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VETERINARY SCIENCE
CANDIDATES' INFORMATION HANDBOOK
AUGUST 2011

Australasian Veterinary Boards Council Inc.
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INTRODUCTION

The National Veterinary Examination (NVE) is designed to assess, for registration purposes, the veterinary knowledge and clinical competences of overseas qualified veterinarians whose veterinary qualifications are not recognised by State or Territory Registration Boards.

The MCQ examination focuses on basic and applied veterinary knowledge across a wide range of topics. The Final (clinical) examination also assesses clinical competence in addition to the understanding and application of veterinary knowledge.

The National Veterinary Examination (NVE) is based on the competences of the veterinary profession as benchmarked against Australian graduates.

The range of topics covered in the NVE is based on the curricula of Australian veterinary schools with an emphasis on the circumstances common in Australia.

The NVE Board of Examiners ensures that the format and content of the NVE examinations are consistent with undergraduate veterinary courses and the standard of examinations in Australian veterinary schools. Members of the Board have broad expertise over the full range of disciplines covered in the NVE examinations.

1. ASSESSMENT PROCEDURE

The assessment procedure consists of four separate components:

1. an **Eligibility Assessment**, which is carried out by AVBC to assess whether the applicant is eligible to sit the NVE (written and clinical components);
2. an **Occupational English Test (OET) OR International English Language Testing System (IELTS)** for applicants whose native language is not English;
3. a **Preliminary Examination** consisting of three papers, set in English, in multiple choice question (MCQ) format, held in Australia and overseas; and
4. a **Final Examination** in clinical veterinary medicine and surgery conducted in English once per year over several days and only in Australia. The Preliminary Examination must be successfully completed before the Final Examination is attempted.

2. EXAMINATION PROCEDURES

2.1 Eligibility Assessment

Before enrolling candidates for the Preliminary Examination, the AVBC assesses their eligibility to sit for the NVE. You are eligible to sit the examination if you:

1. hold a degree or diploma awarded after at least four years of study at a 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; and

2. are registered, licensed or eligible to be recognised as a veterinarian of good standing in the country in which you studied or worked.

2.2 English Language Assessment

Native speakers of English born and educated in the UK, Ireland, Canada, USA, New Zealand and South Africa may apply for exemption from the English language assessment requirement. Candidates should seek this exemption in writing, with supporting evidence of high levels of competency in all aspects of the English language, at the time of applying for assessment of their eligibility to undertake the NVE examination process.

Applicants whose native language is **not** English must pass the Occupational English Test (OET) before commencing the Preliminary Examination. The OET is administered by Centre for Adult Education (CAE) Australia. The test includes written, listening, reading and speaking sections and is held in Australia and overseas. A candidate must pass the OET with a B Pass or higher in all sections to satisfy the English language requirement or gain an exemption from the OET, before proceeding to the Preliminary Examination.

The International English Language Testing System (IELTS) examination is an alternative to the OET. It must be completed with a score of at least a 7 in each section in the academic (not the general) module.

Should you fail to achieve the required standard in either of these examinations, you must re-sit the entire examination. The Board of Examiners does not permit re-sits of sub-sections of the examination.

Information about applying for the OET or IELTS can be obtained from the leaflet "Veterinary Science in Australia" available from the AVBC website.

The currency of a pass on the OET/IELTS test will be two years. The test must be re-taken after that time. In the case of a candidate continuously living and working in an approved English-speaking country (listed in paragraph 1 of section 2.2 of the Handbook), the requirement to re-test may be waived by the Board of Examiners provided the candidate can provide sufficient evidence to establish that English skills have been maintained, and that the previous test satisfies current standards.

2.3 Preliminary Examination (MCQ)

A candidate must sit the Preliminary MCQ examination within the period of validity of the English results (either OET or IELTS), that is, two years. Subsequent attempts at the Preliminary Examination must also be within the validity period of the English test. This can be either by re-sitting the test to current standards or by re-validating a previous test (which satisfies current standards).

The Preliminary Examination, consisting of multiple choice questions, may be undertaken in any of the State or Territory capital cities and in some larger regional centres. For those applicants who live overseas, venues may be organised in some countries from time to time.

The Preliminary Examination is normally held during the first week of March and September each year. All three papers must be completed in the one examination session which is held over 2 days. Once successfully completed, the candidate must attempt the Final (clinical) examination within 2.25 years of sitting the Preliminary Examination.

2.4 Final Examination (Clinical)

The Final Examination is only conducted in Australia in November each year. You **must** pass the Preliminary Examination to be eligible to sit the Final Examination. Applicants whose native language is not English should ensure that they maintain a high level of English language competence in preparation for this examination.

