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Candidate Information Handbook for the New Zealand National Veterinary Examination (NZNVE)

*The information provided in this Handbook is correct at the time of publication.
Candidates should check on the Council's website to ensure that there have
been no alterations or amendments made since the date of publication.*

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CONTENTS

	Page
1. Introduction	3
2. Examination Procedures	
2.1 Applying to sit the NZNVE	4
2.2 Eligibility assessment	4
2.3 English language requirements	4
2.4 Preliminary Examination	5
2.5 Final Examination	5
3. Closing Date For Applications	
3.1 Preliminary Examination	6
3.2 Final Examination	6
4. Fees	
4.1 Fees payable	6
4.2 Withdrawal from the NZNVE	6
4.3 Annual practising certificate (APC) requirements	6
5. Time Frame For Completing the NZNVE	6
6. Validity of Applications	7
7. Preliminary Examination	
7.1 Nature of the Preliminary Examination	7
7.2 Sample examination item	9
7.3 Pass mark for the Preliminary Examination	9
7.4 Number of attempts at the Preliminary Examination	9
7.5 General information on the Preliminary Examination	9
8. Final Examination	
8.1 Selection criteria for entry into the Final Examination	10
8.2 Assessment of candidates	10
8.3 Final Examination	10
8.4 Practical arrangements	15
8.5 Standard of the Final Examination	15
8.6 Pass standard for Final Examination	15
8.7 Provision of feedback to candidates failing the examination	15
8.8 Number of attempts at the Final Examination	15
9. Examination Results	
9.1 Preliminary Examination	16
9.2 Final Examination	16
10. Impaired Performance	16
11. Maintaining the Integrity of the NZNVE process	16
12. Admission to the Register of Veterinarians	17
13. Reading List and Study Resources	17
14. Useful Addresses	22
Appendix A: Sample Preliminary Examination Questions	23
Appendix B: New Zealand National Veterinary Examination process	31

1. INTRODUCTION

Role of the Veterinary Council of New Zealand (VCNZ)

The Veterinary Council of New Zealand is the regulatory body for the veterinary profession established under the Veterinarians Act 2005. The primary purpose of the Council is to protect the public interest by ensuring that veterinarians are fit and competent to practise at the point of registration and on an ongoing basis. The Council achieves this purpose through the exercise of its statutory functions in relation to registration, competence, health, standards setting and monitoring performance and if necessary discipline.

The New Zealand National Veterinary Examination (NZNVE)

The NZNVE is the means by which the Council assesses overseas veterinarians with non recognised qualifications to see if they meet the requirements to practise as veterinarians in New Zealand. The Council has prescribed the NZNVE under part 6(1)(b)(i) of the Veterinarians Act 2005 as a means by which veterinarians with non recognised qualifications can demonstrate their competence to practise in New Zealand.

The NZNVE consists of four parts:

- an **assessment**, carried out by VCNZ to see if applicants are eligible to sit the NZNVE. You must demonstrate fitness to practise by providing evidence of good standing status in the overseas jurisdictions you are registered in and evidence of holding a veterinary science degree or diploma of not less than four years of study
- an **English language test - IELTS (academic) or OET** - to assess your competence in English, if English is not your first language
- a **Preliminary Examination** - which consists of three papers, set in English, in multiple choice question (MCQ) format. This is held twice a year in various centres around New Zealand dependent upon how many candidates there are and where they live. You must complete the Preliminary Examination before attempting the Final Examination
- a **Final Examination**, also conducted in English, which consists of one written paper of three hours and a practical examination of nine sections in clinical veterinary medicine and surgery. This examination is conducted once a year and occurs over several days. It is held only at Massey University, Palmerston North

Note: *The NZNVE is for overseas trained veterinarians who wish to demonstrate their competence to practise in New Zealand. It is not intended for those veterinarians wishing to obtain further postgraduate qualifications in New Zealand.*

When all parts of the examination process have been successfully completed, a candidate who meets all the statutory requirements for registration will be eligible for registration as a veterinarian and upon registration will be able to practise as a veterinarian in New Zealand.

The conduct and results of the examination are subject to the appeals procedure of the VCNZ.

The range of topics covered in the New Zealand National Veterinary Examination is based on the curriculum of the Massey University veterinary programme with an emphasis on the circumstances common in New Zealand practice.

The Council ensures that the format and content of the examinations are consistent with undergraduate veterinary training and the standard of examination at Massey University. It does this through regular scrutiny of the examination content, through cooperation and review with the Australasian Veterinary Board Council (AVBC) Board of Examiners and through the appointment of independent observers at the examinations. VCNZ and AVBC review the equivalence of their registration examination processes every five years. The last review occurred at the end of 2010 with the VCNZ Chief Examiner and the Chair of the AVBC Board of Examiners reviewing and reporting on the respective New Zealand and Australian examinations. On the basis of their reports VCNZ and AVBC have agreed that the two examination processes remain equivalent.

2. EXAMINATION PROCEDURES

2.1 Applying to sit the NZNVE

To apply to sit the examination you must first apply for registration as a veterinarian in New Zealand by completing and returning an application form.

You can download the application form at <http://www.vetcouncil.org.nz/gainReg.php>

As you are not eligible for immediate registration your application must be assessed to establish your eligibility to sit the NZNVE.

2.2 Eligibility assessment

You are eligible to sit the examination if you:

- have applied and submitted the required fee; and
- hold a degree or diploma awarded after at least four years of study from a recognised veterinary school listed in the "World Veterinary Directory", at a school which was part of a college or university listed in the "World List of Universities" or the [AVMA-Listed Veterinary Colleges of the World](#) . Graduates with primary veterinary degrees of less than 4 years duration are not eligible to sit the New Zealand National Veterinary Examination; and
- are registered, licensed or eligible to be recognised as a veterinarian of good standing in the countries in which you are registered or studied or worked; and
- are fit to practise (i.e. have no significant health, disciplinary or criminal issues); and
- have satisfied the Council of your English language competence

2.3 English language requirements

Effective English and communication skills are required to practise as a veterinarian in New Zealand. If English is not your first language you will normally be required to sit and pass an approved English test to demonstrate your competence in English.

Refer to the Council's policy on English Competence at http://www.vetcouncil.org.nz/documentation/Policies/VCNZ_Policy_EnglishCompetence.pdf for detail on the Council's requirements.

You must pass either the IELTS (academic) or OET English tests to the required level before attempting the Preliminary Examination.

The International English Language Testing System (IELTS) test is jointly managed by University of Cambridge ESOL Examinations (Cambridge ESOL), British Council and IDP Education Australia: IELTS Australia. For further information refer to the IELTS website: www.ielts.org

IELTS applicants are required to:

- sit the academic band
- achieve a score of **at least 7** in **each** band of the four individual components of listening, reading, writing and speaking
- pass all four components of IELTS (Academic) at one sitting

The Occupational English Test (OET) is an acceptable alternative to IELTS. A pass with A or B grades in each of the four sections is required. For further information refer to the OET website: www.occupationalenglishtest.com

A pass in an approved English test is valid for 2 years for new registration and examination applicants, but the validity of this pass may be extended for up to five years for applicants who can demonstrate that they have continuously lived and worked in a country where English is the first and prime language for at least 4 years of the previous 5 years.

The Council requires applicants to arrange for English test results to be sent directly from the examining body to the Veterinary Council

Applicants must meet the Council's English language requirements as at the date when registration is about to be granted and not at some date before - for example, the date they apply to sit the registration examinations. Despite this the Council is entitled to use a pass in an approved English test to the required level as a screening measure. In most circumstances any previous decision by the Registration Committee (that an applicant appears to meet the statutory English language requirements by having sat and passed an English test to the required level) is likely to remain the same at the point of registration. However in circumstances where examiners raise any concerns about communication skills during the final examination or English language policy requirements change, applicants may be required to sit and pass an approved English test to the required current standard before registration is granted.

2.4 Preliminary Examination

The Preliminary Examination is normally held during the first weeks of March and September each year. All three multi choice papers must be completed in the one examination session (1 ½ days). Further details on the content of this examination are provided in Section 6 below. There is no limit on the number of times you may attempt the preliminary examination.

