) Sketch an illustrative diagram of the alveolus depicting the most important features. (10 marks)
 - b) Discuss the milk ejection process. (10 marks)

Section B

4. Epithelium consists of a sheet of aggregated cells of similar type and constitutes the external and internal surface of the body. In addition to forming the surface covering, growths of epithelial cells proliferate into the underlying tissue to form glands and hair follicles. Explain the characteristics of the following types of epithelia:
 - (i) Simple squamous epithelium. (5 marks)
 - (ii) Simple cuboidal epithelium. (5 marks)
 - (iii) Simple columnar epithelium. (5 marks)
 - (iv) Stratified squamous epithelium. (5 marks)

5. Imagine you have been called to perform a breeding soundness evaluation of a particular bull at Mr Phiri's farm, discuss in detail of each examination you will perform as you carry out this exercise before passing or failing the bull for breeding purposes. It is advisable to discuss the elements you will look for in the chronological order of importance. (20 marks)

6.
 - i) Explain the stages involved in lactogenesis. (10 marks)
 - ii) Define galactopoiesis. Discuss the autocrine control of galactopoiesis. (10 marks)



THE UNIVERSITY OF ZAMBIA

Institute of Distance Education (IDE)

Diploma in Herd Health and Production in the Tropics

**COURSE DLM 2221 Dairy Housing and Farmstead Design and Livestock
Industry and Applications**

Time allowed: Three (3) hours only

Date: Friday 15th August 2014

Instructions to candidates:

- a) All Questions carry equal marks (20).**
 - b) Answer any five (5) questions, at least two from each section.**
 - c) Answer each section in separate set of answer booklets.**
-

Section A: Dairy Housing and Farmstead Design

- 1.** The aim of housing dairy animals is to provide a congenial environment for better growth, reproduction and milk production. Discuss the functions of any five (5) structures that are found close to the milking parlour to provide comfort and good health and for economic use of labour.
- 2.** On commercial farms where several cows are milked at the same time, a milking parlour becomes a major investment. Discuss the four (4) most common types or designs of milking parlours.
- 3.** Discuss the structures that should be at least 30 metres from the dairy unit and give reasons.

Section B: Livestock Industry and Applications

4. Zambia's ability to capture the potential economic benefits of expanded livestock industry is constrained by gaps in productivity and price competitiveness. The livestock industry in Zambia has the greatest potential of becoming a major Foreign Exchange (Forex) contributor to the national treasury.
- a) Give reasons as to why the livestock industry has great potential for growth in Zambia (10 marks); and
 - b) What would it take for the industries to achieve their potential (10 marks).
5. Zambia is endowed with a several indigenous livestock species that provide a wide range of social and economic importance in the lives of the local people. In recent years, the survival of the local breeds has been on the increase.
- a) Outline the importance of the local livestock breeds in the livestock industry in Zambia (6 Marks);
 - b) What are the major threats to the survival of the local livestock breeds in Zambia? (8 Marks); and
 - c) What are the benefits of inclusion of exotic cattle breeds in the beef/dairy industry in Zambia? (6 Marks).
6. The global livestock sector is growing faster than any other agricultural sub-sector. It provides livelihoods to about 1.3 billion people and contributes about 40 percent to global agricultural output. But such rapid growth exacts a steep environmental price, according to the FAO 2006 report, *"Livestock's Long shadow-Environmental Issues and Options"*.
- a) Describe the various environmental issues that affect the livestock industry (10 marks); and
 - b) Advise on appropriate remedies for each environmental issue (10 marks).
7. Marketing livestock products involves various types of markets and the players involved.
- a) Outline the different type of markets and market players involved in the livestock industry (15 marks).
 - b) What has been the impact of the ban on live animal movement on the marketing of beef and beef products (5 marks).

THE END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA
SCHOOL OF VETERINARY MEDICINE
FINAL EXAMINATIONS (AUGUST 2014)

DLD 2331: DIAGNOSTIC MICROBIOLOGY 1

TIME: THREE (3) HOURS
ANSWER: **ALL** QUESTIONS IN **ALL** THE SECTIONS

SECTION 1: BACTERIOLOGY

1. Collection of clinical specimens for Bacteriological analysis is a very delicate operation for Bacteria organisms.
 - a. Explain how you can collect anaerobic and aerobic clinical specimens meant for bacteriological culture. (5 Marks)
 - b. Provide an example of an anaerobic bacterium. (2 Marks)
2. What is the significance of direct microscopic examination of Clinical specimens and provide an example of a Bacterial disease which can be diagnosed by direct microscopy. (7 Marks)
3. Briefly explain 3 systems or methods you can use to identify Bacterial microorganisms. (6 Marks)

SECTION 2: VIROLOGY

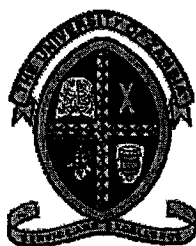
4. You have been requested to collect and send samples to a laboratory for analysis. (20 marks)
 - a.) After collecting sera, tissues and swabs, describe how you would package these samples to avoid leakages during transportation.
 - b.) How would you keep serum, tissue, swab and virus samples in the laboratory for safe storage?

SECTION 3: MYCOLOGY

5. Write short and informative notes on the following: (20 marks)
 - a. Significance/value of histological sections in fungal diagnosis

- b. Procedure for fungal diagnosis by direct microscopic examination of a wet mount
- c. Significance/value of Wood's lamp in fungal diagnosis
- d. Significance/value of Skin scrapings in fungal diagnosis

END OF EXAMINATION



THE UNIVERSITY OF ZAMBIA
Institute of Distance Education (IDE)

Diploma in Livestock Production in the Tropics
COURSE DLM 2132 Mechanization of Livestock Farms

Time Allowed: Three (3) Hours Only

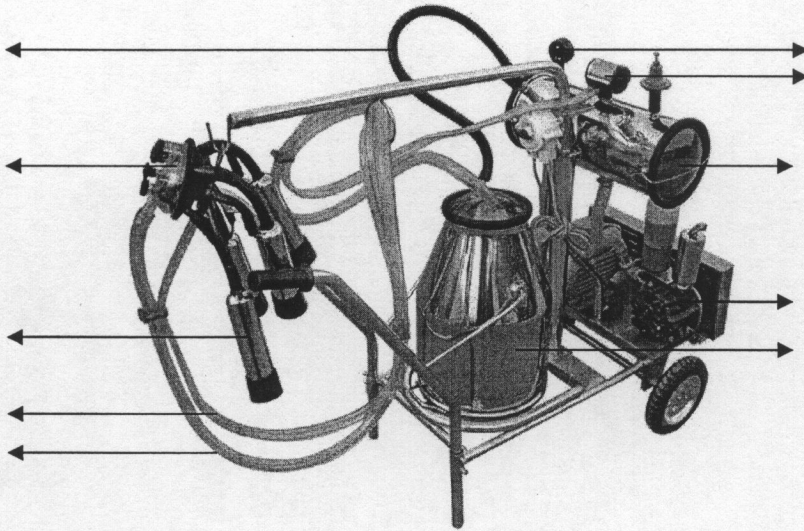
Date: Wednesday 20th August 2014

Instructions to Candidates:

- a) All Questions carry equal marks (20).
 - b) Answer any five (5) questions and clearly show all the calculations.
-

- Q. 1** Dairy farm mechanisation involves the use of heavy machinery such as tractors in land preparation, the planting of pastures, harvesting and storage of hay and silage and in the process of milking dairy cows. As a result, less labour is employed. Discuss the advantages and disadvantages of the use of machine milking on a farm of your choice.
- Q. 2** What is the importance of the milk-let-down process? Discuss the circumstances that assist to initiate the milk-let-down process and the circumstances that should be avoided in the milking parlour.
- Q. 3** A group of emergent farmers from the Eastern Province would like to speed up the process of milking their cows and all intend to purchase milking machines. As a dairy expert discuss with the farmers the advantages and disadvantages of the use of the milking machine in order to remove milk from the udder of the dairy cow.
- Q. 4** The use of the bucket milking machine is common amongst the commercial farmers because it is cheaper and one operator can manage 2 – 4 machines at a time in well designed dairy units:

- a) Complete labelling the ten (10) parts of the portable milking machine indicated below by the six arrows.



- b) It is, however, known that hand milking causes little damage to the udder and teats of dairy cows, the process is the cheapest method of removing milk from the udder and does not require money to purchase expensive equipment such as a milking machine. Discuss any five practices that a good herdsman must do in order to produce clean milk with the use of hand milking.

Q. 5 Write notes on the following:

- a) The correct hand milking technique;
- b) The correct use of the strip cup;
- c) Direct-to-churn milking; and
- d) Systems of cooling milk after milking.

THE END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

SCHOOL OF VETERINARY MEDICINE

FINAL EXAMINATIONS – JULY-AUGUST 2014

VMB 2100: VETERINARY ANATOMY, CYTOLOGY AND PHYSIOLOGY

PAPER I: CYTOLOGY AND PHYSIOLOGY

TIME: THREE (3) HOURS

INSTRUCTIONS:

1. ATTEMPT ALL QUESTIONS IN SECTION A AND SELECT ANY FIVE QUESTIONS FROM SECTION B
 2. ANSWER EACH SECTION IN A SEPARATE SET OF ANSWER BOOKS
-

SECTION A [10 marks per Question; answer all questions]

Question 1:

- a) Describe the structure of erythrocytes and how this is important in their function.
(4 marks)
- b) What feature in the structure of an erythrocyte in birds is different from that in mammals?
(1 mark)
- c) Explain the transport of gases in the blood?
(5 marks)

Question 2:

- a) What is anaemia?
(1 mark)
- b) Mention and briefly explain three (3) types of anaemia that can reduce the number of erythrocytes.
(5 marks)
- c) What is jaundice? Mention and briefly explain the types of jaundice.
(4 marks)

Question 3:

- a) Other than the neurone, mention and state the function(s) of three (3) other cell types found in the nervous system.
(3 marks)
- b) What is a synapse?
(1 mark)
- c) Describe the transmission of an impulse at the synapse (chemical synapse); mentioning the ion involvement and other factors in the process.
(6 marks)

Question 4:

Define negative feedback using an appropriate example and state other examples of negative feedback. (10 marks)

Question 5:

Give a brief description of the following:

- (a) Microscopic features of skeletal and cardiac muscle fibres.
- (b) Electron microscopic details of myofibres.
- (c) Morphological properties of supportive cells of the nervous system
- (d) Cell inclusion bodies
- (e) Features of a nerve fibre in the peripheral nervous system

(10 marks)

SECTION B [10 marks per Question; answer any five questions]

Question 6:

Define homeostasis and give examples of some of its regulatory mechanisms.

(10 marks)

Question 7:

Discuss the different kinds of active transport

(10 marks)

Question 8:

- a) What similarities exist between skeletal and cardiac muscle in their structure?

(2marks)

- b) What is a pacemaker? Why is it important in cardiac muscle function?

(2 marks)

- c) With the aid of a diagram, describe the action potential in cardiac muscle mentioning the various ionic changes at respective stages in the action potential.

(5 marks)

- d) What is the importance of gap junctions in cardiac muscle?

(1 mark)

Question 9:

Describe in detail the different types of epithelium

(10 marks)

Question 10:

Discuss in detail microscopic features of bone.