The Final Examination must be completed within five years of passing the Preliminary Examination or the candidate will be required to re-start the NVE process.

If you are eligible to sit the Final Examination but are resident overseas, you may be able to obtain an appropriate short-stay temporary visa to enter Australia for the purpose of sitting the examination. For further details concerning visa issues, please contact your nearest Australian Embassy, High Commission, Consulate or the Department of Immigration and Citizenship.

2.5 Selection criteria for places in the clinical examination

The Clinical Examination can normally only accommodate groups of eight candidates. If a candidate falls outside a group of eight then they would generally have to wait for the next available examination.

In the event of oversubscription, the Board of Examiners would give priority, in the following order, to candidates who:

1. Have not yet sat the clinical examination due to lack of a place once; or have failed the clinical previously but have been unable to secure a place twice
2. Have passed the MCQ on the first attempt (ranked on basis of MCQ results) and are making their first application for the clinical examination
3. Have passed the MCQ after more than one attempt (ranked on basis of MCQ results) and are making their first application for the clinical examination
4. Have failed the Clinical examination and been declined a place once
5. Have failed the Clinical examination and are making their first application to re-sit
6. Have been formally referred by VCNZ under the agreement between VCNZ and AVBC to examine clinical candidates from either New Zealand or Australia in the event of oversubscription in either country
7. Are NZ residents or are transferring from the NZNVE process

If the number of applicants with the **same priority ranking** exceeds places available, in all cases the final decision to offer a place will be made on the basis of MCQ examination results.

2.6 Certificate

Following the successful completion of the OET/IELTS (if required), Preliminary and Final Examinations, you are eligible to receive a Certificate issued by the AVBC. The Certificate in Veterinary Science entitles you to apply for full registration in any State or Territory in Australia. You should present this Certificate to the Veterinary Board in the State or Territory in which you intend to register. The addresses of the Boards are given at the end of this booklet (see Appendix B).

3. APPLICATION PROCEDURES

3.1 Outline of Procedures

You need to apply to AVBC for an Eligibility Assessment of qualifications. Forms are available on the AVBC website or from the AVBC office.

When you enrol in the NVE you will be given a copy of the “Rules of Conduct” for the NVE. These relate to the Preliminary and Final examinations, and outline your responsibilities and obligations as a candidate.

If you are assessed as eligible to undertake the NVE process you will be sent an application for the Preliminary Examination (MCQ), together with an information package to assist you in your preparations for the examination.

If you are assessed as eligible, but you are required to undertake an English test, you will be sent an application for the Preliminary Examination (MCQ) and information package **after** you provide evidence that you have passed the English test.

Once you successfully pass the Preliminary Examination (MCQ), you will be sent a similar application form for the Final (Clinical) Examination and documentation to assist your preparation.

3.2 Closing date for applications

The closing dates for the acceptance of applications to sit the Preliminary Examination are **1 December** (for the March examination) and **1 July** (for the September examination). Late applications will **not** be considered.

The closing date for the Final Examination, which is held in November, is **1 September**. Candidates sitting the September Preliminary Examination (MCQ) are given due consideration if their application form is late as a consequence of their awaiting Preliminary Examination results. Precise dates can be obtained from the AVBC Office on (03) 9620 7844 or by e-mailing nve@avbc.asn.au

4. EXAMINATION FEES

4.1 Fees Payable

All fees are payable in advance by candidates attempting the examination. The session fees can be obtained from the AVBC website or by contacting the AVBC Office on (03) 9620 7844. **Each fee allows only one attempt at each examination.** If you are allowed to sit again, a separate application to sit the examination must be completed and another examination fee paid.

Cheques/money orders should be in Australian dollars made payable to the "AVBC Inc". If you are resident overseas this fee **must** be paid as a bank draft or bank cheque and **must** nominate an Australian bank on it. Payment by direct transfer or credit card is also available.

4.2 Withdrawal Fees

Once you have applied and been accepted for a particular examination session, withdrawal from the examination session will result in a cancellation fee. Concerning the Preliminary Examination, if notice of the withdrawal is received at least four weeks prior to the examination, a **cancellation fee of \$AUD500** will apply and this will be deducted from the amount of examination fee to be refunded. The examination fee will be forfeited altogether if the withdrawal is made less than four weeks prior to the examination, unless a medical certificate is provided in which case the \$AUD500 cancellation fee will apply.

Concerning the Final Examination, withdrawal before 1 October will result in a cancellation fee of \$500. Withdrawal after 1 October will result in the total fee being forfeited.

Withdrawal from the OET/IELTS would need to be discussed with CAE or the organisers of IELTS.