2.5 Final Examination

The Final Examination is conducted at Massey University in November each year. You must have passed the Preliminary Examination to be eligible to sit the Final Examination.

You must sit and pass the Final Examination within five years of passing the Preliminary Examination.

If English is not your first language you should ensure that you maintain a high level of English language competence during the preparation for the Final Examination.

You are permitted two attempts at the Final Examination and two attempts at any supplementary examination that may be required within one sitting of the examination. Further attempts may be approved by the Registration Committee only if you can provide evidence that you have undertaken appropriate activities to enhance your veterinary knowledge and skills.

Upon successful completion of the English language requirement and after passing the Preliminary and Final Examination, your application for registration can be considered.

3 CLOSING DATES FOR APPLICATIONS

3.1 Preliminary Examination

The closing dates for the acceptance of applications to sit the Preliminary Examination are 31 January (for the March examination) and 31 July (for the September examination).

3.2 Final Examination

The closing date for the Final Examination, which is held in November, is normally in late September. Candidates sitting the September Preliminary Examination (MCQ) are given due consideration if their application is late as a consequence of awaiting Preliminary Examination results.

4. FEES

4.1 Fees payable

Fees are payable in advance of sitting the examinations. As fees are subject to review and may change from time to time please check the Council's website at <http://www.vetcouncil.org.nz/fees.php> for the current examination fees.

Each examination fee allows only one attempt at each examination. If you are eligible to take the examination a second time a separate application must be completed and another examination fee paid.

Cheques should be in New Zealand dollars made payable to the "Veterinary Council of New Zealand". Payment by Visa or Mastercard are also accepted.

4.2 Withdrawal from the NZNVE

Once you have confirmed that you will sit a particular examination, withdrawal from the examination will incur a cancellation fee. If you decide to withdraw from an examination, you must notify VCNZ at least seven days before the first examination date in order to receive a refund of 80% of the examination fee. If you give less than seven days notification, fees will not be refunded.

In cases where there are exceptional circumstances (e.g. severe illness or urgent domestic problems) and where you can produce documented proof of the exceptional circumstances for withdrawal, the Council may consider a partial refund.

4.3 Annual Practising Certificate (APC) Requirements

When you pass the NZNVE you are eligible for registration provided you satisfy the other registration requirements of the Act. To practise in New Zealand you must be registered and also hold a practising certificate. To be issued with a practising certificate you must satisfy the Council that you meet the minimum practising requirements of the Act. As such, if you have been practising outside of New Zealand since first applying for registration/to sit the registration examinations, you will need to provide another letter of good standing with your APC application.

Please refer to the Council's website at <http://www.vetcouncil.org.nz/fees.php> for the current annual practising fee. This covers the practice period of 1 April to 31 March each year but is rebated for veterinarians who register later in the practising year.

5. TIME FRAME FOR COMPLETING THE NZNVE

You must sit and pass the Final Examination within five years of passing the Preliminary Examination. If you do not pass the Final Examination within this timeframe you will be required to resit and pass the Preliminary Examination before proceeding to the Final Examination.

The final examination is normally held in November of each year. In reality the five year timeframe means, for example, that:

- If you passed the Preliminary Examination in March 2008 you have 56 months to sit the Final Examination (in November 2012)
- If you passed the Preliminary Examination in September 2008 you have 50 months to sit the Final Examination (in November 2012)

6. VALIDITY OF APPLICATIONS

The application documentation of those who do not enter the examination process is disposed of after 2 years of date of receipt.

The application documentation of those who enter the examination process but do not proceed after sitting the preliminary examination is disposed of after 5 years of date of receipt.

7. THE PRELIMINARY EXAMINATION

7.1 Nature of the Preliminary Examination

The Preliminary Examination is in multiple choice question (MCQ) format in which answers to questions are marked on a computer-readable answer sheet. It is designed to test your general knowledge of the sciences basic to veterinary science and the clinical and technical procedures relevant to practice in New Zealand.

You must satisfy Council's English language requirements before you sit the Preliminary Examination. If English is not your first language refer to section 2.3 for the English language test requirements...

Previous examination results indicate that some candidates have not studied in sufficient breadth or depth when preparing for the examination. Many of the questions test clinical judgement or your ability to apply specific knowledge. You should therefore attempt to analyse each question thoroughly before answering. The content of the preliminary examination is broadly based and the performance of candidates appears to be influenced by a number of factors, including their undergraduate training.

There are three papers.

Paper 1: Companion Animals (e.g. dogs, cats, horses, miscellaneous small animals)

Paper 2: Agricultural Animals (e.g. cattle, sheep, birds)

Paper 3: Public Health and Pathology

Each paper has 100 questions and two hours are allowed to complete each paper.

The papers cover the following areas of veterinary work:

Topic guide to the preliminary examination (MCQ)

Note these are approximate numbers only

Topic	Approximate % in paper
Paper 1 - Companion animals	
Clinical medicine	50
Surgery	40
Reproduction	10
Paper 2 - Agricultural animals	
Clinical medicine	40
Surgery	10
Reproduction	20
Flock and herd	20
Epidemiology	10

Paper 3 - Public health and pathology

Public health	15
Microbiology/parasitology/parasitic diseases	25
Pathology	40
Infectious diseases	20

Paper 1 - Companion animals

Clinical medicine and surgery of dogs, cats and horses, including:

- i) Clinical medicine and surgery of the following body systems:
 - gastrointestinal system including associated organs such as salivary glands, liver and pancreas
 - cardiovascular and haemopoietic systems
 - respiratory system
 - nervous system
 - endocrine system
 - musculoskeletal system
 - reproductive system including mammary glands
 - skin, and
 - the body as a whole.
- ii) General medicine and surgery, radiography, anaesthesiology.
- iii) Reproduction of dogs, cats and horses.

Paper 2 - Agricultural animals

Clinical medicine of cattle, sheep, goats, poultry and pigs and camelids, including:

- (i) Clinical medicine of the following body systems:
 - gastrointestinal system including associated organs such as salivary glands, liver and pancreas
 - cardiovascular and haemopoietic systems
 - respiratory system
 - nervous system
 - endocrine system
 - musculoskeletal system
 - reproductive system including mammary glands
 - skin, and
 - the body as a whole.
- (ii) General medicine and surgery of farm animals.
- (iii) Reproduction of cattle, sheep, goats, poultry and pigs.
- (iv) Flock and herd (diseases of cattle, sheep, pigs, poultry and other animals).
- (v) Epidemiology of diseases of farm animal populations, veterinary preventive medicine.

Paper 3 - Public health and pathology

General pathology, general microbiology (includes bacteria, fungi and viruses), general parasitology (includes helminths, arthropods, protozoa), covering:

- (i) Public Health (Zoonoses and Food Hygiene)
- (ii) Microbiology and Parasitology
- (iii) Special pathology of the gastrointestinal system including liver and pancreas, cardiovascular system, urinary system, genital tract and reproductive system, nervous system, musculoskeletal system and diseases of the new born.

- (iv) Infectious diseases of cattle, sheep, goats, pigs, horses, dogs, cats, and poultry.
- (v) Parasitic diseases of cattle, sheep, goats, pigs, horses, dogs, cats and poultry.

7.2 Sample examination item

The following sample question is intended to provide an indication of the format of the examination. It does not represent the degree of difficulty or scope of any part of the examination. You need to be aware that test-taking skills are no substitute for knowledge. A computer readable answer sheet is used in the MCQ examination.

Example: Which one of the following clinical signs is NOT characteristic of the wasting form of acetonemia (ketosis) of dairy cattle?

- A poor appetite
- B sternal recumbency
- C nervous depression
- D weight loss
- E spontaneous recovery

The correct answer is B so the letter B should be filled in on the computer readable answer sheet. (For more of the sample MCQ questions, refer to Appendix A)

NOTE: Marks are not deducted for incorrect answers. Past experience has shown that some candidates who have failed the Preliminary Examination have not attempted enough questions.

7.3 Pass mark for the Preliminary Examination

The pass mark for each paper is standardised to 60% to reflect the difficulty of the questions included in the papers. The data on the difficulty of the questions is derived from trial testing the questions on Australasian veterinarians and senior veterinary students.