(10 marks)

Question 11:

List down the types of connective tissue proper and describe the microscopic appearance of dense irregular connective tissue. (10 marks)

Question 12:

Describe structural appearance and functions of granulocytes and agranulocytes found in blood. (10 marks)

END OF EXAM

THE UNIVERSITY OF ZAMBIA

SCHOOL OF VETERINARY MEDICINE

FINAL EXAMINATIONS – JULY-AUGUST 2014

VMB 2100: VETERINARY ANATOMY, CYTOLOGY AND PHYSIOLOGY

PAPER II: ANATOMY

TIME: THREE (3) HOURS

INSTRUCTIONS:

1. SELECT FIVE (5) QUESTIONS IN SECTION A AND SELECT ANY TWO (2) QUESTIONS FROM SECTION B
-

SECTION A [Select any five (5) questions; 10 marks per Question]

Question 1:

- a) Explain the meanings of the following anatomical terms: **cranial; rostral; median plane; lateral; sagittal**
(5 marks)
- b) Based on your understanding of the word “**superficial**”, where would you expect the superficial digital flexor tendon in a horse’s leg to be found, relative to the deep digital flexor tendon?
(1 mark)
- c) True or false? Condyles are found on the distal ends of the femur, humerus and scapula. (1 mark)
- d) Which common bone feature is a somewhat spherical articular surface on the proximal end of long bones? (1 mark)
- e) What name is given to the processes found on the humerus and what name is given to the processes found on the femur? (2 marks)

Question 2:

- a) Define the term “**peritoneum**” Where is the peritoneum located in the dog?
(2 marks)
- b) Which nerve when injured would cause paralysis of the muscle that separates the thoracic cavity and abdominal cavity? (1 mark)
- c) The bone-like substance beneath the tooth enamel is known as? (1 mark)
- d) In the upper jaw of the tooth, which tooth is the carnassials tooth and with which teeth/tooth of the lower jaw does it occlude with? (2 marks)
- e) List, in order from cranial to caudal, the arterial branches that the abdominal aorta gives off once it enters the abdomen after piercing the diaphragm. (4 marks)

Question 3:

- a) Name two components of the peripheral nervous system (PNS). (2 marks)
- b) When a typical spinal nerve emerges from the intervertebral foramen, it usually trifurcates. What are the names of the branches it trifurcates into?
(3 marks)
- c) Using a good practical example differentiate between the sympathetic and parasympathetic arms of the autonomic nervous system. (2 marks)
- d) True or false? Within the spinal cord pathways the discriminative tactile and proprioceptive sensibilities are conveyed to the brain in the fasciculus gracilis and fasciculus cuneatus by the cranial branches of large dorsal root afferent fibers. (1 mark)
- e) True or false? Secretions of an automatic nature, voluntary behavior and posture regulation are effected via descending spinal tracts. (1 mark)
- f) True or false? Leptomeninges refers to the combination of dura mater and arachnoid membrane. (1 mark)

Question 4

- a) Three of the following eyeball muscles are innervated by the oculomotor nerve (III). Which ones are they?
 - i. Dorsal rectus
 - ii. Medial rectus
 - iii. Obicularis oris
 - iv. Ventral oblique
 - v. Pterygoid
 - vi. Geniohyoideus(3 marks)
- b) What are the functions of each of the following parts of the eye of the dog?
 - i. Cornea
 - ii. Conjunctiva
 - iii. Retina
 - iv. Optic nerve
 - v. Iris
 - vi. Lens
 - vii. Extraocular muscles

(7 marks)

Question 5

- a) List and state the components and functions of the dog digestive system between the pharynx and the cecum.

(10 marks)

Question 6

Describe the anatomy of the inguinal canal in the dog and name the various structures that are transmitted through it in the male and female dog.

(10 marks).

Question 7

- a) Name the lobes of the liver of the dog (5 marks)
- b) Where precisely is the pancreas of the dog located? What are its functions? (5 marks)

SECTION B [Answer any two questions; 25 marks per Question]

Question 8

- a) Draw a well-labeled diagram of a transverse section of the spinal cord showing the following parts: **central canal, gray commissure, gray horns, dorsal roots, ventral roots, dorsal column, ventral column, lateral column, communicating branch, dorsal root ganglion.**
- b) Discuss the anatomy and functions of the following parts of the nervous system: **central nervous system; autonomic nervous system; sympathetic nervous system; parasympathetic nervous system**

Question 9

Give a description of the functional anatomy of the following anatomical components of the dog:

- a) Stomach
- b) Liver
- c) Intestines
- d) Distribution of the abdominal aorta
- e) Peritoneum

Question 10

- a) List and explain the functional anatomy of the female reproductive organs of the bitch
- b) List and explain the functional anatomy of the reproductive organs of the male dog.

Question 11

- a) Name five (5) muscles of the dog's forelimb that act on the elbow joint and state their origin, action and innervation.
- b) Name five (5) muscles of the dog's hindlimb that act on the stifle joint and state their origin, action and innervation

END OF EXAM

THE UNIVERSITY OF ZAMBIA

UNIVERSITY FINAL EXAMINATIONS – JULY 2014

VMB 2209 – VETERINARY EMBRYOLOGY

TIME: THREE (3) HOURS

INSTRUCTIONS: ANSWER ALL QUESTIONS. ALL QUESTIONS CARRY EQUAL MARKS

- 1. Write short notes on the following**
 - a) Paramesonephric duct in the female embryo.
 - b) Derivatives of the genital tubercle, genital swellings and genital folds in the female
 - c) Physiological herniation of the mid-gut loop
 - d) Three components of the somites
 - e) Freemartinism
 - 2. In detail outline and discuss**
 - a) Three developmental abnormalities related to great vessels entering or leaving the heart
 - b) Three abnormalities of cardiac development at atria and ventricular levels
 - c) The role of umbilical veins and arteries in a developing embryo
 - 3. Briefly discuss:**
 - a) The different ways into which animals are born according to Aristotle in ca. 350 BC.
 - b) Elements that spermatozoa will have to overcome in order for fertilization to take place.
 - c) The process of gastrulation in a developing embryo
 - d) Functions of the placenta.
 - 4. In a sentence or two define the following:**
 - a) Inner-cell Mass (ICM)
 - b) Blastocyst
 - c) Polar trophoctoderm
 - d) Mural trophoctoderm
 - e) Pronuclei
 - f) Ductus venosus
 - g) Wolffian duct
 - h) Phallus
 - i) Hensen's node
 - j) Hypoblast
 - 5. With the aid of a diagram and arrow heads show blood circulation in a developing embryo between the placenta and the rest of the embryo**
-

END OF EXAM

THE UNIVERSITY OF ZAMBIA

UNIVERSITY EXAMINATIONS-JULY 2014

VMB 3120 -VETERINARY ANATOMY

TIME: THREE (3) HOURS

INSTRUCTIONS:

- 1. ATTEMPT ONLY FIVE (5) QUESTIONS.**
 - 2. ILLUSTRATE YOUR ANSWERS WITH DIAGRAMS WHERE POSSIBLE.**
 - 3. ALL QUESTIONS CARRY EQUAL MARKS.**
-

1. Give a detailed account of the form, topography and relations of the porcine intestine.
2. a). Describe the avian ribs pointing out any similarities and differences to those of mammals.
b). Describe the skin and associated glands of the domestic fowl.
3. Describe in detail the various dental features used in estimating age in
 - a) Ruminants
 - b) Horse
4. Describe the important external features of the ruminant skull.
5. Write short notes on the following aspect of the ruminant stomach
 - i) Topography and relations
 - ii) Internal form of the omasum
 - iii) Omental attachment to the stomach
 - iv) Vascularisation and innervation
6. Give a detailed account of the anatomical distribution of the vascular and neurological elements in the distal equine forelimb.
7. Give a detailed account of the equine hindlimb passive stay apparatus.

END OF EXAM

VMB 3131: VETERINARY HISTOLOGY

INSTRUCTIONS:

1. TIME: **THREE (3) HOURS**
 2. ANSWER **ALL FIVE (5) QUESTIONS**. ALL QUESTIONS CARRY EQUAL MARKS.
-

1. Write brief notes on the histological features of the following organs when viewed under a light microscope:
 - i) The Aorta
 - ii) The Tongue of a sheep
 - iii) Ovary of a bitch
 - iv) The Gall bladder - cat
 - v) The pancreas - dog
 2. The Lymphoreticular System is made up of several organs with almost similar histological features, therefore describe the:
 - i) histological structure of the spleen
 - ii) three theories of splenic circulation
 3. With the aid of a diagram
 - i) compare and contrast the different types of secretory units of salivary glands
 - ii) describe the composition of a taste bud
 - iii) the general histological outline of tubular organs, e.g., GIT
 - iv) the blood-air-barrier of the lungs or alveoli
 4. In detail compare and contrast the conducting and respiratory division of the lower respiratory system.
 5. Write explanatory or descriptive notes on the following whilst also noting the function(s) of each:
 - i) Cornea
 - ii) Organ of Corti
-

END OF EXAMINATION



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

UNIVERSITY EXAMINATIONS - JULY/AUGUST 2014

VMB 3300 - VETERINARY BIOCHEMISTRY

TIME : THREE (3) HOURS

INSTRUCTIONS : ANSWER ANY FIVE (5) QUESTIONS

ALL QUESTIONS HAVE EQUAL VALUE

Question 1

In the excretion of nitrogen,

- a) Name two compounds that are responsible for the transfer of the amino nitrogen from the peripheral tissues into the liver for onward excretion. [2]
- b) Assuming nitrogen from various amino acids, in the form of amino group, is transaminated to α -ketoglutarate, explain, with the help of structural equations how you would form the two compounds named in a) above. [5]

- c) Once in the liver, explain, again with the help of equations (structural), how the amino nitrogen carried by these two compounds can be accessed by the urea cycle for use in the biosynthesis of urea. [6]
- d) In which enzyme deficiency is hyperammonemia accompanied by orotic aciduria and why? [4]
- e) Using the manipulation of DNA as a therapeutic tool, how you would correct the problem in d) above? [2]

Question 2

You are required to translate the protein α -amylase using a eukaryotic cell extract,

- a) Name all the requisites you would expect to be present in the extract for this process to be successful. [4]
- b) Explain the role of any three requisite identified in a) above. [3]
- c) Give an account of how you would form the initiation complex from your requisites. [13]

Question 3

In genetic engineering,

- a) Define the terms, "restriction"; "flanking sequence" and "recombinant DNA". [5]
- b) Name the enzymes used in restricting DNA. What is their role in nature? [3]
- c) If you are given a DNA segment containing the gene

responsible for milk production in Friesians by a client and you are required to multiply that segment a thousand fold within 24hrs, give an account on how you would achieve this, clearly explaining the reason for each step taken. [12]

Question 4

- a) In the complete oxidation of a molecule of glucose to carbon dioxide and water, ATP (or its equivalents) is consumed and produced. Discuss this statement by giving only the chemical equations where ATP (or its equivalents) is i) consumed and ii) produced in the complete oxidation of a molecule of glucose to carbon dioxide and water. For each chemical equation given, state the metabolic pathway involved. [10]
- b) Using your answers to a) above, estimate the number of ATP molecules (or its equivalents) i) consumed and ii) produced in the complete oxidation of four molecules of glucose to carbon dioxide and water. [05]
- c) Give a well labeled schematic diagram to explain why a molecule of FADH_2 does not produce the same number of ATPs as a molecule of NADH. [05]

Question 5

In oxidation of fatty acids,

- a) State the various types of oxidation of fatty acids. [3]
- b) With the aid of a pathway, discuss the complete beta oxidation of fatty acids with an odd number of carbon atoms using an appropriate fatty acid as an example. [17]

Question 6

Hemoglobin(Hb)has a role of transporting oxygen to various parts of the body and carbon dioxide to the lungs.