5. PRELIMINARY EXAMINATION (MCQ)

5.1 Nature of the Preliminary Examination

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

Recent results indicate that some candidates need to take greater care in preparing for the examination by studying more broadly and in greater depth. Many of the questions test clinical judgement or the ability to use specific knowledge. Candidates should attempt to analyse each question thoroughly before giving their answer.

5.2 Number of attempts at the Preliminary Examination

There is no limit on the number of attempts that can be made at the Preliminary Examination. However, subsequent attempts must be within the validity period of the English test as outlined in section 2.2 of the Handbook.

5.3 General Information on the Preliminary Examination

The examination is conducted over two days and under strict supervision. Candidates will be provided with all material 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.

There are three papers:

Paper 1: Companion Animals (eg. dogs, cats, horses, miscellaneous small animals);

Paper 2: Agricultural Animals (eg. cattle, sheep, goats, poultry, pigs and camelids); and

Paper 3: Public Health and Pathology.

TOPIC GUIDE TO THE PRELIMINARY EXAMINATION (MCQ) (note: these are approximate figures 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

Each paper has 100 questions and you have two hours to complete each paper. The papers contain questions covering the following areas of veterinary work:

Paper 1: Companion Animals

Clinical medicine and surgery of dogs, cats, horses and miscellaneous small animals, including:

- a) Clinical medicine and surgery of the following body systems:
 - gastrointestinal system including associated organs eg 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.
- b) General medicine and surgery, radiography and anaesthesiology.
- c) Reproduction of dogs, cats and horses.

Paper 2: Agricultural Animals

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

- a) Clinical medicine of the following body systems:
 - gastrointestinal including associated organs eg 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.
- b) General medicine and surgery of agricultural animals.
- c) Reproduction of cattle, sheep, goats, poultry and pigs.
- d) Flock and herd (diseases of cattle, sheep, pigs, poultry and other animals).
- e) 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:

- a) Public Health (Zoonoses & Food Hygiene)
- b) Microbiology and Parasitology
- c) 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 newly born.
- d) Infectious diseases of cattle, sheep, goats, pigs, horses, dogs, cats, and poultry.
- e) Parasitic diseases of cattle, sheep, goats, pigs, horses, dogs, cats and poultry.

5.4 Sample Examination Item

The following sample question is intended to give an indication of the format of the examination. It does not represent the degree of difficulty nor scope of any part of the examination. You should note 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 acetoanaemia (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 please refer to Appendix D.

Please note that marks are **not** deducted for incorrect answers so be sure to attempt all questions.

5.5 Pass Mark for the Preliminary Examination

Results of the Preliminary Examination are sent in writing within eight weeks. Please note that no results are given by telephone.

The pass mark for each paper is 60% and this is standardised to reflect the difficulty of the questions included. The data on the difficulty of the questions is derived from trial testing the questions on Australian veterinarians and students. This means that the raw score out of 100 for each paper will be multiplied by a standardising factor.

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 in the event that you fail the Final Examination, you will be required to re-sit the Preliminary Examination.

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

6. FINAL EXAMINATION (Clinical)

6.1 Nature of the Final Examination

You can only take this exam after you have passed the OET or IELTS to the current standard required by the AVBC and it is still current or re-validated (see section 2.2). You also need to have passed the Preliminary Examination.

This examination is in twelve parts, each taking between one and two hours. There will usually be two examiners present for each part. There may also be an observer from AVBC present for some parts. Depending on the number of candidates, the whole test takes from four to five days to complete.

All subjects are examined at a level based on the competency standards of the veterinary profession as benchmarked against Australian graduates.

The Final Examination is held at an Australian veterinary school (in recent years, at the University of Queensland). It is the candidate's responsibility to arrange and meet all costs for accommodation and travel. You will be required to bring a white coat, coveralls, gumboots, clinical thermometer and stethoscope to the Final Examination.

6.2 General Information on the Final Examination

In this examination you will be expected to show manipulative skills, demonstrate competencies, to make observations and interpret them.

It covers the following areas:

- Knowledge of management systems used in the care of Australian 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 (eg the handling of pigs);
- Diagnostic skills including making a clinical examination, interpretation of post mortem specimens, applying field tests in clinical pathology and the collection and delivery of specimens to the laboratory.
- Some knowledge of the common poisonous plants is expected;
- Clinical therapeutics including the drugs used for the common diseases, techniques used in treatment and the legislation concerning scheduled 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.

The examination tests your knowledge of disease and animal management under Australian conditions at a level that will allow you to practise effectively in Australia. In some of the sections you may be given a series of clinical signs, and you will be asked for a differential diagnosis. You need to be prepared to explain why you have come to a particular diagnosis. You will be expected to know specific information but it is not simply an exercise in fact recall. You may be expected to work through problems just as you would in veterinary practice.