A **pass** will be awarded to candidates who score at least 60% in each paper. A candidate who fails only one paper, but scores an average of at least 60% across the three papers and scores no less than 50% in the paper they failed will be awarded a **conditional pass**.

A conditional pass will allow you to proceed to the Final Examination but if you then fail the Final Examination, you will be required to re-sit and pass the Preliminary Examination before again being allowed to sit the Final Examination.

A score of below 50% in any one paper will mean you fail the entire Preliminary Examination regardless of your average score.

If you fail the Preliminary Examination, you must re-sit all of the papers at the next attempt.

Note that overall marks above 59.5 and 49.5 will be rounded up (to 60 and 50). However, when considering average marks, the average will be calculated from the exact marks received and not the rounded marks.

7.4 Number of attempts at the Preliminary Examination

There is no limit on the number of times you may attempt the preliminary examination. However the Council strongly recommends that if you fail the preliminary exam you should complete a remedial study programme before re-attempting the examination.

7.5 General information on the Preliminary Examination

The examination is conducted over one and a half days under strict supervision.

Candidates are provided with all materials necessary for the examination.

Calculators, slide rules or other mechanical aids are neither required nor permitted.

Scrap paper is not provided or permitted in the Preliminary Examination.

8. FINAL EXAMINATION

8.1 Selection criteria for entry into the Final Examination

The Final Examination can accommodate a maximum of 12 candidates. In the event of over subscription the Council normally gives priority, in the following order, to candidates who:

1. have not yet sat the final examination but have been declined a place once, or have failed and subsequently been declined a place twice (other than priority 6)
2. have passed the Preliminary Examination, on their first attempt (ranked on the basis of their marks)
3. have passed the Preliminary Examination, but required more than one attempt (ranked on the basis of their marks)
4. have failed the Final Examination and subsequently been declined a place once
5. have failed the Final Examination and are making their first application to resit
6. have been formally referred by the AVBC under the Agreement between VCNZ and AVBC to examine final examination candidates from either NZ or Australia due to a shortfall or oversubscription in either country
7. are Australian residents or are transferring from the Australian preliminary examination process
8. have failed and been advised of the desirability of retraining before re-sitting

8.2 Assessment of candidates

For the final examination you will be assessed on your:

- knowledge of the subject in relation to New Zealand conditions;
- skill in handling and examining animals;
- knowledge of equipment and procedures;
- attitude displayed to animal welfare;
- performance in clinical and surgical procedures;
- professional judgement, and
- communication skills.

During the practical surgery, assessment will be made on:

- aseptic preparation of both surgeon and patient;
- surgical technique;
- knowledge of surgical anatomy;
- likely outcome of problems arising as a result of faulty technique, infections or complications caused by interference to the surgical site by the patient.

8.3 Final Examination

The Final Examination comprises 10 sections – a written examination and nine oral/practical assessments.

Written Examination: Section 1

This written examination of 3 hours duration is on topics of relevance to veterinary practice in New Zealand. You will be asked to write short notes on up to 12 different topics with some scope for choice i.e. you may be asked to answer 12 out of 15 or 10 out of 13 questions.

Written examination example

Answer 12 of the following 15 questions. All questions are of equal value.

1. Discuss the sources of microbial contamination of meat during slaughter and dressing procedures.
2. Outline methods of humane slaughter of sheep.
3. Discuss the advantages of the neck site for injection of animal remedies into livestock destined for human consumption.
4. Discuss the potential risks to New Zealand livestock from illegal importation of animal products.
5. Outline the main provisions of the Animal Welfare Act.
6. Discuss the ethical obligations of veterinarians regarding the provision of emergency services for the treatment of animals.

7. Discuss the ethical and legal obligations of veterinarians in regard to the supply of a restricted veterinary medicine.
8. Discuss perennial ryegrass staggers.
9. Discuss selenium responsive diseases of sheep.
10. Discuss anthelmintic resistance in nematodes infecting sheep.
11. Discuss the methods for detecting oestrus in cows.
12. Discuss the use of dry-cow therapy in the control of mastitis.
13. Discuss the treatment of internal parasites in a New Zealand working dog.
14. Discuss the management of fleas in a household which has one Golden Retriever dog and two adult cats.
15. Discuss two (2) important zoonoses of cats in New Zealand.

Practical Assessments: Sections 2 - 10

This part of the final examination consists of nine oral/practical assessments. Each is 1 - 1 ½ hours in duration. Two examiners will be present for each part of the examination. Depending upon the number of candidates, the whole final examination takes 3-4 days to complete. You can only take this examination after you have passed the English test specified in 2.3 (if applicable) and the Preliminary Examination.

You will be expected to clinically examine animals, interpret diagnostic test results, recommend appropriate therapy and answer questions relating to common conditions that are dealt with in practice in New Zealand. As each station has a time limit you should not deliberately avoid answering examiners questions by 'talking around' the issue if you do not know the answer. Doing so may mean that examiners may not be able to ask other intended questions and that there will be less time to respond to further questions. This may result in you receiving a lower mark.

The examination procedure assesses your knowledge as well as its practical application in animal handling, clinical examination, anaesthesia and surgery. You will be expected to show manipulative skills, demonstrate competencies, make observations and interpret them in order to come up with appropriate diagnoses and treatment plans.

The examination covers the following areas:

- Knowledge of management systems used in the care of New Zealand companion and agricultural animals. This includes feeding systems, especially pasture management and breeding systems, including natural and artificial breeding and embryo transfer, oestrus synchronisation and parturition induction
- Ability to handle and restrain animals of all domestic species
- Diagnostic skills including clinical examination, interpretation of postmortem specimens, applying field tests in clinical pathology and the collection and delivery of specimens to the laboratory. Some knowledge of common poisonous plants is expected
- Clinical therapeutics including the drugs used for the common diseases, techniques used in treatment and the legislation concerning registered drugs
- Disease control programs and preventive medicine generally
- Animal welfare considerations occurring in veterinary practice
- Legal constraints on the delivery of veterinary services to the public
- Writing reports and certificates
- Radiology and radiation safety

The examination tests your knowledge of disease and animal management under New Zealand conditions at a level that will allow you to practise effectively in New Zealand.

The questions individual candidates are asked during the final examination stations vary, but come from a common pool of questions of equivalent degrees of difficulty.

The lists of procedures in the following descriptions of sections indicate what may be included in those sections, but do not exclude other questions or procedures.

Section 2 Clinical skills and knowledge – cattle

- (a) You are expected to clinically examine a cow and explain the parameters you are checking in your examination.
- (b) You will be asked to perform a number of procedures commonly used in Cattle Medicine, which may include:
- Pregnancy testing per rectum
 - Examination of the mouth
 - Passing a stomach tube
 - Restraining a cow and injecting a solution into the jugular vein
 - Collecting a blood sample from the tail vein
 - Giving an epidural anaesthetic
 - Lifting and restraining a cow's front or back leg
 - Aseptically collecting a milk sample
 - Collection of urine sample from a cow via a urinary catheter
 - Collection of a sample of rumen fluid by rumenocentesis
 - Detailed examination of a cow's foot
 - Casting a cow to carry out a potentially painful procedure on her front leg
 - Examining a bull's testicles and measuring the bull's scrotal circumference
 - Collection of a semen sample from a bull
 - Basic obstetrical procedure
 - Demonstrating knowledge of reproduction and breeding of cattle
- (c) You will be expected to work through case examples including laboratory reports produced from samples taken from clinical cases and reports from herd health recording systems. After your assessment of the results, you will be asked to discuss the importance or relevance of them and how they would assist in the possible diagnoses and outcomes to treatment. You will be required to outline your management, or any further tests that may be required to aid your likely diagnosis and treatment outcomes of each case.