- a) Define the different levels of protein structural organization you find in hemoglobin. [4]
- b) What is distal and proximal histidine in this molecule and what role do these molecules play in the binding and release of oxygen in an animal? [6]
- c) In the presence of carbon dioxide in tissues, the affinity of hemoglobin for oxygen is reduced. Explain, with the aid of equations. [10]

Question 7

- a) Using a specific, different and named example for each of the following, clearly show understanding of the structural difference(s) between:
 - i) a pyrimidine and a purine
 - ii) a mononucleotide and a nucleosideSupport your answer(s) with the appropriate chemical structures. [04]
- b) Using uric acid and glutathione, discuss the statement that amino acids are biosynthetic precursors for non-protein nitrogen containing compounds. Discuss two important functions played by glutathione. [04]
- c) EITHER: In the biosynthesis of a purine or a pyrimidine, give details for the chemical equations catalysed by ribokinase and aspartate carbamoyltransferase

OR: In the biodegradation of a purine or a pyrimidine, give details for the chemical equations catalysed by xanthine oxidase and dihydrouracil dehydrogenase. [08]

- d) Name and describe two genetic diseases of pyrimidine degradation. [04]

Question 8

In nucleic acid metabolism,

- a) Discuss the roles of all enzymes involved in the replication of DNA. [13]
- b) With the aid of a diagram, write a brief description of tRNA with reference to the functions of its components. [7]

END OF EXAMINATION



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

UNIVERSITY SUPPLEMENTARY EXAMINATIONS - JULY/AUGUST

20

VMB 3300 - VETERINARY BIOCHEMISTRY

TIME : THREE (3) HOURS

INSTRUCTIONS : ANSWER ANY FIVE (5) QUESTIONS

ALL QUESTIONS HAVE EQUAL VALUE

Question 1

In fatty acid metabolism

- a) Describe the regulation of fatty acid oxidation. [10]
- b) Write short notes on beta-oxidation of unsaturated fatty acids with an even number of carbon atoms. [10]

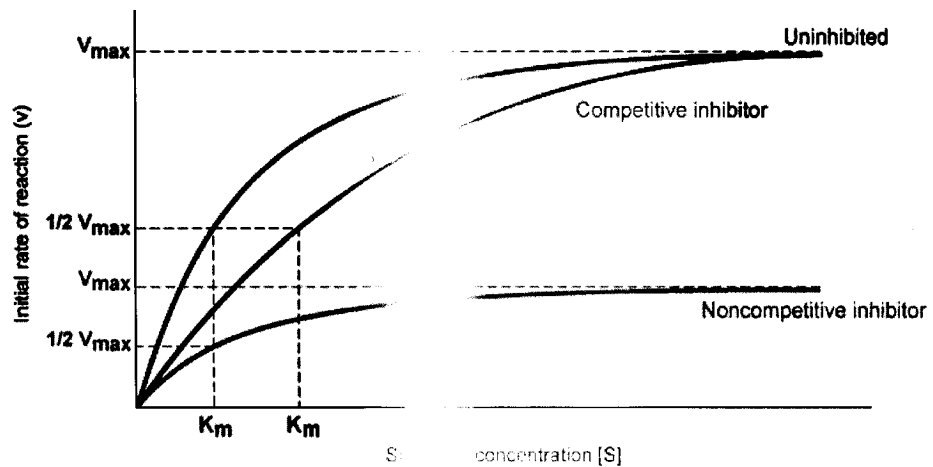
Question 2

In metabolism,

- a) Name any three classes of enzymes, outline their biochemical properties and give one example of an enzyme in each class. [08]

- b) Using the graph below, explain the enzyme kinetics for each plot. [12]

The Effects of Inhibition on Enzyme Kinetics



Question 3

- a) Discuss in detail all the characteristics of DNA. [9]
- b) Describe the formation of the replication fork during the process of DNA replication [11]

Question 4

Your beloved cat has just collapsed and after carrying out various biochemical tests on its serum, you discover that the levels of citrulline, carbamoyl phosphate and ammonia are abnormally high and that the high levels are not a result of urea cycle enzyme deficiency. Arginine is a substrate of the cycle. Quick administration of phenylalanine could just revive your cat.

- a) Explain, with the aid of equations, how phenylalanine can be used to compensate for a deficient substrate. [15]
- b) What four possible dangers could be at the back of your mind as phenylalanine is administered as the drug of choice? [3]
- c) Assuming the high citrulline, carbamoyl phosphate and ammonia were a result of enzyme deficiency, which enzymes would be limiting? [2]

Question 5

With respect to nucleic acids;

- a) State the different types of RNA [3]
- b) Discuss the roles of enzymes during DNA replication. [17]

Question 6

Your pig, Pinki, is fed on condensed pig mash consisting of, among others, groundnut cake and maize. The maize is used as the sole energy source (starch) while the ground nut cake is the major protein source with 40% crude protein.

- a) Name the products of digestion of the above carbohydrate and protein in the mouth, clearly indicating the source for each product. [5]
- b) In the small intestine, name all the enzymes that would be involved in the digestion of Pinki's carbohydrates and explain the role of each enzyme named. [4]
- c) If the groundnut cake in the feed had left-over oils after processing consisting mainly of triacylglycerols (TAGs) what would be their fate in the small intestine. [2]
- d) Assuming, the products of digestion are absorbed finally as chylomicrons or through the portal vein, explain briefly how Pinki's extrahepatic tissues can benefit from these. [9]

Question 7

- a) Briefly describe the relationship between respiration and photosynthesis. [5]
- b) Discuss the non cyclic flow of electrons. [15]

THE UNIVERSITY OF ZAMBIA

FINAL EXAMINATIONS - JULY 2014

VMB 3400: VETERINARY PHYSIOLOGY

INSTRUCTIONS:

1. TIME: **THREE (3) HOURS**
 2. ANSWER **FIVE (5) QUESTIONS ONLY**.
 3. ALL QUESTIONS CARRY EQUAL MARKS OF 20 EACH.
 4. USE A SEPARATE ANSWER BOOKLET FOR EACH QUESTION.
-

1. The pituitary gland regulates many body functions and consists of two portions, the neurohypophysis and the adenohypophysis. This gland is under the control of the hypothalamus.
 - a) State how the hormones of the hypothalamus reach the pituitary gland. (2 marks)
 - b) List the hormones produced by each portion of the pituitary gland. (4 marks)
 - c) Discuss the role of anti diuretic hormone and adrenocorticotrophic hormone in homeostasis. Include the target organ(s) and stimuli for the secretion of each hormone. (14 marks)
2. The primary function of the respiratory system is gaseous exchange which takes place in the lungs. To achieve this goal, various mechanisms are at play to ensure that oxygen is delivered to the tissues and carbon dioxide is eliminated from the body. The system is also lined by numerous cell types that contribute different secretions. Surfactant is one such secretion that is critical for normal lung function.
 - a) Which cells produce surfactant? (1 mark)
 - b) What is the function of surfactant within the respiratory tract? (1 mark)
 - c) Describe the mechanism that allows for air to move into and out of the lungs? Include how pressure gradients are established and how this determines the direction of air flow. (10 marks)
 - d) With the aid of a diagram describe how temperature and pH affect the affinity of haemoglobin for oxygen. (8 marks)
3. In detail discuss the following:
 - a) The role of LH, FSH, Oxytocin, PGF₂ α , Inhibin, Estradiol-17 β and Progesterone in the regulation of the estrus cycle in cattle.
 - b) Factors that may affect estrous expression in cattle
4. Compare and contrast puberty in male and female animals. (20 marks)

5. With the aid of an illustrative diagram, describe the process involved in the secretion of hydrogen ions into the renal tubules. Mention the fate of these hydrogen ions. (20 marks)
6. Answer the following questions with regard to energy metabolism and thermoregulation:
- a) What is energy metabolism?
(2 marks)
 - b) Give three reasons why measurement of metabolic rate is important.
(3 marks)
 - c) Describe the direct calorimetry method of measuring metabolic rate.
(3 marks)
 - d) List four factors that can affect the metabolic rate of an animal.
(2 marks)
 - e) Briefly describe the physiological response to heat and cold in animals.
(6 marks)
 - f) How does the nervous system control temperature regulation in the animal's body? (4 marks)

END OF EXAM

THE UNIVERSITY OF ZAMBIA

FINAL EXAMINATIONS - JULY 2014

VMB 4500: VETERINARY PHARMACOLOGY

INSTRUCTIONS:

1. TIME: **THREE (3) HOURS**
 2. ANSWER **FIVE (5) QUESTIONS ONLY**.
 3. ALL QUESTIONS CARRY EQUAL MARKS OF 20 EACH.
-

1.
 - a) What do you understand by the term bioavailability? What factors determine the bioavailability of a drug?
 - b) What do you understand by the term biotransformation? Briefly describe Phase I and Phase II biotransformation reactions giving at least two (2) examples of the specific types of reactions involved in each phase.
2.
 - a) Barbiturates may be grouped into four classes based on their duration of action. List these classes giving one example of a barbiturate in each class.
 - b) Discuss the pharmacological effects of barbiturate anaesthetic agents.
 - c) Compare and contrast the elimination from the body of a thiobarbiturate and an oxybarbiturate in a lean Greyhound and an obese Labrador.
3. Discuss the mode of action, pharmacological effects, and clinical uses of morphine in small animals.
4. Inflammation and pyrexia are normal physiological responses to injury. Excessive inflammatory reactions can be harmful and need to be controlled.
 - a) Summarise the arachidonic acid cascade indicating sites of action of anti-inflammatory agents.
 - b) Discuss the general mechanism of action and pharmacokinetics of nonsteroidal anti-inflammatory drugs (NSAIDs)
 - c) What advantages do the newer NSAIDs have over the traditional NSAIDs? Give specific examples of drugs.
5. Write short notes on:
 - a) Ecobolic drugs
 - b) Mode of action, spectrum of activity, side effects, and uses of chloramphenicol.
6. Write short descriptive notes on the following:-
 - a) Drugs used to treat different types of fungal infections in animals.
 - b) Treatment of transmissible venereal tumour in dogs.
 - c) Treatment of theileriosis in cattle.
 - d) Treatment of trypanosomiasis.
 - e) Ectoparasiticides

7. Discuss the general properties, mode of action and spectrum of activity of the following drugs:-

- a) Praziquantel
- b) Imidocarb
- c) Moxidectin
- d) Amprolium
- e) Albendazole

END OF EXAM

THE UNIVERSITY OF ZAMBIA
SCHOOL OF VETERINARY MEDICINE

DEPARTMENT OF CLINICAL STUDIES
2013/14 ACADEMIC YEAR FINAL EXAMINATIONS

VMC 5100: PROPAEDEUTICS TO CLINICAL VETERINARY MEDICINE

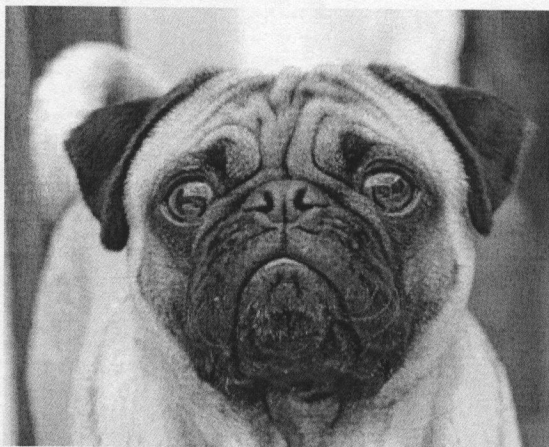
TIME: THREE HOURS

INSTRUCTIONS:

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

SECTION A

1. Signalment is very important when it comes to the management of skin problems in dogs and cats. You are presented with the dog shown below and the owner has a lot of questions since it is the first time she is keeping this breed.