Section 3 Clinical skills and knowledge – horses

- (a) You are expected to clinically examine a horse and explain the parameters you are checking in your examination.
- (b) You will be asked to perform a number of procedures commonly used in Equine Medicine, which may include:
- Catching and putting a halter on a horse
 - Conducting a clinical examination, taking temperature
 - Undertaking a simple test to check dehydration
 - Taking a blood sample
 - Examining the horse's mouth and assessing teeth condition
 - Checking eyes with or without an ophthalmoscope
 - Demonstrating how to correctly and safely apply a twitch to nose or ear
 - Demonstrating neck grip to give injection
 - Indicating injection sites for IM injection
 - Picking up horse's foot/feet
 - Demonstrating use of hoof testers
 - Demonstrating knowledge of anaesthetics and tranquillisers used in horses
 - Positioning of horse and equipment for radiography
 - Abdominal paracenteses
 - Palpating the larynx

- Indicating injection sites to block:
 - regional nerves to legs and feet
 - motor nerves to the eye
 - sensory nerves to the eye
- (c) You will be expected to work through case examples including laboratory reports produced from samples taken from clinical cases. This may include reproduction and breeding. After your assessment of the results, you will be asked to discuss the importance or relevance of them and how they would assist in the possible diagnoses and outcomes to treatment. You will be required to outline your management, or any further tests which may be required to aid your likely diagnosis and treatment outcomes of each case.

Section 4 Clinical skills and knowledge – sheep, deer and other farmed species

- (a) You are expected to clinically examine a sheep or herd and explain the parameters you are checking in your examination.
- (b) You will be asked to perform a number of procedures commonly used in Sheep Medicine, which may include:
- catching and carrying out a clinical examination
 - taking temperatures
 - collecting a jugular blood sample
 - examining mouth and teeth
 - discussing the significance of a 'daggy' tail
 - examining feet and using a searcher knife to check for footrot
 - taking a faecal sample for culture
 - palpating several rams' testicles and discussing findings.
- (c) You may be asked to demonstrate knowledge of common conditions or manipulative procedures used with other farmed species such as pigs or goats.
- (d) You may be asked to demonstrate knowledge of use of regional anaesthesia and common drugs used for antler removal.
- (e) You will be expected to work through case examples including laboratory reports produced from samples taken from clinical cases of sheep and other farm animals. This may include knowledge of reproduction and breeding. After your assessment of the results, you will be asked to discuss the importance or relevance of them and how they would assist in the possible diagnoses and outcomes to treatment. You will be required to outline your management, or any further tests which may be required to aid your likely diagnosis and treatment outcomes of each case.

Section 5 Clinical skills and knowledge – companion animals

You are expected to clinically examine a companion animal (dog or cat) and work through case-studies and slides with the examiners. The examination includes:

- (a) Clinical examination of dog or cat. You will be expected to explain the parameters you are checking in your examination
- (b) You will be given several laboratory reports produced from samples taken from a clinical case. After your assessment of the results, you will be asked to discuss the importance or relevance of them and how they would assist in the possible diagnoses and outcomes to treatment
- (c) Discussion on several case histories. You will be required to outline your management, or any further tests which may be required to aid your likely diagnosis and treatment outcomes of each case. Such cases may include reproduction.

Section 6 Clinical skills and knowledge – companion animal surgery, radiology and radiation safety

You will be asked to work through clinical surgical case studies and demonstrate knowledge of:

- (a) Appropriate surgical choices and techniques
- (b) Interpretation of x-rays, knowledge of radiography and interpretation of radiographs.
- (c) Knowledge of radiation safety.
- (d) Knowledge of surgical instruments and their use

Section 7 Veterinary medicines, public health, meat hygiene

You will be expected to discuss, with the aid of colour slides and case studies, aspects of preventive medicine and regulatory medicine as it applies in New Zealand.

The areas that will be covered include:

- (a) The necessary steps to be taken by a veterinarian on suspicion of an exotic disease, for example Foot and Mouth Disease or Avian Influenza
- (b) The various disease control programmes currently in use in New Zealand (such as Tuberculosis prevention)
- (c) Knowledge of zoonotic diseases such as leptospirosis, toxoplasmosis
- (d) Knowledge of food safety and the role of veterinarians in meat hygiene
- (e) Knowledge of the legal requirements for veterinary medicines in New Zealand, including withholding periods for veterinary drugs, significance of residues of veterinary drugs and chemicals in food
- (f) Knowledge of legal requirements for undertaking experiments on animals, and animal welfare legislation as it applies to veterinarians.

Section 8 Pathology, parasitology, microbiology

A series of questions will relate to a number of pathological, parasitological and microbiological specimens. Specimens may be accompanied by a brief history and by requests for pathological description, diagnosis and where appropriate, for further diagnostic procedures and an interpretation of their public health significance. Specimens may be in the form of fresh abattoir specimens, colour slides, parasites, microbiological cultures and H&E stained histological sections set up on a binocular microscope. In addition you may be expected to conduct a routine post mortem examination.

Section 9 Practical anaesthesia

You will be asked to carry out a thorough clinical examination and assessment on a companion animal as to its suitability for anaesthesia, indicate a suitable anaesthetic procedure and carry out the anaesthesia to the point where the animal is stable under the anaesthesia.

Section 10 Practical surgery

You will be asked to perform a common surgical procedure such as an ovariohysterectomy or cystotomy using full aseptic surgical procedures. It is likely that the companion animal used will be a dog but it may be a cat.

Assessment is made on aseptic preparation of both surgeon and patient, surgical technique including knowledge of:

- anatomy
- tissue handling and haemostasis
- instrument dexterity and competence
- suture selection and knot security
- overall appreciation for reason for time restraint for surgery
- knowledge of surgical anatomy
- likely outcome to problems arising as a result of faulty technique, infection or complications; and interference to the surgical site by the patient
- discussion of instructions for after care at home after discharge.

8.4 Practical arrangements

The Final Examination is held at Massey University, Palmerston North. It is your responsibility to arrange and meet all costs for accommodation and travel. You are required to take a white coat, coveralls, gumboots, clinical thermometer and stethoscope to the final examination.

8.5 Standard of the Final Examination

The standard of the final examination aims for equivalence with the minimum standard for the Bachelor of Veterinary Science degree of Massey University, New Zealand. Such a standard may be difficult to obtain by candidates who:

- qualified a number of years ago, perhaps have worked in a narrow area and who have not undertaken substantial revision of the basic subject matter of the examination; or
- obtained a basic qualification which does not cover adequately all the subjects covered by the examination and who have not undertaken further study to remedy these shortcomings; or
- have failed to familiarise themselves with the husbandry, diseases and conditions of animal species to be commonly found in New Zealand, or with the relevant legislation; or
- entered the examination without sufficient fluency in the English language.

8.6 Pass standard for the Final Examination

Section 1 of the Final Examination

You must achieve a mark of 50% for the written part of the examination.

Sections 2 of the Final Examination

Each of the ten sections is marked as a pass or fail.

There are three categories of result in the final examination.

- a) **PASS**, where a pass in each of the ten sections has been obtained;
- b) **SUPPLEMENTARY EXAMINATION** granted. Although the final examination is a test of overall competence, candidates who have passed at least seven sections may be awarded a “supplementary examination” and as such permitted to resit a maximum of three sections. The failed sections are normally re-taken at the next available final examination session;
- c) **FAIL**, where fewer than seven sections have been passed.

Candidates need to be aware that if they display a substantial deficiency in one or more specific areas within a section they will not be awarded a pass in that section.

8.7 Provision of feedback to candidates failing the final examination

Final Examination candidates who fail will be provided with general feedback from examiners on their areas of weakness.

The tasks and procedures used to assess knowledge and skill is varied for each section of the final examination. As such candidates cannot assume that if they address any identified deficiencies, they will pass the next sitting of examinations.

Candidates must not communicate directly with the examiners before or after the examination. Send all correspondence and queries to the Veterinary Council office.

8.8 Number of attempts at the Final Examination

Candidates are permitted two attempts at the Final Examination. A third attempt may be approved by the VCNZ Registration Committee if the candidate can provide evidence that they have undertaken appropriate activities to enhance their veterinary knowledge and skills. Candidates may be allowed to sit a supplementary examination twice (during each attempt at the final examination). A second failure at the same supplementary examination will be viewed as a failure in the Final Examination, and the candidate must then re-sit the Final Examination (or re-sit the Preliminary Examination if they had initially gained a conditional pass in that examination).

9. EXAMINATION RESULTS

9.1 Preliminary Examination

VCNZ will endeavour to send the results of the Preliminary Examination to you by mail within 21 days. However, if there is a delay in marking the examination or VCNZ receiving the results, it may take longer than 21 days. Results are not provided over the telephone.

9.2 Final Examination

VCNZ will endeavour to send the results of the Final Examination (and any subsequent Supplementary Examination) to you in the mail within six weeks. Results will not be provided over the telephone. Candidates must not communicate directly with the examiners before or after the examination. Send all correspondence and queries to the Veterinary Council office.

10. IMPAIRED PERFORMANCE

If you consider that you have performed poorly in an examination because of illness, personal circumstances or events before or during the examination, you must advise us immediately and send written evidence to support your claim, including a recent medical certificate if relevant. You must send these documents within five working days after the examination. Medical certificates will not be accepted after the examination results are posted.

No examination result will be revised in this process but, depending on the individual circumstances of a case, the fee for the next set of examinations may be waived or reduced.

Direct all your inquiries and send all correspondence to Registrar, Veterinary Council of New Zealand, PO Box 10-563, Wellington.

11. MAINTAINING THE INTEGRITY OF THE NZNVE PROCESS

NZNVE candidates are expected to behave honestly, fairly and with respect for others at all times during the examination process.

When applying to sit the NZNVE Examination candidates are required to confirm that they have:

- read and agree to abide by the following NZNVE Conduct requirements; and
- understand that failure to do so may be sufficient cause for the Veterinary Council to terminate their participation in the examination, invalidate their results, bar their participation in future examinations or take other appropriate action.

Conduct requirements

During the NZNVE Preliminary, Final or Supplementary Examinations, candidates must not give, receive or obtain any unauthorised assistance, or attempt to do so. This includes:

- communicating, or attempting to communicate, with other candidates during the staging of the Preliminary Examination, Final Examination; or Supplementary Examination; or
- communicating, or attempting to communicate, with other candidates, on any matters related to the assessments undertaken during the 9 clinical stations of the Final Examination or the Supplementary Examination; or
- copying from, or attempting to copy from, a fellow candidate; or
- attempting to introduce or consult during the Preliminary, Final or Supplementary Examination, any unauthorised printed or written material or electronic calculating or information storage device; or mobile phone or other communication device;
- impersonating a NZNVE candidate or engaging someone else to take the examination
- assisting another candidate to plagiarise (for example by giving them their own work to copy from or sharing questions asked during the clinical stations of the final examination).

Candidates must not remove any examination materials from the examination venue unless instructed to do so by authorised examiners or VCNZ staff.

Candidates must maintain the confidentiality of the examination content. They must not:

- reproduce, or attempt to reproduce examination materials through memorisation or any other means
- provide information relating to examination content that may give or attempt to give an unfair advantage to those who may be taking the examination.

Candidates must maintain high standards of professional behaviour and integrity during the examination process. Disruptive or unethical behaviour which undermines or attempts to undermine the examination process will not be tolerated. This includes offering any benefit to any NZNVE examiner or administrator in return for any benefit which is not usually granted to other candidates.

Candidates should understand that VCNZ may require candidates to retake any or all parts of NZNVE if presented with sufficient evidence that the security of the examination has been compromised, despite the absence of any evidence of a candidate's personal involvement in such activities.

12. ADMISSION TO THE REGISTER OF VETERINARIANS

Candidates who pass all parts of the NZNVE and satisfy the other statutory requirements for registration will be eligible for registration as a veterinarian in New Zealand. The practising certificate fee must be paid before registration is completed. VCNZ staff will process a provisional registration so that you are able to start work, and will present an application on your behalf to the next VCNZ Registration Committee meeting following the final examination. Shortly after approval by the Registration Committee your registration certificate and annual practising certificate will be mailed to you.

13. READING LIST AND STUDY RESOURCES

This reading list is a guide only.

You may find these texts through local or university libraries. Some website references that have been discovered for the books are provided. Other websites that might offer the books for sale are:

www.directtextbooks.com

www.addall.com

www.amazon.com

General Reference

Aiello S E, and Line S. *The Merck Veterinary Manual*, Merck & Co, 10th Ed 2010.

Blood D C, Studdert, V P, & Gay, CC., *Comprehensive Veterinary Dictionary*, 3rd Ed 2007

Blood D C & Brightling, P, *Multiple Choice Questions in Veterinary Medicine*, W B Saunders 1996

Pratt Paul W, Ed *Mosby's Review Questions and Answers for Veterinary Boards*, 2nd Ed Mosby 1998, ISBN 0323001459

Ettinger S J & Feldman E C, *Textbook of Veterinary Internal Medicine: diseases of the dog and cat*, 6th Ed 2005

Radostits, Mayhew and Houston - *Veterinary clinical examination and diagnosis*, Saunders 2000

Production Animal Medicine

Parkinson T J, Vermunt J J Malmo J (eds). *Diseases of Cattle in Australasia*. Vetlearn, Wellington, New Zealand 2010

Howard J M, *Current Veterinary Therapy 4 (Food animal practice)*, 4th Ed 1999, W B Saunders Company, Philadelphia

Manktelow B W, *The Veterinary Handbook*, 1st Ed 1984, Continuing Education, Massey University, Palmerston North, New Zealand

Radostits O M, Lelie K E & Fetrow J, *Herd Health Food Animal Production Medicine*, 2nd Ed 1994 W B Saunders Company, London (try www.addall.com)

Radostits O M, Gray C C, Hinchcliffe K W & Constable P D., *Veterinary Medicine: A textbook of the diseases of cattle, horse, sheep, pigs and goats*, 10th Ed 2007

West D M, Bruere A M, & Ridler A L, *Sheep: The Health Diseases and Production* 2009 Veterinary Continuing Education, Massey University, Palmerston North, New Zealand

Williamson N (ed), *The Farmers Veterinary Guide* (2008), 3media group. Level 7, 67 Symonds Street, Auckland (try www.NewZealandbooks.com)

Grace M, *Managing Trace Element Deficiencies* (1994), NZ Pastoral Agriculture Research Institute Ltd

Taylor D J, *Pig Diseases* 1990, Cambridge Book Production Consultants, London

Morrow D A, *Current Therapy in Theriogeology*, 2nd Ed 1986, W B Saunders Company, Philadelphia

Companion Animal Medicine and Surgery

Slatter D H, *Textbook of Small Animal Surgery*, 2nd Ed 1993 W B Saunders & Co, London

Hall L W, Clarke K W, *Veterinary Anaesthesia and Analgesia* 1994, Bailliere Tindall, London

Thrall D, *Textbook of Veterinary Diagnostic Radiology*, 2nd Ed 1994, W B Saunders Company, London

Nelson R W & Cuoto G, *Essentials of Small Animal Internal Medicine* 1992, Mosby, Philadelphia

Toxicology

Bruere A N, Cooper B S & Dillion E A, *Veterinary Clinical Toxicology* 1990, Veterinary Continuing Education, Massey University, Palmerston North, New Zealand

Conner H E, *The Poisonous Plants in New Zealand* 1992, GP Publications Ltd

Veterinary Pathology and Public Health

Blackmore D K, & Humble M W, *Zoonoses in New Zealand* 1987, Veterinary Continuing Education, Massey University, New Zealand

Petersen G V, Madie P & Blackmore D K, *Veterinary Aspects of Meat Quality* 1991, Veterinary Continuing Education, Massey University, Palmerston North, New Zealand

Latimer K S, Mahaffey E A & Prasse K. W, Duncan & Prasse's *Veterinary Laboratory Medicine: clinical pathology*, 4th Ed 2003

McGavin D & Zachary J F, *Pathologic Basis of Veterinary Disease*, 4th Ed 2007 Mosby Elsevier, St Louis, Missouri 2007

Veterinary Parasitology

Soulsby E J L, *Helminths Arthropods and Protozoa of Domesticated Animals*, Bailliere Tindall, London

Veterinary Microbiology

Wilks C R, *Veterinary Virology* (1992, Veterinary Continuing Education, Massey University, Palmerston North, NZ

Anesthesia

Muir W.W et al, *Handbook of Veterinary Anesthesia*, 4th Ed 2007

Poultry

Manktelow B W; Lohr J E; Wilks C R & Christensen M H, *Avian Veterinary Handbook* 1988, Veterinary Continuing Education, Massey University, Palmerston North