- a) State the breed shown above. (**2 marks**)
- b) State the common skin condition and the clinical signs thereof that this breed is predisposed to. (**6 marks**)
- c) List **two (2)** differential diagnosis for the condition in (b) above (**2 marks**)
- d) Outline how you would confirm diagnosis of the condition in (b) above? (**5 marks**)

- e) Outline your management of the condition in (b) above. **(5 marks)**
2. Colic is one of the most costly equine medical problems estimated to occur in one of every 10 horses each year and is the number one causes of mortalities in horses.
- a. Briefly outline the clinical signs associated with colic. **(3 marks)**
 - b. Discuss how you would investigate a case of colic to come up with a definitive diagnosis. **(8 marks)**
 - c. Outline the medical management of a colic case. **(5 marks)**
 - d. Briefly discuss factors that would warrant surgical intervention of a colic case. **(4 marks)**
3. The genera *Cooperia*, *Nematodirus*, *Oesophagostomum*, *Trichostrongylus*, *Haemonchus* and *Fasciola* are by far the most important endoparasites of the sheep and goat industry. The majority of these parasites live in the stomach and gut, but also include lungworms that complete their life cycle in the respiratory tract.
- a) Describe the pathogenesis of the major clinical signs seen small ruminants using *Haemonchus* as an example. **(5 marks)**
 - b) Describe the pathogenesis and clinical signs in *Fasciola gigantica* infection in small ruminant. **(5 marks)**
 - c) Describe how you would control internal parasites including Liver fluke in a flock of small ruminants. **(5 marks)**
 - d) Briefly outline a worm control protocol as part of your goat health plan. **(5 marks)**

SECTION B

4. A 2-month-old male English bulldog puppy is presented with cyanosis and a history of syncope of a week's duration. The owner also tells you that the dog has been showing weakness when exercised or excited and is stunted compared to the littermates. You carry out a physical examination and find the following: a holosystolic murmur, at the right sterna border, dyspnoea and severe crackles upon auscultation of the lungs. Haematology results reveal a PCV of 67%.
- The puppy's vaccinations and deworming are up-to-date.

- a. What are your tentative diagnoses? **(2 marks)**
 - b. List two **(2)** differential diagnoses. **(2 marks)**
 - c. Describe how you would confirm your diagnoses in (a) above. **(4 marks)**
 - d. Describe the grading of murmurs in dogs **(6 marks)**
 - e. Outline the medical management of the condition in (a) above. **(6 marks)**
5. A veterinarian is presented with a case of adult cattle with suspected organophosphate poisoning. Clinical signs include vomiting, diarrhea, sweating, salivation, labored breathing with a few deaths.
- a) Describe the mechanism of action of organophosphate compounds used in the control of ectoparasites in cattle. **(8 marks)**
 - b) Discuss how you would treat organophosphate poisoning? **(6 marks)**
 - c) Explain the meaning of the term 'Organophosphate Induced Delayed Neuropathy (OPIDN). Give an example of a drug eliciting this condition. **(6 marks)**
6. As a veterinary clinician, you will be presented with cases of gastrointestinal disorders on a regular basis.
- a. Using a table format, differentiate regurgitation from vomiting in small animals. **(10 marks)**
 - b. List four (4) causes of regurgitation in dogs. **(4 marks)**
 - c. Describe your diagnostic plan and symptomatic treatment of a cat with gastritis. **(6 marks)**
7. A nine-year-old cow is presented to your practice with the following clinical signs seen 48 hours after calving: dry muzzle, ruminal tympany, absence of the pupillary reflex, subnormal temperature, decreased respiratory rate, increased heart rate and its in sternal recumbency.
- a) What is your tentative diagnosis? **(2 marks)**
 - b) Describe in detail the aetiology of this condition. **(5 marks)**
 - c) Outline your differential diagnoses. **(3 marks)**
 - d) Discuss the treatment and prevention of the condition in a) above. **(10 marks)**

.....**THE END**.....

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

2013/14 ACADEMIC YEAR END OF YEAR FINAL EXAMINATIONS

VMC 5200: PRINCIPLES AND INTRODUCTION TO VETERINARY SURGERY

TIME: THREE HOURS

INSTRUCTIONS:

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

SECTION A

1. Gastrointestinal surgery is one of the most common types of surgery done in small animal practice.

- a) Define and give indications for the following procedures: **(2 marks each)**
 - i. Gastrotomy
 - ii. Enteropexy
 - iii. Gastrostomy
 - iv. Intestinal plication
 - v. Serosal patching
- b) While performing an exploratory laparotomy on a cat with vomiting, anorexia and abdominal discomfort, you find that the intestines are 'bunched up' with what appears to be a string foreign body. Describe how your enterotomy procedure would differ from one where there is a fur-ball. **(4 marks)**
- c) Name and briefly describe a procedure you would use to manage pyloric stenosis in a dog. **(6 marks)**

2. Most invasive surgical procedures will require the administration of anaesthesia.

- a) List the properties of an ideal inhalation anaesthetic agent. **(5 marks)**
- b) Write short notes on the "Pin Index System". **(3 marks)**
- c) Outline how you would perform a leak test for an anaesthetic machine and thereafter how you would safely induce anaesthesia and apply an endotracheal tube (ET) in a 22kg cross bred dog for a surgical procedure expected to last two hours. Further discuss how you would recover the dog from anaesthesia. **(12 marks)**

3. Outline **four (4)** radiographical findings for each of the following conditions (**4 marks each**)

- a) Pneumonia
- b) Hypertrophic osteopathy
- c) Malignant nasal tumour
- d) Megaoesophagus
- e) Pleural effusion

SECTION B

4. Surgery of the perineum is frequently performed in small animals.

- a) Describe the surgical anatomy of the perineum, and justify its importance in surgery of the region. (**5 marks**)
- b) List the types of presentation of rectal prolapse and explain the approach to management of each one (**15 marks**)
- c) With the help of sketch or line drawings, discuss how you would differentiate rectal prolapse from intussusception. (**5 marks**)

5. A nine-year-old broodmare with confirmed granulosa cell tumour of the ovary and suspected pyelonephritis is referred to your practice for ovariectomy.

- a) List the available celiotomy options for the ovariectomy. (**4 marks**)
- b) Describe how you would confirm the pyelonephritis in the broodmare. (**2 marks**)
- c) The ovarian tumour is relatively small and the client does not want to see any postoperative scar tissue, describe in detail the approach you would use to carry out the ovariectomy. (Approach only and include anaesthesia and postoperative care). (**12 marks**)
- d) Briefly outline the disadvantages of the approach described in (c) above. (**2 marks**)

6. Wounds are commonly seen in small animal practice. The wounds range from those that require minimal attention from the veterinary surgeon to those that require prolonged and skilled attention from the animal health care team.

- a) List the factors that a surgeon has to consider when he/she has to decide whether or not to close a wound that is as a result of a traumatic incident. (**5 marks**)
- b) Discuss in detail, the classification, technique of use and advantages and disadvantages of surgical drains in veterinary surgery. (**12 marks**)
- c) List **Six (6)** methods of managing skin tension in veterinary surgery. (**3 marks**)

7. You are a recent graduate working at a private practice in Mazabuka district and a visiting expatriate engineer presents to you a recumbent, 35 kg Rottweiler with severe dehydration. You examine the dog and find that mucous membranes are pale and tachy, the pulse is weak and thready, the extremities are cold and the orbits are sunken. The dog also has a Packed Cell Volume (PCV) of 13%.

- a) What is your tentative diagnosis? **(1 mark)**.
- b) State what could have caused the condition named in (a) above? **(2 marks)**.
- c) Outline other clinical signs you would see. **(3 Marks)**.
- d) Briefly describe what your immediate action would be. **(4 Marks)**.
- e) After a thorough examination of the patient, you decide that you need to give blood, how much blood would you give (show your calculations) and how? What would be your criteria for choosing a blood donor? **(10 Marks)**.

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

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

2013/14 ACADEMIC YEAR FINAL EXAMINATIONS

VMC 5309: INTRODUCTION TO VETERINARY REPRODUCTION AND OBSTETRICS

TIME: THREE HOURS

INSTRUCTIONS:

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

SECTION A

1. In small animal practice, knowledge of reproduction and obstetrics is important.
 - a. Using a table format, compare and contrast radiology versus ultrasonography as a means of pregnancy diagnosis in bitches. **(8 marks)**
 - b. Compare and contrast stages of labour and parturition between bitches and queens. **(8 marks)**
 - c. Write short notes on **one (1)** of the following: **(4 marks)**
 - (i) Use of progesterone for contraception in dogs
 - (ii) Clinical signs and diagnosis of pseudopregnancy in dogs
2. You are attending a workshop as an expert of reproduction in the mare. The workshop is for horse owners who would like to venture into horse breeding. The following are among the many questions you get from the workshop attendants. Please answer the questions as clearly as possible.
 - a. Outline why the mare is described as a seasonal breeder and what factors affects its seasonality. **(4 marks)**
 - b. Briefly outline the methods used to detect heat in the mare. **(4 marks)**
 - c. Maternal recognition of pregnancy is not very well elucidated in the mare; describe the events occurring in the mare that could be equated to maternal recognition of pregnancy. **(4 marks)**
 - d. Discuss in detail the endocrinology of pregnancy in the mare. **(8 marks)**

3. At a farm in Lusaka West, a cow is presented to you for examination. According to the farmer, the cow was seen in labour but no calf has been born for almost 24 hours now. You carefully examine the cow *per vaginum* and the only part you can feel is the foetal dorsum.
- What is your diagnosis? **(2 marks)**
 - Discuss the various foetal dispositions that could have led to the condition you suspect in (a) above. **(4 marks)**
 - Describe in detail how you would treat and manage this condition in view of your diagnosis in (a) above. **(12 marks)**
 - Outline the advice you would give to the farmer in light of these findings? **(2 marks)**

SECTION B

4. (a) The oestrous cycle of cattle, horse, swine, sheep and goat is a complex period that is characterised by a number of events. For each of these animal species state the following: **(10 marks)**
- oestrous cycle length
 - duration of oestrus
 - time of ovulation
- (b) Design and discuss **three (3)** synchronisation protocols for timed artificial insemination (TAI) procedure using some of the following hormones in a primiparous cow: Buserelin Acetate, PRID, CIDR, PGF₂ α , GnRH and Estradiol-17 β . **(10 marks)**
5. A farmer calls you to see a Holstein-Friesian cow that calved about seven hours earlier. Upon examination you notice why the farmer called you. A huge haemorrhagic mass is hanging from the vulva almost touching the ground.
- What is your tentative diagnosis? **(2 marks)**
 - List **three (3)** differential diagnoses? **(3 marks)**
 - Describe the aetiopathogenesis of the condition in (a) above. **(6 marks)**
 - Discuss in detail the treatment options for this condition. **(6 marks)**
 - Outline the advice you would give the farmer regarding prevention of this condition. **(3 marks)**

6. A high yielding milk cow was confirmed pregnant by a renowned veterinary surgeon at about 30 days following an insemination by a well-trained inseminator. However, three weeks following pregnancy confirmation, the cow was reported to be on heat.
- Would you consider this cow to be exhibiting a strange behaviour, explain in detail? **(4 marks)**
 - Outline your rectal examination findings of the reproductive tract? **(10 marks)**
 - Discuss further tests you would carry out to confirm your findings in (b) above? **(4 marks)**
 - Outline the management of this case. **(2 marks)**
7. In the pig, pregnancy is quite short, 114 days (3 month, 3 weeks and 3 days) and the day of farrowing highly predictable. However there are three stages, the pre-farrowing period, the farrowing process and the immediate post-farrowing period.
- List some of the clinical signs of impending farrowing in the sow. **(4 marks)**
 - Describe the events that occur during each of the three phases during the farrowing process in a sow. **(10 marks)**
 - Briefly discuss the hormonal controls of farrowing. **(6 marks)**

-----End of Examination-----

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

2013/14 ACADEMIC YEAR SECOND SEMESTER FINAL EXAMINATIONS

VMC 6110: VETERINARY CLINICAL MEDICINE

TIME: THREE HOURS

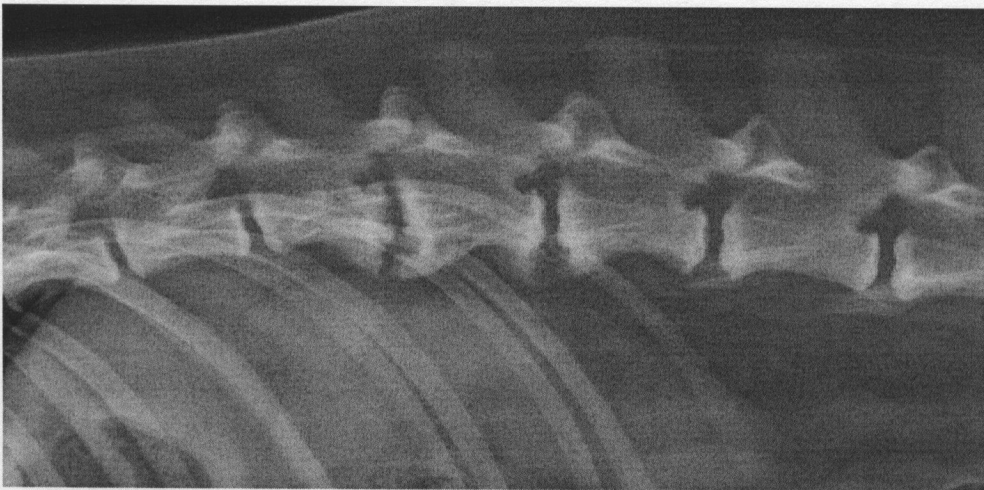
INSTRUCTIONS:

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

SECTION A

1. You are presented with a three-year-old bull with anorexia, fever, depression and haemoglobinuria. Clinical examination of the bull reveals pale mucous membranes, icterus and swelling of the superficial lymph nodes. Ectoparasite control on the farm is erratic.
 - a. What is your tentative diagnosis? **(2 marks)**
 - b. List two **(2)** differential diagnoses. **(4 marks)**
 - c. Describe how you would confirm your diagnosis in (a) above. **(4 marks)**
 - d. Describe the pathogenesis of the condition in (a) above. **(3 marks)**
 - e. Describe how you would manage this case. **(3 marks)**
 - f. Describe how you would prevent further occurrence of similar cases on the farm. **(4 marks)**
2. After foaling, it is very important that the newly born foal takes in colostrum as soon as possible because not doing so predisposes the neonate to various disease conditions.
 - a. Discuss why it is important that the foal should take in colostrum almost immediately it is born. **(4 marks)**

- b. Give the name of the condition that results from a foal's inability to take in colostrum and how can you confirm its presence in a foal. **(4 marks)**
 - c. List four (4) conditions that the condition in (b) above can predispose the foal to. **(2 marks)**
 - d. For each of the following, outline how you would manage them: **(4 marks each)**
 - i. If the foal is between 18 and 24 hours old.
 - ii. If the foal is more than 24 hours old.
 - e. Briefly outline how you ensure such the condition, in (a) above, does not occur at a breeding stud. **(2 marks)**
3. A three-year-old male mongrel is presented to your practice with anorexia of a week's duration. You realise that this patient had been treated for a longstanding suppurative pyoderma about a month prior to presentation. On examination, the dog has a temperature of 40°C and manifests pain on palpation of the thoracolumbar spine. There is also evidence of weight-loss and depression. You take the radiograph of the spine, shown below, to further evaluate the spinal pain.



- a. What is your tentative diagnosis? **(2 marks)**
- b. List two (2) differential diagnoses. **(2 marks)**
- c. Outline the expected results of any further tests you would carry out in order to reach a definitive diagnosis. **(6 marks)**
- d. Outline the radiographical findings **(4 marks)**
- e. Outline your management of this case. **(6 marks)**

SECTION B

4. A three-year-old buck is presented with frequent non-productive urination, stretching, kicking and looking at its side, rapid tail switching, and blood in its urine. The buck seems inappetent, appears to be constipated and has a bloated abdomen, and has Crystals on its hairs around the prepuce (sheath).
- What is your tentative diagnosis? **(2 marks)**
 - Give **three (3)** differential diagnoses. **(6 marks)**
 - Outline how you would confirm the diagnosis you have stated in a) above? **(2 marks)**
 - Describe the factors that would contribute to the development of this condition. **(4 marks)**
 - Describe how you would manage and prevent further occurrence of this condition? **(6 marks)**
5. A five-year-old male mongrel is presented to your practice with an eye problem. The owner tells you that the problem has been longstanding and going on for more than three weeks. Examination of the eyes reveals conjunctival hyperaemia, dry, dull or lacklustre cornea, thick tenacious mucopurulent ocular discharge and there is evidence of corneal vascularisation. Shirmers's tear test shows inadequate tear production.
- What is your tentative diagnosis? **(2 marks)**
 - List **two (2)** differential diagnosis **(4 marks)**
 - Outline what further ancillary tests you would carry out in order to reach a definitive diagnosis **(6 marks)**
 - Outline your management of this case in a (a) above. **(8 marks)**

6. You have been called to a two hundred sow unit pig farm with a problem of high mortality. Upon clinical examination you find the following signs, high fever ($>41^{\circ}\text{C}$), moderate anorexia, erythema, cyanosis and in breeding sows abortions, stillbirths, deformities and mummies are common. Some pigs show raised red and edematous rhomboid wheals, squealing in pain on moving and also have swollen joints and lameness. After conducting postmortem you find inflamed and haemorrhagic mucosa of the stomach (paint-brush effect) and intestine. Some carcasses show cloudy swelling of the kidney and often ecchymotic haemorrhages. Others have button ulcers in caecum.
- List three (3) diseases (two viral and one bacterial) present on this farm. (3 marks)
 - Briefly discuss the pathogenesis of each of the three conditions (6 marks)
 - Outline how you would differentiate the three suspected diseases on this pig farm? (7 marks)
 - Discuss the clinical signs of the bacterial disease listed in (a) above, taking into account all its clinical forms. (4 marks)
7. You are presented with a 12-year-old gelding with a problem of malaise, coughing, purulent nasal discharge and unthriftiness. Your physical examination reveals fever, miliary yellow nodules and ulceration of the nasal mucosa. You also observe chronic enlargement and induration of lymphatics and lymph nodes with the skin nodules on the legs rupturing and discharging sticky pus. Other findings include painful oedema of the legs and swelling of joints.
- What is your tentative diagnosis and how would you confirm your diagnosis? (2 marks)
 - List four (4) differential diagnoses. (2 marks)
 - With reference to the pathogenesis of the condition explain the following:
 - The painful oedema and swelling of the joints. (2 marks)
 - The anaemia as evidenced from the laboratory evaluation. (4 marks)
 - Discuss how you would manage the condition in (a) above. (8 marks)
 - Briefly outline how you would prevent the condition in (a) above. (2 marks)

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

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

2013/14 ACADEMIC YEAR FINAL EXAMINATIONS

VMC 6210: VETERINARY OPERATIVE SURGERY

TIME: THREE HOURS

INSTRUCTIONS:

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

SECTION A

1. You are presented with a seven-year-old gelding with a problem of lameness. Your gait evaluation reveals reduced arc of foot flight and stride length indicating bilateral forelimb lameness. Further evaluation localizes the lameness to be due to pain below the “knee” joint.
 - a. Briefly, outline how you would localize the lameness in the foot. **(2 marks)**
 - b. List four (4) conditions that would result in foot lameness. **(2 marks)**
 - c. If the horse exhibited heel pain and displayed a ‘tip toe’ gait, what is be your tentative diagnosis and outline a technique(s) you would use to confirm the diagnosis? **(4 mark)**
 - d. Discuss in detail how you would manage the condition in (c) above. **(10 marks)**
 - e. Outline the prognosis and post-operative care of the horse. **(2 marks)**
2. Ophthalmic surgery in small animals is a highly specialized discipline in veterinary practice which requires good knowledge of ocular anatomy and exceptional surgical skills.
 - a. Describe the difference between a temporary and permanent tarsorrhaphy and give **two (2)** indications for each. **(6 marks)**
 - b. Using a table format, compare entropion and ectropion (include their definitions, clinical signs and list two (2) corrective procedures for each condition. **(10 marks)**
 - c. Outline how transpalpebral enucleation differs from the subconjunctival enucleation procedure. **(4 marks)**

3. Forelimb orthopaedic conditions occur in dogs at a moderate prevalence. **Answer either (a) or (b) and NOT BOTH.**

a. Elbow dysplasia may be a problem in growing dogs.

- i. List the conditions that may contribute to the elbow dysplasia complex. **(5 marks)**
- ii. Discuss comprehensively, the management of **two (2)** conditions listed in (a) above that make up elbow dysplasia. **(15 marks)**

OR

b. You are presented with a three-year-old mixed breed dog with a leg carrying lameness of the right forelimb that occurred after the owner ran over it with his car. Clinical examination reveals *crepitus* with a false joint in the mid-humeral region. Radiographic examination reveals the fracture as shown in the figure below. Neurological examination reveals deep pain sensation as well as a positive response to a “pin prick” on both lateral and medial aspects of the entire limb.

- i. With the aid of sketches/line drawings outline how you would surgically manage this fracture. **(15 marks)**
- ii. Briefly, discuss any forelimb immobilization techniques you may utilize as an adjunct to the repair that you undertook in (i) above. **(5 marks)**



SECTION B

4. You are presented with a gelding with a problem of chronic nasal discharge, dyspnea and swelling located deep to the right parotid salivary gland. Based on the presenting problems, your tentative diagnosis is guttural pouch empyema.
- Briefly outline how you would confirm the suspected diagnosis. **(2 marks)**
 - List the other conditions that affect the guttural pouches and how you would rule them out. **(2 marks)**
 - List the surgical approaches to the equine guttural pouches. **(2 marks)**
 - Assuming that the diagnosis is confirmed to be guttural pouch empyema, discuss how you would surgically manage the condition (include patient preparation and anaesthesia). **(12 marks)**
 - Outline the post operative care. **(2 marks)**
5. 'Mindy' is a 10-month-old dog that has come to your clinic for a rabies booster vaccination. On physical examination of the oral cavity, you observe an abnormality as shown in the picture below.



- What is this condition called? **(2 marks)**
- Give **one (1)** differential diagnosis. **(2 marks)**
- Outline how you would differentiate the two conditions. **(2 marks)**
- Outline the reasons for concern about the condition in (a) above? **(2 marks)**
- Describe the measures you would employ in taking care of this condition. **(6 marks)**
- List two (2) possible complications of extracting canine teeth. **(4 marks)**
- List and describe two (2) malocclusions. **(2 marks)**

6. You are presented with a six-year-old, intact female cross-breed dog which the owner says has been anorexic, drinking more water than usual and has been urinating frequently. On clinical examination, the dog is pyrexia.
- What is your tentative diagnosis? (2 marks)
 - List any other **four (4)** clinical signs you would see. (4 marks)
 - Outline how you would confirm your diagnosis? (2 marks)
 - Discuss how you would surgically manage the case in (a) above? (include preoperative considerations, post-operative care and complications) (12 marks)
7. Joints are complex structures that have articulation surfaces that produce synovial fluid and the elbow and stifle are two such joints. **Answer either (a) or (b) and NOT BOTH.**
- Stifle joint pathologies make up a significant portion hind limb lameness cases in canine orthopaedics.
 - Describe the cause(s) and presentation of patella luxation (5 marks)
 - How are patella luxations commonly classified? Elucidate the relevance of this classification in diagnosis and management of this condition. (5 marks)
 - List all the available treatment options for managing patella Luxation. Thereafter, describe in detail any of the options. (10 marks)

OR

- Condylar fractures may occur in veterinary patients and “Y” fractures of the humeral condyle are of a particular challenge to the veterinary surgeon.
 - Discuss comprehensively, the approach and surgical management of a “Y” humeral condylar fracture in an adult canine patient. (15 marks)
 - List available options for surgically managing phalangeal fractures. (5 marks)