Epidemiology

Thrusfield M, *Veterinary Epidemiology* (2005), 3rd Edition, Blackwell Publishers, London

Martin S W, Meek A H, & Willeberg P, *Veterinary Epidemiology, principles and methods*, 1987

Pharmacology

Brander G S; Pugh D M; Bywater R J & Jenkins W L, *Veterinary Applied Pharmacology and Therapeutics*, 5th edition 1991, Bailliere Tindall, London

Equine

Rose & Hodgson, *Manual of Equine Practice* 2nd Ed 2000, W B Saunders

Mair et al – *Equine Medicine, Surgery and Reproduction*, Saunders 1999

Robson – *Current Therapy in Equine Medicine 4 & 5*, W B Saunders 1997 and 2003

Auer J A and Stick JA. *Equine Surgery*, 3rd Ed 2005, W B Saunders

Munroe G and Weese S, *Equine Clinical Medicine, Surgery and Reproduction*, Manson Publishing Ltd

Colahan P T, Merritt A M, Moore J N and Mayhew I G, *Manual of Equine Medicine and Surgery: Pocket Companion to 5th Ed*. Mosby 1999

Large Animal Internal Medicine 4th Edition, Smith, Mosby 2009

Parliamentary Acts

Government legislation relevant to the Veterinary profession:

Veterinarians Act 2005

Veterinarians Amendment Act 2008

Animal Welfare Act 1999

Agricultural Compounds and Veterinary Medicines Act 1997

Medicines Act 1981

Biosecurity Act 1993

Misuse of Drugs Act 1975

Animal Products Act 1999

These, along with their subsequent amendments are available online at:

<http://www.legislation.govt.nz> or by mail order from Bennetts Government Bookshop, Bowen House, corner of Lambton Quay and Bowen Street, Wellington telephone +64 4 499 3433 or fax +64 4 499 3375

Courses, Seminars, Workshops, Conferences

Each year, VetLearn (registered trademark of the Foundation for Continuing Education of the New Zealand Veterinary Association) develops and organises numerous courses and assists NZVA Special Interest Branches in the organisation of their annual conferences. In addition the Foundation publishes a range of proceedings and other books relevant to veterinary clinical science in New Zealand, and also offers for sale electronic documents from American colleges.

VetLearn contact details are:

VetLearn
Massey University
Private Bag 11222
Palmerston North
New Zealand
Ph: 06 350 5227
Fax: +64 6 350 5659
Web: www.vetlearn.org.nz
Email: vetlearn@vets.org.nz

The **University of Sydney Post Graduate Foundation in Veterinary Science** offers services such as refresher courses presented by world authorities in the subject supported by appropriate local specialists, seminars, symposia and workshops. The Foundation also offers distance education opportunities in many subjects from Radiology to Feline Medicine. Many participants use the Distance Education program to prepare for membership and fellowship examinations in the Australian College of Veterinary Scientists. The proceedings of workshops run by the Foundation have proven to be valuable sources of information for veterinarians. The information provided in the courses and seminars is generally more relevant to clinical care in Australasia. Membership costs apply. Contact details are:

University of Sydney Post Graduate Foundation in Veterinary Science, P O Box A561, Sydney South, New South Wales 2000, Australia, fax +61 2 261 4620, www.pgf.edu.au

Periodicals

It would be useful to look at some prominent veterinary periodicals for new treatments, particularly those that use new methods and new drugs, as textbooks can be out of date. The following journals may be useful:

- New Zealand Veterinary Journal
- Australian Veterinary Journal
- Australian Veterinary Practitioner
- Equine Veterinary Journal
- Journal of the American Veterinary Medical Association
- Journal of the American Animal Hospital Association
- Veterinary Record

Seeing Practice

Candidates for the final examination are advised to familiarise themselves with aspects of veterinary medicine relevant to New Zealand practice. Observing the practice of New Zealand veterinarians would be sound preparation for all sections of the practical examination.

The Veterinary Council cannot assist with organising this. It is up to the candidate to contact practices directly

Occasionally opportunities for seeing practice are available at Massey University during holiday breaks, but must be booked well in advance.

In addition the New Zealand Veterinary Association (NZVA) may be able to assist in matching candidates with veterinarians willing to provide observation opportunities. For further information on what NZVA can offer and contact details refer to section 16 below and <http://www.vetspace.org.nz/category/classified-ads/students-seeking-work-experience>

Internet Sources of Information

The following sources of veterinary educational information have been gathered from searches of the internet. VCNZ does not take responsibility for the accuracy of the information provided on these sites. Many overseas universities, particularly American University sites offer case studies that may assist students in diagnosis. Note that some of these case studies may not be relevant to the NZ situation.

<http://www.us.elsevierhealth.com>

There are many reference texts listed on this site, also included is reference to the Mosby book of multiple choice questions, by Pratt. Look for the Veterinary tab, then go to Veterinary Reference and Review.

<http://vetmedicine.about.com/cs/learning/>

Links to online learning opportunities for practitioners and students

<http://cal.vet.upenn.edu/radiology/index.html>

radiology case studies

Colorado State University, College of Veterinary Medicine and Biomedical Sciences:

<http://www.cymbbs.colostate.edu/clinsci/wing/fluids/fluidcas.htm>

Cornell University, School of Veterinary Medicine:

<http://w3.vet.cornell.edu/nst/>

Case studies, necropsy

Washington State University, College of Veterinary Medicine:

<http://courses.vetmed.wsu.edu/vm552/urogenital/art.htm>

University of California – Davis:

<http://www.vmeth.ucdavis.edu/cardio/cases>

Case studies in Small Animal Cardiovascular Medicine

University of Georgia:

<http://www.vet.uga.edu>

Case studies (use search engine at the site, type in 'case studies')

KARL STORZ Veterinary Endoscopy:

<http://www.ksvea.com/resources.html>

District of Columbia Academy of Veterinary Medicine:

<http://www.dcavm.org/01june.htm>

Lecture notes

Consultant:

<http://www.vet.cornell.edu/consultant/consult.asp>

A Diagnostic Support System for Veterinary Medicine

www.cormboss.au

www.vein.library.usyd.edu/links/parasitology.htm

<http://www.equinehospital.co.nz/articles/ParasiteControl.pdf>

<http://www.nzerf.co.nz/Attachments/Equine%20Parasitology%20-%20Bomac%20Series%20for%20printing.pdf>

http://nz.merial.com/disease_information/cats/en_parasite.asp

information on dog, beef cattle, dairy, sheep, horse, deer disease can be accessed on this site

<http://www.teara.govt.nz/en/diseases-of-sheep-cattle-and-deer/1>

Parasitology

<http://www.nrl.moh.govt.nz/regulatory/c21.pdf>

Information produced by the National Radiology Laboratory

Study Resources:

<http://workingdogs.com/book035.htm>

Books and videos specifically related to veterinary medicine, including multiple choice questions to aid students in the American Board exams

<http://www.ivis.org/home.asp>

A not for profit organisation established to provide information to veterinarians, veterinary students and animal health professionals.

<http://vetgate.ac.uk>

Gateway to internet resources in animal health

<http://vein.library.usdyd.edu.au>

Veterinary Education and Information Network

www.vin.com

Veterinary information networks

14. USEFUL ADDRESSES

Institute of Veterinary, Animal and Biomedical Sciences

Massey University

Private Bag 11-222

Palmerston North

Tel: +64 6 356 9099

(Massey is the only university in New Zealand offering a degree in veterinary science)

New Zealand Veterinary Association (NZVA)

PO Box 11 212

Wellington 6142

Phone: 04 471 0484

Email: nzva@vets.org.nz

The NZVA offers reduced price associate membership to overseas-trained veterinarians who have not yet achieved registration in New Zealand. Membership provides access to the extensive information available on the NZVA website, to library facilities, to Continuing Education seminars and courses, to professional periodicals and opportunities for networking with New Zealand veterinarians. NZVA will also include associate members details on their website for seeing practise opportunities.