THE END OF THE EXAMINATION

Veritas

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

2013/14 ACADEMIC YEAR FINAL EXAMINATIONS

VMC 6319: VETERINARY REPRODUCTION & GYNAECOLOGY

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

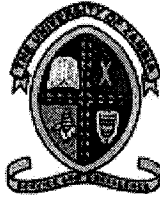
SECTION A

1. A small scale dairy farmer in Lusaka West who keeps about 100 cows has requested you to investigate the reproductive status of his herd. You carry out a herd record analysis and notice that the average calving interval was 395 days, calving to first service interval was on average found to be 95 days, the average number of inseminations per conception was 2.0 and the conception rate to first insemination was 44%.
 - a) Compare these findings to the normal reproductive parameters. **(6 marks)**
 - b) Discuss in detail the various causes that might have led to the above findings. **(12 marks)**
 - c) What advice would you give to the farmer in light of these findings? **(2 marks)**
2. A five-year-old mongrel is presented to your practice with a mucopurulent vaginal discharge of three days duration. On examination, the bitch is depressed, has a temperature of 39.9°C and pale mucous membranes. The owner tells you that the bitch was in oestrus about seven weeks prior to presentation. She is also polydipsic and polyuric.
 - a) What is your tentative diagnosis? **(2 marks)**
 - b) List two **(2)** differential diagnoses. **(4 marks)**
 - c) Outline the pathophysiology of the condition in (a) above. **(6 marks)**
 - d) Outline your management options of this case in (a) above. **(8 marks)**
3. Infertility in the mare is the most common reproductive complaint of horse owners. The cause of infertility could either be functional or due to infectious diseases.
 - a) Briefly outline how poor perineal conformation of the mare can lead to infertility. **(4 marks)**
 - b) Describe how the granulosa cell tumour results in infertility in the mare. **(4 marks)**
 - c) List four **(4)** infectious causes of infertility in the mare. **(2 marks)**
 - d) For any **two** **(2)** of the listed causes of infertility in (c) above, discuss the aetiology, management and the prognosis for future reproduction. **(10 marks)**

SECTION B

4. One of the common causes of infertility on beef and dairy farms in Zambia is anoestrus. It can lead to prolonged days open and inter-calving interval leading to increased veterinary costs.
- List the various causes of anoestrus on beef and dairy farms. **(6 marks)**
 - For **three (3)** of the listed causes in (a) above describe the pathogenesis leading to anoestrus. **(6 marks)**
 - Describe how you would treat and/or prevent anoestrus due to the **three (3)** causes listed in (b) above. **(6 marks)**
 - Outline the advice you would give a farmer having anoestrus problems on his beef farm during the long dry season in Zambia. **(2 marks)**
5. Write short notes on any **four (4)** of the following: **(5 marks each)**
- Follicular cysts in cows
 - Repeat breeder cow
 - Fat Cow Syndrome
 - Semen collection methods in the bull
 - Pseudopregnancy in the doe
6. There are a number of diseases in sows that result in stillbirths. Porcine Reproductive and Respiratory Syndrome (PRRS) also known as Mystery Swine Disease (name first given to the disease), Mystery Reproductive Syndrome, Swine Infertility and Respiratory Syndrome (SIRS) is just but one of such diseases.
- List **six (6)** other diseases capable of causing stillbirth in sows. **(6 marks)**
 - Outline the clinical signs of Porcine Reproductive and Respiratory Syndrome. **(6 marks)**
 - Discuss preventive measures a farmer needs to undertake to prevent stillbirths in a piggery. **(8 marks)**
7. A total of 100 Jersey heifers from Katamba farm in Chisamba were inseminated by Mr Gentle Giant, a renowned artificial insemination technician. However, all the heifers aborted in the first three months of gestation.
- Which **two (2)** important diseases would you suspect? **(4 marks)**
 - Discuss how you would clinically differentiate these **two (2)** diseases. **(8 marks)**
 - In light of your suspicions in (a) above, do you think these heifers should be re-bred? **(4 marks)**
 - Outline the measures you would take in order to prevent future early abortions based on your suspicions in (a) above. **(4 marks)**

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



University Supplementary/ Differed Examinations September 2014

VMD 2301- Biostatistics

INSTRUCTIONS:

1. Read all instructions carefully before attempting to answer any question.
 2. This examination has five (5) questions. You are expected to answer all the **five (5)** questions.
 3. State any assumptions used and show all calculations
 4. Answer each question in a separate answer booklet.
 5. All Questions carry equal marks.
 6. TIME: 3 hours
-

Question one:

A farmer had Friesian cows on his farm and kept a record of their milk. Below is record of milk yield in litres recorded on one particular day:

[10.2 12.0, 10.5, 5.2, 9.5, 6.3, 13.1, 13.5, 12.5, 10.7, 7.2, 14.9, 6.5, 8.1, 7.9, 12.0, 10.5, 9.5 6.3, 13.5, 12.5, 7.2, 12.0, 13.1, 10.7]

- (a) Calculate the sample mean, median and mode.
- (b) Calculate the sample variance.
- (c) Based on your estimates in (a) above, can this population be said to be normally distributed? Justify your answer.

Assume that this set of milk yields was drawn from a normally distributed population with mean ($\mu=9$) of and the standard deviation (σ) = 2.0. Answer the following questions:

- (d) If we want to classify, 20% of this population as having low milk yield, what cut off value should we use to select this group?
- (e) With respect to this population, if a cow produces 16 litres of milk per day would it be considered to be a Friesian cow, assuming $\alpha=0.05$?

Question Two:

A researcher conducted a research in which he wished to find out if there was a difference in ability to cause weight gain between two feed rations. He decided to conduct a cohort study involving two groups of animals. Group one had 128 animals fed on feed ration A (RA) and

out of these 32 gained weight while Group two had 142 animals fed on ration B and out of these 72 did not gain wait.

- (a) Tabulate the data in a 2x2 contingency table **(2 Marks)**
- (b) In this study, what is the probability that an animal will not gain weight? **(2 Marks)**
- (c) What is the probability that animals fed on ration B will gain weight? **(2 Marks)**
- (d) Is there any difference in the ability to cause weight gain between the two feed ration? **(4 Marks)**

Question 3

- (i) What does the F-test measure? **(2 Marks)**
 - (ii) Why cant the value of F not be smaller than 1? **(2 Marks)**
 - (iii) How is the critical value of F determined? **(2 Marks)**
- b) Three machines A, B and C are designed to produce identical surgical gloves. An interested buyer wants to know whether the hourly outputs of the machines are different. Random samples of a specific number of hours for each machine are selected and output are recorded as follows:

| | | | | | | |
|------------|---|---|---|---|---|---|
| Machine A: | 2 | 4 | 5 | 3 | | |
| Machine B: | 4 | 5 | 7 | 3 | 4 | |
| Machine C: | 6 | 5 | 7 | 4 | 6 | 8 |

Test the hypothesis that the hourly output of the three machines are not different, choosing a significant level of $\alpha = 0.05$. **(14 Marks)**

Question 4

A farm manager wants to know the criteria he can use to fix the income of persons applying for a job at his farm. He collects data for employs at his farm referring to years of experience (x) and monthly income expressed in hundred of Kwacha (y).

X: Years of experience

Y: monthly income

| | |
|----|----|
| 11 | 10 |
| 7 | 8 |
| 5 | 6 |
| 6 | 9 |
| 8 | 5 |
| 10 | 11 |

- a) Find the regression equation of income y on years of experience x . (12 Marks)
- b) Using this equation, what initial salary should be given to a person applying for a job having served in a similar capacity on another farm for (i) 13 years and (ii) 20 years? (8 Marks)

Question 5

12. An experiment was undertaken to see the effect of two drugs on water intake of 10 diabetic dogs. A set of measurements were taken and the data relating to the successive use of the drugs is shown below.

| Dog | Drug A | Drug B |
|-----|--------|--------|
| 1 | 4 | 6 |
| 2 | 7 | 8 |
| 3 | 5 | 4 |
| 4 | 4 | 8 |
| 5 | 7 | 8 |
| 6 | 7 | 10 |
| 7 | 6 | 8 |
| 8 | 7 | 7 |
| 9 | 5 | 9 |
| 10 | 7 | 9 |

- a) Calculate the 95% confidence interval for the effect of each drug. (10 Marks)
- b) Is there a difference between the effects of the two drugs (use $\alpha = 0.05$) (10 Marks)

End of Exam



**THE UNIVERSITY OF ZAMBIA
SCHOOL OF VETERINARY MEDICINE
DEPARTMENT OF DISEASE CONTROL**

***VETERINARY CLINICAL PATHOLOGY - VMD 5100
FINAL EXAMINATION, 2014***

| | | |
|---------------------|----------|-----------------------------|
| Instructions | : | Answer all questions |
| Time | : | 3 Hours |
| Total | : | 100 marks |

QUESTION 1

Give the most appropriate specimen collection, preservative to be used and one important clinical/pathological symptom/lesion seen in each of the following suspected diseases of livestock for laboratory confirmation.

- a) i) Foot and mouth disease ii) African horse sickness iii) Rabies iv) Newcastle disease v) African swine fever
- b) i) Haemorrhagic septicemia ii) Anthrax iii) Contagious bovine pleuropneumonia iv) Brucellosis v) Paratuberculosis
- c) i) Heart water ii) East Coast fever iii) Globidiosis iv) Babesiosis v) Trypanosomiasis
- d) i) Bovine Schistosomiasis ii) Brooder pneumonia iii) Mange iv) Subclinical mastitis v) Bovine ketosis

(20 marks)

QUESTION 2

- a) Describe the objectives of the canine vaginal cytology. Give the detailed cytological account of the different stages of the oestrous cycle in dogs. (10 marks)
- b) A 9 year old German shepherd dog was presented to a veterinarian for the evaluation of the weight loss, polyuria, depression and occasional vomiting. Following are the laboratory findings given in the table.

| Hematology | | Values | Urine examination | | Values |
|------------|----------------|----------------------|-------------------|----------------------|----------|
| 1. | PCV | 42% | 12 | Colour | Yellow |
| 2. | HB | 14gms/dl | 13 | SPG | 1.031 |
| 3. | Plasma protein | 6g/dl | 14 | pH | 6.3 |
| 4 | TWBC | 12,000/ μ l | 15 | Glucose | +++++ |
| 5 | SN | 9,600/ μ l (80%) | 16 | Ketones | +++ |
| 6 | BN | 0 (0%) | 17 | Sediment microscopic | -ve |
| 7 | Lym | 1,800/ μ l (15%) | Blood chemistry | | Values |
| 8 | Mono | 240/ μ l (2%) | 18 | Glucose | 400mg/dl |
| 9 | Eosino | 120/ μ l (1%) | 19 | Cholesterol | 280mg/dl |
| 10 | Platelets | 200,000/ μ l | | | |
| 11 | Reticulocytes | 10,000/ μ l | | | |

Interpret **all the 19** parameters given above with that of normal you know in dogs and discuss the deviated findings giving your laboratory diagnosis in this patient including two possible causes of your diagnosed condition. (10 marks)

QUESTION 3

Write brief notes on the following;

- Mean Corpuscular Haemoglobin Concentration (MCHC) (4 marks)
- Plasma turbidity test (4 marks)
- Thrombocytes (4 marks)
- Creatinine (4 marks)
- Myeloid stem cells (4 marks)

QUESTION 4

Outline the indications for the three elements; i) Alkaline phosphatase, ii) gamma Glutamyl transpeptidase (GGT) and iii) Lactate dehydrogenase (LD). Give a detailed discussion of the importance of these three elements. Discuss thus demonstrate how you would exploit these three elements in your decision making process. **(20 marks)**

QUESTION 5

- a) Draw a sketch illustrating the endocrine function of the pancreas. Referring to the sketch in (a), give a detailed account of the importance of the pancreatic endocrine function **(10 marks)**
- b) Discuss examination of red blood cell (RBC) morphology/characteristics and the describe the findings and their significance **(10 marks)**

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



**THE UNIVERSITY OF ZAMBIA
SCHOOL OF VETERINARY MEDICINE
DEPARTMENT OF DISEASE CONTROL**

VETERINARY EPIDEMIOLOGY AND ECONOMICS (VMD 5319)

END OF YEAR EXAMINATION, 2014

TIME: 3 HOURS

ANSWER ALL QUESTIONS

SECTION ONE: VETERINARY EPIDEMIOLOGY

Question 1

Compare and contrast any the flowing:

- a) Experimental and observational study [4 Mark]
- b) Cohort study and case-control study [4 Marks]
- c) Ecological study and field trial [4 Marks]
- d) Sample population and reference population [2 Marks]
- e) Unblinded and double blinded clinical trial [2 Marks]
- f) Proportion and ratio [2 Marks]
- g) Randomisation and sampling [2 Marks]