Appendix A: Sample Preliminary Examination Questions

Please note that the following sample multiple choice questions (MCQ) questions are intended to provide candidates with an example of the type of questions and format used in the Preliminary Examination. *They do not reflect the degree of difficulty or content of questions in the examination paper.*

Further examples of multiple choice questions which examine the type and breadth of knowledge expected of candidates of the National Veterinary Examination can be found in a series of books published by Mosby titled: "Pratt Paul W, Ed *Mosby's Review Questions and Answers for Veterinary Boards*, 2nd Ed 1998, ISBN 0323001459".

Paper 1: COMPANION ANIMALS

- 1 A horse is acutely sore in its gait but not lame, the skin at the back of the pastern is swollen, painful, smelly, and has recent horizontal fine fissures. Which one of the following treatments would be **MOST** likely to be effective?
- A systemic corticosteroids
 - B* topically applied astringent mixture such as white lotion
 - C topical application of an antibacterial ointment such as 5% furacin
 - D topical application of a 2% xylocaine jelly
- 2 Chronic lead poisoning in the horse is often associated clinically with which one of the following signs?
- A chronic diarrhoea
 - B incoordination of hind legs
 - C blindness due to retinal damage
 - D* laryngeal hemiplegia
- 3 In the resting thoroughbred horse the occurrence of a third heart sound
- A is indicative of asymmetrical ventricular contraction
 - B* may be a normal physiologic event
 - C is indicative of synchronous diaphragmatic flutter
 - D is indicative of complete heart block
- 4 The resting heart rate of a clinically normal thoroughbred horse in race training is usually within the range of
- A* 20 to 40 beats per minute
 - B 40 to 60 beats per minute
 - C 60 to 80 beats per minute
 - D 80 to 100 beats per minute
 - E 100 to 120 beats per minute
- 5 Which one of the following abnormalities produces a systolic murmur?
- A mitral valve stenosis
 - B aortic valve insufficiency
 - C* mitral valve insufficiency
 - D persistent right aortic arch
 - E tricuspid valve stenosis
- 6 In large animal radiography where higher kVp exposures are required, it is preferable to
- A wear protective lead aprons and gloves
 - B use additional filtration at the tube port
 - C use screen film
 - D* adopt all of the above
- 7 A circle absorber is designed to remove carbon dioxide from the patient's exhaled gas. To be efficient, the design should ensure that
- A the fresh gas flow rate exceeds the patient's minute volume
 - B some carbon dioxide is rebreathed to maintain respiratory drive
 - C there is sufficient resistance to ventilation to prevent collapse of the lungs
 - D* the tidal volume can be accommodated in the spaces between the soda lime

- granules
- 8 The soda lime used to absorb CO₂ in anaesthesia
- A* requires water for reaction to occur
 - B absorbs heat during reaction
 - C is composed mainly of sodium hydroxide
 - D is hardened by the addition of potassium hydroxide
- 9 A volatile anaesthetic agent which should **NOT** be used with soda lime is
- A* trichlorethylene
 - B ether
 - C chloropane
 - D halothane
- 10 A horse suffering from an acute intestinal accident is **MOST** likely to have
- A primary respiratory acidosis
 - B primary respiratory alkalosis
 - C primary metabolic alkalosis
 - D* primary metabolic acidosis
- 11 Which one of the following statements is true?
- A because of its large diameter the equine small intestine should be anastomosed with a double layer of inverting sutures
 - B the end-to-end crushing technique is not suitable for use in intestinal anastomosis in horses
 - C the removal of excessive gas and fluid from the intestine is important in the prevention of postoperative ileus in horses
 - D* pedunculated lipomas are a common cause of obstructive colic in middle aged, obese horses
- 12 In 'developed' countries where dog populations are controlled, the principal vehicle for the transmission of rabies is
- A cats
 - B* wild carnivora and omnivora
 - C fruit and vampire bats
 - D farm livestock

Paper 2: AGRICULTURAL ANIMALS

- 13 Of the following topical applications, the one **MOST** likely to be an effective treatment for chorioptic mange of cattle is
- A lime-sulphur spray
 - B an iodophor preparation containing 1% free iodine
 - C* moxidectin pour-on 0.5mg/kg
 - E an organic arsenical spray
- 14 Of the tests listed below, the **MOST** supportive of the diagnosis of bracken fern (*Pteridium aquilinum*) poisoning in cattle is
- A reduced serum creatinine phosphokinase level
 - B reduced haematocrit (packed cell volume)
 - C elevated serum protein level
 - D* reduced blood platelet count
 - E elevated blood urea nitrogen level

- 15 Which one of the listed nutritional states has been associated causatively with the disease post-parturient haemoglobinuria in cattle?
- A* phosphorus deficiency
 - B calcium deficiency
 - C vitamin C deficiency
 - D zinc deficiency
 - E protein deficiency
- 16 In which one of the following plant poisonings is it probable that the illness is caused by a fungus growing in the plant rather than the plant itself?
- A* perennial ryegrass (*Lolium perenne*)
 - B phalaris grass (*Phalaris tuberosa*)
 - C marshmallow (*malva parviflora*)
 - D stagger weed (*Stachys arvensis*)
 - E Sudan grass (*Sorghum spp.*)
- 17 An adult goat is presented with fever, an obvious white opacity in one eye, weeping and blepharospasm and skew deviation of the same eye, paresis and lateral deviation of the head. Which one of the following diseases is the likely diagnosis?
- A* listeriosis
 - B infectious kerato-conjunctivitis
 - C coliform meningo-encephalitis
 - D bovine malignant catarrh (malignant catarrhal fever)
 - E coccidiosis
- 18 A gilt which is farrowing has savaged and killed the first 3 piglets born. The remainder have been removed by the farmer and are still alive. Your preferred procedure for handling this problem should be to
- A destroy the gilt and send the brain and tissues to a laboratory for an examination for Aujeszky's disease
 - B* administer a tranquiliser or light dose of barbiturate to the gilt and replace the piglets
 - C administer 100cc of 50% dextrose I/V to the gilt
 - D tranquilise the piglets
 - E foster the piglets and dispose of the gilt
- 19 Hypoglycaemia in piglets **MOST** commonly results from
- A low glucose in the sow diet
 - B hereditary predisposition
 - C lack of vitamin A in the sow diet
 - D*agalactia in the sow
 - E hyperinsulinaemia
- 20 Which one of the following physical factors, when applied to animals during pregnancy, is known to cause congenital defects?
- A high altitude
 - B severe cold
 - C* high temperatures
 - D exposure to high levels of ultraviolet irradiation
 - B constant wetness

- 21 Heat stroke, or simple hyperthermia, occurs during hot weather. Which one of the listed factors is **LEAST LIKELY** to be a contributing cause?
- A* direct irradiation of the head by the sun
 - B over-crowding in confined spaces with inadequate ventilation
 - C fat animals with heavy coats
 - D physical exercise
 - B reduced water intake
- 22 Of the following surgical procedures the one which carries the poorest success rate in correcting left sided displacement of the abomasum is
- A* left sided laparotomy with replacement only of the abomasum
 - B right sided laparotomy with fixation of the pylorus
 - C paramedian laparotomy with fixation of the abomasum
 - D roll and toggle technique
- 23 There is evidence that arthrogryposis in cattle is caused by
- A *Brucella abortus* infection
 - B manganese deficiency in late pregnancy
 - C lupin poisoning after 90th day of gestation
 - D* Akabane virus infection
- 24 Which one of the following signs occurs only in pregnant cows?
- A dry cervical mucosa
 - B fremitus in the middle uterine artery
 - C an enlarged uterine horn with a corpus luteum in the ipsilateral ovary
 - D* foetal membrane slip
 - B enlarged maternal caruncles
- 25 The diagnosis of pregnancy in the sow can be assisted by
- A blood gonadotrophin levels
 - B* vaginal biopsy and trans-rectal B-mode ultrasound at 30 days
 - C Doppler instrument at 10 days
 - D foetal membrane slip at 55 days
- 26 Total sperm count is related to testicle size. Which of the following parameters gives the **BEST** guide to total sperm count?
- A scrotal circumference multiplied by length of testicles
 - B* the greatest scrotal circumference with the testes held side by side in the scrotum
 - C the diameter of both testicles added together
 - D the diameter of the scrotum
- 27 The laboratory test used to diagnose anthrax in a cow which has just died suddenly is
- A* stain of a blood smear taken from a peripheral blood vessel
 - B culture of faeces
 - C a complement fixation test
 - D culture of material obtained from the spleen
 - E total blood cell count