Question 2

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

- a) Define the term "Association". [2 marks]
- b) What measure of association would you use to determine whether the groundnut cake is responsible for the outbreak? [2 marks]
- c) Draw a 2X2 contingency table to summarise the results of disease on the two farms. [4 marks]

- d) What method would you have used to come up with the hypothesis that groundnut cake is the cause of the outbreak? [2 marks]
- e) From your table in (c) above, calculate the following proportions [7 marks]:
 - i) exposed
 - ii) diseases
 - iii) diseased and exposed
 - iv) diseased in the exposed group
 - v) diseased in the non-exposed group
 - vi) exposed in the diseased group
 - vii) Exposed in the non-diseased group.
- f) Calculate the risk ratio, odds ratio and attributable rate. [3 marks]

Question 3

The Zambian Government has just received grant aid from the British Government amounting to one Million Pounds to eradicate bovine TB in Zambia using a test and slaughter method. From previous surveys, the prevalence of bovine TB in cattle is estimated at 67%. You are the epidemiologist in charge of the project. There are two diagnostic tests that are to be used in diagnosing infected animals. Test A has a sensitivity and specificity 89% and 100% respectively and Test B has a sensitivity and specificity of 98 and 90%. All animals that are slaughtered

- a) Which of the diagnostic tests would you start with the eradication exercise? Give reasons for your answer [5 Marks].
- b) You test 1, 500,000 animals in Southern, Central, Lusaka, and Copperbelt Provinces using the diagnostic test you chose in (a) above. Determine the number of truly negative animals that would have been wrongly slaughtered? [12 Marks].
- c) After this first round of the exercise, you find out that the estimated prevalence has now been reduced to 5%. You want to employ another test so that you can decide to carry out a second round of the test and slaughter method. Which of the above two diagnostic tests would you employ this time? [3 Marks]

Question 4

- a) What is EMPRES and what role does EMPRES play? Define Trans-boundary animal diseases and classify them according to EMPRESS.
- b) What is epidemiological surveillance and/ or monitoring? Differentiate between epidemiological surveillance and epidemiological monitoring and state how they are related to Epidemiological diagnosis.
- c) Classify epidemiological surveillance and give a brief discussion of each class of surveillance.
- d) Define an outbreak and state the relationship between an outbreak and epidemic. Provide a detailed definition of an outbreak investigation.

SECTION TWO: VETERINARY ECONOMICS

Question 1

- a) Before setting up livestock disease insurance markets, the insurance companies and veterinarians must consider Insurability Conditions. Briefly DESCRIBE the Insurability Conditions for Livestock Disease Insurance [5 marks]
- b) You have decided to go into private veterinary practice as a fresh graduate from the school of veterinary medicine. OUTLINE the range / types of livestock services that can be provide by a veterinary surgeon as an entrepreneur [5 marks]
- c) A smallholder farmer has 24 sheep. During the year his/her flock produce 15 male lambs and 17 female lambs. For many years the farmer has vaccinated his flock against *clostridium*. However, because the flock had not suffered an outbreak of *clostridium* for many years the farmer decided that this year not to vaccinate against this disease. Unfortunately, the flock suffered an *clostridia* outbreak in the year of no vaccination: 4 male lambs and 4 female lambs died; the farmer also spent US\$0,75 per lamb in medicine, and each lamb required an extra hour of time (labour costs are US\$0,25 per hour); the male lambs are worth US\$30, and the female lambs US\$25; * Cost of vaccine was \$0.5 per lamb. Carryout a partial budget analysis and advise the farmer [10 marks]

Question 2

Briefly discuss

- a) Some of the useful macroeconomic indicators [5 marks]
- b) 2 Common methods of calculating depreciation of livestock [5 marks]
- c) As the only animal health Economist in the country, you have been consulted to advise the government on adoption of coartem as an intervention for treatment of malaria. Clinical trials have shown that Fansida has 60% failure in treatment of malaria while coartem has 1% percent failure. The cost of Fansida is 20 cents and coartem 2.4 dollars. There are 1000 patients that die of malaria per year. Zambia's per capita GDP is 1, 600 dollars
 - i. What economic analysis tool would you use to help policy makers reach a decision [1 mark]
 - ii. When is this economic analysis tool you have chosen in (1) appropriate? [1 mark]
 - iii. What is the major characteristic of this economic analysis tool [1 mark]
 - iv. Should the Government adopt the use of coartem as an intervention? Explain your answer with adequate calculations indicating all the formulas used [7 marks]

Question 3

- a) Markets work under certain conditions and fail under some circumstances. Briefly describe and explain the following situations in which market fails [10 Marks].
- i. Public goods
 - ii. Positive externalities
 - iii. Negative externalities
 - iv. Monopoly
- b) Discuss the opportunity cost, how it is measured and the role it plays in decision making in the livestock sector [10 marks].

END OF EXAM

THE UNIVERSITY OF ZAMBIA
2013/ 2014 END OF ACADEMIC YEAR EXAMINATIONS
JULY/ AUGUST 2014
PREVENTIVE VETERINARY MEDICINE (VMD 6609)

TIME: 3 HOURS

TOTAL MARKS: 100%

INSTRUCTIONS: ANSWER ALL QUESTIONS

Question 1

- a) Briefly discuss the concept and principle of nucleic acid-based vaccination.
Outline the merits and demerits of this mode of delivery of vaccines in the control of livestock diseases.
- b) Transmission of biological agents is cardinal in the spread of infectious diseases.
Using avian influenza virus as a model, discuss the intricate nature of this element in the perpetuation diseases.

12 marks

Question 2

Give a detailed account of how modern livestock production systems as well as the modern disease control strategies have given rise to emerging and re-emerging livestock diseases.

10 marks

Question 3

- a) Define Preventive Veterinary Medicine (PVM). Compare and contrast between PVM and Epidemiology.
- b) How is livestock movement control enforced generally and in Zambia particularly?
- c) Briefly discuss factors influencing the animals' response to vaccination.
How would you mitigate the effects of such factors?
- d) Define and classify Environmental Hygiene. Describe how you would carry out disinfection and environmental control measures in the case of a suspected Anthrax outbreak where cattle are found dead in the kraal?
- e) Briefly define and describe the Test and Slaughter Method and give an example of its current application in Zambia. Define depopulation and provide an example of its application either in Zambia or elsewhere.

14 marks

Question 4

- a) One of the fundamental requirements of a successful herd health programme is a **simple, reliable system of recording** animal health events and production performance. What are the fundamental requirements of such a system?
- b) List the components of a herd health programme and provide a brief summary of what they entail to the success of the programme.
- c) Discuss the components of a well planned swine herd health programme.
- d) What is the main objective of a herd health programme in the dairy and how can it be achieved? What are the methods for achieving optimum reproductive efficiency in the dairy and what reasons can you provide for such methods? **15 marks**

Question 5

- a) Name the parameters that determine the profitability of a beef cattle herd health programme. To which influences are they subject?
- b) What are the objectives of herd health programme in a feedlot set-up?
- c) Discuss the different treatment methods in fish management.
- d) Briefly discuss how you would investigate a disease outbreak in the fish pond

13 marks

Question 6

Disease outbreaks cost poultry producers and related industries millions of dollars a year in lost revenue. To minimize the losses, methods and practices must be followed.

- a) Discuss disease control measures in poultry establishments under a collective term of bio-security.
- b) Explain the influence of modern methods of management in poultry disease occurrence.
- c) As a veterinarian explain the significance of nutrition and maternal antibodies in the production of quality chicks indicating factors that may influence maternal antibody production in breeder hens.

12 marks

Question 7

Most of the emerging and re-emerging infectious diseases originate from wildlife.

Discuss the factors and mechanisms that may lead to transmission of diseases between named wildlife and domestic animals at the interfaces in the case of the diseases listed below:

10 marks

- i. Newcastle disease and avian influenza
- ii. Foot and mouth disease
- iii. Rabies
- iv. African swine fever

Question 8

- a) Owing to the discovery of oil in Kafue National Park, a new town is quickly being developed. Unfortunately for the developers, they have witnessed unprecedented attacks by Jackals. A wildlife veterinarian called to assess the situation discovers he is dealing with rabies in a wildlife population. Conservationists have advised the Government not to kill the Jackals as a way of disease eradication, but to vaccinate them.
- i. Define rabies. What is the causative agent?
 - ii. What are the key presenting clinical signs of a rabid jackal?
 - iii. Briefly, is this vaccination campaign likely to succeed in eradicating this disease? Give reasons for your answer.
- b) Outline at least four (4) components of consumptive wildlife utilization in Zambia, giving practical examples of each form of utilization.
- c) Before conducting a game capture exercise, there are cardinal points to consider for it to be successful. Comment on these points giving at least a line on each explaining why they are important.

14 marks

END OF EXAMINATION

The University of Zambia

School of Veterinary Medicine

Veterinary Public Health VMD 6800

End of Year Examinations

July/August, 2014

INSTRUCTIONS

Answer all questions in Section A and choose only two (2) questions from Section B.

Each question must be answered on a separate booklet.

Total Marks: 100

Time: 3 hours

SECTION A

QUESTION 1

- a) Define Yellow fever and discuss how it can be transmitted.
- b) Name the most important vectors and their most likely breeding sites.
- c) Explain how you could treat Yellow fever.

10 marks

QUESTION 2

Pesticide use has increased 50-fold since 1950 (2.3 million tones of industrial pesticides are used annually) and contributed to the success of the “Green Revolution” (1940s-1970s). List 10 disadvantages of using pesticides.

10 marks

QUESTION 3

What is waste water?

Briefly discuss the following

- (i) Chemical oxygen demand (COD) and
- (ii) Biochemical oxygen demand (BOD).

10 marks

QUESTION 4

As an Environmentalist, write a scientific report to the Zambian Parliament to persuade the house to pass a law that would ban the uncontrolled disposal of animal waste countrywide. In your report, give alternative measures of managing such wastes.

10 marks

QUESTION 5

Assume that you want to find out the clinical effect of a certain pathogen in mice using an experimental study. To assure validity or quality of your results, what measures would you take into account and why?

10 marks

QUESTION 6

a).

- i. elaborate succinctly on carcinogenic and mutagenic pollutants
- ii. elaborate succinctly on sociological and psychological hazards
- iii. elaborate succinctly on properties of natural water
- iv. elaborate succinctly on water pollution

(1 mark each)

b).

In as brief as possible terms, describe the following the best way you understand them:

- i. How environmental hazards are characterised
- ii. What you understand by environmental quality assurance?
- iii. The environmental effects of water pollution
- iv. The health hazards of polluted water
- v. Comfort in relation to environmental health
- vi. The human environment and its elements

(1 mark each)

SECTION B

QUESTION 7

- a.) Compare and contrast the terms zoonotic diseases with emerging and re-emerging infectious diseases. Your answer should be in reference to those of viral origin.
- b.) What are the determinants for the emergence and re-emergence of infectious diseases?
- c.) Briefly describe the role of wildlife in the emergence and re-emergence of ebola virus disease and rabies.
- c.) Emerging infectious diseases will continue to challenge public health systems unless measures are put in place to combat them. Briefly discuss what national strategies and effective plan of action should be developed to combat them.

20 marks

QUESTION 8

Zoonotic helminths, though mostly still neglected, are becoming increasingly important public health concerns especially in resource poor regions of the world.

- a) For each of the following helminths, briefly outline the public health significance. (2 marks each)
 - i. *Taenia solium*
 - ii. *Echinococcus granulosus*
 - iii. *Trichinella spiralis*
 - iv. *Hymenolepis nana*
- b) As a District Veterinary officer in a district in the Western province Zambia you have been requested to design a control programme against Echinococcosis. With reference to the life cycle of this zoonotic tapeworm, design a control programme for the parasite in your district. (12 marks)

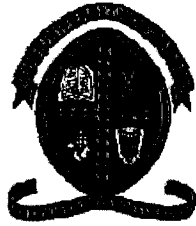
20 marks

QUESTION 9

Assuming you are the District Veterinary Officer (DVO) for Southern and you have been requested by the Provincial Veterinary Officer to collect information on cases of zoonotic diseases.