- 28 Which one of the following methods of diagnosis would you use to identify cases of ovine brucellosis in rams if only one method was permitted?
- A palpation of the scrotum and contents
 - B cytological examination of semen
 - C bacterial examination of semen
 - D* complement fixation test
 - E biopsy of testicle
- 29 Which one of the following strategies can be used **MOST** effectively in the final stages of a campaign to eradicate Swine Fever (hog cholera) from a pig population?
- A ceasing feeding garbage to pigs
 - B* slaughter of infected herds
 - C vaccination with serum-virus vaccine
 - D vaccination with inactivated virus vaccine
- 30 *Salmonella typhimurium* may cause septicaemic disease in young chickens. The disease can be **BEST** controlled by
- A vaccination of breeders
 - B* good hygiene in the collection and handling of eggs at the breeder farm and hatchery
 - C treatment of chickens for the first 3 weeks of life with an antibiotic drug
 - D vaccination of all breeders and hatchlings
 - E fresh infected meat
- 31 Long distance spread of the infective agent down-wind, without the assistance of insect vectors, is characteristic of
- A contagious bovine pleuropneumonia
 - B* foot and mouth disease
 - C African Horse Sickness
 - D Mycotic dermatitis (*Dermatophilus congolensis*)
- 32 In a well managed, well fed dairy herd the proportion of cows showing oestrus by 60 days after calving will be approximately
- A* 90%
 - B 50%
 - C 70%
 - D 100%
- 33 It is generally regarded that the minimum time to allow a dairy calf to stay with its dam to ensure a passive transfer of antibodies in the colostrum is which one of the following
- A 2 hours
 - B* 12 hours
 - C 2 weeks
 - D 2 months

Paper 3: PUBLIC HEALTH AND PATHOLOGY

- 34 Humans occasionally become infected with the liver fluke *Fasciola hepatica*. Infection can usually be traced to ingestion of
- A undercooked ruminant liver
 - B snails
 - C* watercress
 - D undercooked tripe
 - E ruminant faecal contamination

- 35 Infection with *Dirofilaria immitis* in humans takes the form of
- A* localised pulmonary infarct
 - B severe cardiac insufficiency
 - C acute hypersensitivity
 - D renal insufficiency
 - E hepatic related illness
- 36 *Brucella abortus* can be transmitted from cattle to farmers in many ways. The **MOST** likely is
- A percutaneous infection from unpasteurised milk
 - B* percutaneous infection after handling aborted fetuses/uterine discharges etc
 - C inhalation of infective droplets
 - D conjunctival exposure
 - E ingestion of meat from infected animals
- 37 A telangiectasis is a
- A haematoma
 - B cavernous angioma or tumour of newly formed blood vessels
 - C* mass of dilated previously existing blood vessels
 - D cancer metastasis
 - E small abscess
- 38 Aujeszky's disease (pseudorabies) virus is
- A caused by a rhabdovirus morphologically similar to but antigenically distinct from rabies virus
 - B* unusual among herpes viruses in having a wide host range
 - C a form of inclusion body rhinitis, although in young pigs it may cause a generalized fatal illness
 - D effectively controlled in most parts of the world, including Australia, by modified live virus vaccines
- 39 Equine Viral Abortion
- A is caused by equine rhinovirus
 - B occurs in early pregnancy
 - C is diagnosed by the presence of intracytoplasmic inclusion bodies in foetal hepatocytes
 - D* is caused by a herpes virus that also causes respiratory disease
- 40 *Toxocara canis* eggs in fresh dogs' faeces are
- A thin shelled, unembryonated
 - B thin shelled, embryonated
 - C* thick shelled, unembryonated
 - D thick shelled, embryonated
- 41 Following infection of cattle, *Dictyocaulus viviparus* larvae reach the lungs via
- A intestine, portal vein, liver, heart, lung
 - B intestine, abdominal cavity, liver, heart, lung
 - C* intestine, lymphatics, mesenteric lymph nodes, thoracic duct, heart, lungs
 - D intestine, abdominal cavity, thoracic duct, heart, lungs
- 42 The stable fly *Stomoxys calcitrans*
- A causes cutaneous myiasis
 - B* causes worry due to its painful bite
 - C bites only horses
 - D transmits *Strongylus vulgaris* infection

- 43 The combination of results likely to be found in rumen overload is
- A high rumen pH and high plasma P
 - B low plasma P and low packed cell volume
 - C low rumen pH and high plasma Na
 - D* low rumen pH and high plasma lactate
 - E low rumen pH and high plasma K
- 44 A test which is useful for confirming a diagnosis of acute hepatic necrosis is
- A serum creatine phosphokinase
 - B serum lipase
 - C urinary bilirubin
 - D* serum sorbitol dehydrogenase
 - E serum transpeptidase
- 45 Autopsy findings of uniformly pale, slightly swollen kidneys would be **MOST** consistent with
- A interstitial nephritis
 - B pyelonephritis
 - C* nephrosis
 - D renal neoplasm
 - E embolic nephritis
- 46 The primary pathological lesion produced by *Brucella ovis* infection in rams is
- A seminal vesiculitis
 - B* epididymitis
 - C orchitis
 - D balanoposthitis
 - E urethral rupture
- 47 In the central nervous system, oligodendroglia are primarily concerned with
- A initiation of nervous impulses
 - B regulation of fluid and electrolyte balance
 - C* formation and maintenance of myelin
 - D phagocytic activity
 - E transport of toxins
- 48 The characteristic muscle lesion of blackleg (*Clostridium chauvoei*) is
- A* hemorrhagic myositis
 - B degenerative myopathy
 - C muscular hypertrophy
 - D intestinal oedema with no muscle lesion
 - E reduction of muscle volume
- 49 Severe inflammation of hair follicles resulting in alopecia, crust formation and secondary infections in the dog, is characteristic of
- A dermatophilus infection
 - B* demodex infestation
 - C sarcoptic mange
 - D hyperadrenocorticism (Cushing 's Syndrome)
 - E contact hypersensitivity

- 50 Fatty change mainly affects the
- A nucleus
 - B* cytoplasm
 - C nucleolus
 - D mitochondria
 - E endoplasmic reticulum
- 51 The **MOST** important method of spread of *Brucella abortus* among cattle is
- A* ingestion
 - B passive venereal transfer or passive sodomy
 - C placental
 - D respiratory
- 52 Which one of these findings would be of greatest assistance in establishing a diagnosis of enterotoxaemia in a sheep found dead?
- A a fibrin clot in the pericardial sac and autolysed kidneys
 - B many large gram negative rods arranged singly in smears of the mucosa of the small intestine
 - C severe acute pulmonary oedema
 - D* *Cl. perfringens* type D toxin in the small intestine as determined by mouse inoculation tests
- 53 Which one of the following organisms is frequently isolated from lesions resembling tuberculosis in the submaxillary lymph nodes of pigs?
- A *Streptococci Group E*
 - B *Staphylococcus aureus*
 - C *Pasteurella multocida*
 - D* *Rhodococcus* (*Corynebacterium*) *equi*
- 54 Sleepy foal disease is an acute highly fatal septicaemia of new born foals characterised by kidney micro abscesses. The causative organism is
- A* *Actinobacillus equuli*
 - B *Rhodococcus* (*Corynebacterium*) *equi*
 - C *Streptococcus equi*
 - D *Salmonella typhimurium*
 - E *Escherichia coli*
- 55 Infectious avian encephalomyelitis virus causes disease with nervous signs in domestic fowl
- A* 1 - 4 weeks of age
 - B 12 - 18 weeks of age
 - C older than 25 weeks
 - D of any age provided that they are not immune
- 56 *Psoroptes equi* causes
- A* sensitivity about the ears
 - B severe pruritis
 - C uneasiness and foot stamping
 - D a skin lesion characterised by exudate and scab formation

Appendix B: New Zealand National Veterinary Examination process