- (a) Why is such information important? **(4 marks)**
- (b) Is control of zoonoses important? If so give reasons. **(4 marks)**
- (c) Name two zoonotic diseases that are likely to be a problem in children and give reasons for your answer? **(4 marks)**
- (d) Name two important zoonotic diseases you would expect to be prevalent in Southern province and justify your answer **(4 marks)**
- (e) Name two important zoonotic diseases you would expect to be prevalent in Western province and justify your answer **(4 marks)**

END OF EXAM



The University of Zambia
School of Veterinary Medicine

Master of Science in One Health Analytical Epidemiology (MSc. OHAE)

ADVANCED STATISTICAL METHODS IN EPIDEMIOLOGY (VMM 7512)

End of Year Exam

14th July 2014

Instructions

Answer all questions

All questions carry equal marks

Show all calculations

State all assumptions used

Duration: Three (3) hours

Good luck

Question 1

Corneal grafting is a major treatment used in the prevention of blindness, especially in Africa. A survey was carried out on a sample of 334 patients who had undergone corneal grafting surgery to identify factors associated with wound rapture. Of the 334 patients, 19 suffered subsequent wound rapture. The age and sex of each of the 334 patients was recorded.

A logistic regression analysis was carried out to determine the extent to which the probability of the wound rapture depends on the age and sex of the patient. The following output was obtained from SPSS (Note that sex is coded as 0 for female and 1 for male).

Variables in the equation

| | B | S.E. | Wald | df | Sig | Exp(B) | 95.0% C.I. for Exp(B) | |
|--------|----------|--------|-------|-------|-----|--------|-----------------------|-------|
| | | | | | | | Lower | Upper |
| Step 1 | Age | -0.065 | 0.027 | 5.813 | 1 | 0.016 | 0.937 | 0.889 |
| | Sex(1) | 0.575 | 0.517 | 1.240 | 1 | 0.265 | 1.778 | 0.988 |
| | Constant | -1.796 | 0.594 | 9.143 | 1 | 0.002 | 0.166 | 4.894 |

a) Are both age and sex useful predictors of wound rapture? Justify your answer by interpreting the odds ratio and CIs in the table (5 marks).

A further logistic regression was carried out to determine the extent to which the probability of wound rapture depends on the age of the patient. The following output was obtained

Variables in the equation

| | B | S.E. | Wald | df | Sig | Exp(B) | 95.0% C.I. for Exp(B) | |
|--------|----------|--------|-------|-------|-----|--------|-----------------------|-------|
| | | | | | | | Lower | Upper |
| Step 1 | Age | -0.061 | 0.025 | 5.779 | 1 | 0.016 | 0.941 | 0.895 |
| | Constant | -1.497 | 0.499 | 9.011 | 1 | 0.003 | 0.224 | 0.989 |

Hosmer and Lameshow Test

| Step | Chi-square | df | Sig |
|------|------------|----|-------|
| 1 | 6.539 | 8 | 0.587 |

b) Write down an expression to show how the estimated probability of wound rapture depends on age, based on this output. Use this expression to estimate the probability of wound rapture for a subject aged : (8 marks)

i) 20 years

ii) 50 years

c) Use the odds ratios and 95% confidence intervals in the output to summarise the effects of age on the odds of wound rapture (4 Marks).

d) What is the purpose of the Hosmer and Lameshow test? Interpret the results of this test (3 Marks).

Question 2

Packed cell volume is a good indicator of the health of an animal. A multivariate linear regression analysis was carried out to determine factors that are predictors of the PCV of a cow in Zambia. The variables under consideration were the age of the cow in months, number of ticks on the animal and multiple infections with a number of tick transmitted blood parasites. The results of the analysis are shown in the table below: (Note that all categorical variables are coded as 1 when the factor is present and 0 when it is absent)

Table 4 Multivariate linear regression model of the effect of infection with different tick-borne pathogens and other significant confounding factors on the PCV of cattle in Central and Eastern Zambia

| Variable | Coefficient | p value | 95% C.I. for coefficient | |
|--|-------------|---------|--------------------------|-------|
| | | | Lower | Upper |
| Constant | 22.38 | <0.001* | 17.01 | 27.74 |
| Age (months) | -0.03 | <0.001* | -0.04 | -0.02 |
| <i>T. parva</i> + <i>T. mutans</i> + <i>Anaplasma</i> spp | -5.52 | 0.001* | -8.83 | -2.20 |
| <i>T. parva</i> + <i>T. taurotragi</i> + <i>T. mutans</i> + <i>Anaplasma</i> spp + <i>E. ruminantium</i> | -7.32 | 0.001* | -11.56 | -3.07 |
| Abundant (>50 ticks/animal) | -14.44 | 0.011* | -25.52 | -3.37 |

C.I. = confidence interval

- a) Write down the regression equation for the above output (5 marks)
- b) What would the PCV of a cow that is 30 months old, has no ticks on it and is only infected with a combination of *T.parva*, *T. mutans* and *Anaplasma spp*?(5 marks)
- c) Interpret the results of the output above (7 marks)
- d) Describe the methods you would use to check that this model did not violet the underlying assumptions for a linear regression model (3 marks)

Question 3

- a) i) State any three important functions that are fundamental in survival analysis
 ii) Describe what is meant by right censoring in survival analysis
- b) Suppose that an epidemic occurs affecting pigs and 12 of them are brought to a clinic for observation and possible treatment which commences on the day they were brought in. Suppose further that a record of times to death (in days) and censorship are as follows:

Death and censored (*) times:

1, 3, 3*, 4, 8, 10, 13, 13, 16*, 24, 23*, 26.

- i) Obtain the Kaplan-Meier product limit estimates of $s(t)$, the survival function.
- ii) Plot the curve of $s(t)$.

Question 4

- a) When present, heterogeneity must be accounted for in meta-analysis. Describe the two methods that can be used to investigate heterogeneity, mentioning their advantages and disadvantages (10 Marks).
- b) Publication bias is one of the key concerns in meta-analysis. Describe the various methods that can be used to deal with publication bias (10 marks).

Question 5

- a) Differentiate between meta-analysis and qualitative literature review. Why does meta-analysis has more statistical power than any single study that is part of it (3 marks)?
- b) Mention three reasons why linear regression cannot be used to model a variable with a dichotomous outcome (3 Marks)
- c) The odds ratio is important in the interpretation of the results of a logistic regression analysis. Explain the mathematical relationship between the odds ratio and the logit (5 marks).
- d) In survival analysis, censoring is said to be present when we have some information about a subject's event time, but we don't know the exact event time. Outline the three reasons why censoring may occur. Describe the three types of right censoring (9 marks)

UNIVERSITY OF ZAMBIA

SCHOOL OF VETERINARY MEDICINE

VMP 4100 VETERINARY PATHOLOGY EXAMINATIONS – July 2014

TIME: Three (3) hours

INSTRUCTIONS: (i) Answer all questions in this paper
(ii) Answer each question in a separate answer book let

Q1. Write short notes on any **four (4)** of the following:

- (a) Disseminated intravascular coagulation (DIC) (5 marks)
- (b) Absolute polycythaemia (5 marks)
- (c) Hypertrophic cardiomyopathy (5 marks)
- (d) Hypovolaemic shock (5 marks)
- (e) Centrilobular necrosis (5 marks)
- (f) Suppurative pericarditis (5 marks)

Q2. Write short notes on any **four (4)** of the following:

- (a) Metaplasia (5)
- (b) Virus induced hypoplasia (5)
- (c) Myelin disorders (5)
- (d) Nephrotic syndrome (5)
- (e) Salt poisoning in pigs (5)
- (f) Immunological causes of renal pathology (5)

Q3. Answer any **two (2)** of the following questions:

- a) Describe liver cirrhosis in detail (10 marks)
- b) Describe the mechanisms of endocrine disease (10 marks)
- c) Discuss the cause and pathology of Contagious Bovine Pyelonephritis (10 marks)

Q4. Write short notes on any **four (4)** of the following:

- a) Hemorrhagic septicemia (septicemic pasteurellosis) (5 marks)
- b) Canine Distemper (5 marks)
- c) Atelectasis (5 marks)
- d) *Spirocerca lupi* of canids (5 marks)
- e) Wooden tongue (actinobacillosis) (5 marks)
- f) Meconium aspiration syndrome (5 marks)

Q5. Write short notes on any **four (4)** of the following:

- a) Functions of inflammatory exudates (5 marks)
- b) Fat Necrosis (5 marks)
- c) Cellular events of inflammation (5 marks)
- d) Comparisons between benign and malignant tumors (5 marks)
- e) Cystic graafian follicle (5 marks)
- f) Cancer metastasis (5 marks)

Q6. Answer any **two (2)** of the following questions:

- a) Cryptorchidism (10 marks)
- b) Hyperplasia of the prostate gland (10 marks)
- c) Transmissible venereal tumor (10 marks)

UNIVERSITY OF ZAMBIA

SUPPLEMENTARY EXAMINATIONS – SEPTEMBER 2014

VETERINARY PARASITOLOGY (VMP 4400)

TIME: THREE (3) HOURS

ANSWER: ALL QUESTIONS

ANSWER EACH QUESTION IN A SEPARATE ANSWER BOOK

SECTION A: PROTOZOOLOGY

Q1. Clearly **OUTLINE** the classification in Apicomplexa protozoan parasites (20 Marks)

Q2. Write **BRIEF NOTES** on ANY FOUR (4) of the following topics (20 Marks)

- a. Nutrition in protozoan parasites (5 Marks)
- b. Transmission in Sarcomastigophora (5 Marks)
- c. Modes of reproduction protozoan parasites (5 marks)
- d. Modes of locomotion in protozoa in protozoan parasites (5 marks)
- e. Enzootic stability in protozoan disease outbreak (5 marks)
- f. Habitats of protozoan parasites of veterinary importance (5 marks)

PLEASE TURN OVER

SECTION B: HELMINTHOLOGY

Q3. What is larval echinococcosis? Describe in detail the life history of the causative agent of echinococcosis and explain its public health importance. **(20 marks)**

Q4. Write short notes on **ANY FOUR (4)** of the following topics: **(20 marks)**

- (a) The basic life cycle of an aquatic cestode **(5 marks)**
- (b) Larval stages of terrestrial cestodes **(5 marks)**
- (c) The transmission of the cattle eye worm **(5 marks)**
- (d) Factors initiating arrested larval development **(5 marks)**
- (e) The equine pinworm **(5 marks)**
- (f) Nematode cuticular ornamentations and their significance **(5 marks)**

PLEASE TURN OVER

SECTION C: ENTOMOLOGY

Q5. Some soft bodied “thread-horn” flies, with filamentous multi-segmented antennae which are longer than the total length of their head and thorax, have continued troubling man and his livestock for centuries.

- (a) Classify the flies described above at **class** and **suborder** levels. **(5 marks)**
- (b) Give a detailed explanation of the lifecycle of the “thread-horn” flies. **(5 marks)**
- (c) State the habitat of the pre-adult stages of “thread-horn” flies. **(5 marks)**
- (d) Mention one disease that is transmitted by “thread-horn” flies. **(5 marks)**
- (e) What is the most effective and economic method of controlling “thread-horn” flies?
(5 marks)

Q6. Write short notes on **ANY FOUR (4)** of the following:

- (a) The morphology and life cycle of soft ticks **(5 marks)**
- (b) The distribution of the three groups of the genus *Glossina* (Fusca group , Palpalis group and Morsitans group) **(5 marks)**
- (c) General life cycle and veterinary significance of mites **(5 marks)**
- (d) Vectors of *Babesia bigemina* **(5 marks)**
- (e) *Tunga penetrans* **(5 marks)**
- (f) The family Cimicidae **(5 marks)**

END OF EXAMINATION