You will not be expected to know the fine details of local legislation, uncommon drugs, exact dose rates or local names for plants, bacteria or parasites.

Section 1: Companion Animal Medicine

You will be expected to clinically examine a companion animal (*ie* dog or cat) and work through case-studies and slides with the examiners.

This examination consists of three components:

- Clinical examination of a preselected body system on a dog or cat. You will be expected to explain the parameters you are checking in your examination.
- You will be given one or more laboratory reports produced from samples taken from a clinical case. After your assessment of the results, you will be asked to discuss their importance or relevance and how they might assist in deciding the possible diagnoses and outcomes to treatment.
- Discussion on one or more case histories. 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 2: Food Animal Medicine & Surgery

(a) Cattle

(b) Small Ruminants

You are expected to work through case-studies and slides with the examiner. The examination will include segments on cattle and small ruminants covering medical and surgical conditions of general body systems of food animals.

Section 3: Food Animal Medicine - manipulative procedures

(a) Cattle

This is a practical hands-on session. You will be asked to perform a number of procedures commonly used in cattle medicine.

NOTE that manual pregnancy testing per rectum is regarded as an important skill in cattle practice and it will be given extra weighting. A time limit of approximately 10 - 15 minutes will normally be applied to allow candidates time to demonstrate competence in other procedures.

A list of basic cattle manipulative procedures to be tested in the Food Animal practical session will normally 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 anaesthesia;
- Lifting and restraining a cow's front or back leg;
- Aseptically collecting a milk sample.

But may also include:

- 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 obstetric procedure.

(b) Small ruminants - sheep, goats

This is a practical hands-on session. You may be asked to perform a number of procedures commonly used in sheep or goat medicine. A list of basic sheep or goat manipulative procedures to be tested in the food animal practical session will include being asked to observe and examine a number of sheep or goats in a small yard. As well you may be asked to:

- catch and carry out a clinical examination on a sheep or goat;
- take temperatures;
- collect a jugular blood sample;
- examine mouth and teeth;
- discuss significance of 'daggy' tail;
- examine feet and use searcher knife to check for footrot;
- take faecal sample for culture;
- palpate several rams' testicles and discuss findings.

Section 4: Food Animal Medicine & Production - Intensive

(a) Pigs

(b) Poultry

Australia has intensive pig and poultry farms which require you to have a basic working knowledge of industry practices. While individual animals have an importance from a disease control point of view, the main objective is to achieve high productivity in a cost-effective manner whilst maintaining healthy pigs and poultry.

You will be expected to understand basic husbandry procedures concerning:

- disease control within these intensive animal production establishments;
- quarantine in the event of disease outbreak;
- factors which affect production costs;
- epidemiological principles of disease prevention, control and eradication.

You will be expected to work through case studies and slides on pig and poultry diseases with an examiner.

Section 5: Equine Medicine & Surgery

This is an oral examination dealing with clinical cases covering surgical and medical diseases of horses. You will work through case studies and clinical case slides with the examiners.

You may be asked questions on

- all the body systems
- clinical cases
- radiographs and on radiation safety
- surgical instruments and techniques
- diagnostic aids used in horses
- test results, blood and serum analysis for clinical cases
- when to make referrals and correct procedures to use

Section 6: Equine Clinical Skills

This is a practical session. You will be asked to catch a horse in a stable or small yard and put on a bridle or head collar.

You will be asked to identify parts of the horse's surface anatomy. You will also be required to write a report and identify a horse on a certificate provided.

You will be expected to carry out some of the following manipulative procedures:

- Catch and put a halter on a horse;
- Conduct clinical examination, take temperature;
- Simple test to check dehydration;
- Take blood sample for the racing panel;
- Examine the horse's mouth and assess teeth condition;
- Check the eyes- without ophthalmoscope, or with an ophthalmoscope;
- Simulate how to correctly and safely apply a twitch to nose or ear;
- Demonstrate neck grip to give injection;
- Indicate injection sites for IM injection;
- Pick up horse's foot/feet;
- Demonstrate use of hoof testers.

The session may also include:

- Anaesthetics and tranquillisers used in horses;
- Positioning of horse and equipment for radiography;
- Abdominal paracentesis;
- Palpation of larynx;

- Indicate injection sites to block:
 - (i) regional nerves to legs and feet
 - (ii) motor nerves to the eye
 - (iii) sensory nerves to the eye

You may be asked to demonstrate the use of other equipment used in general practice.

Section 7: Companion Animal Surgery

You may be asked to:

- discuss anaesthetic and tranquillising agents
- work through clinical surgical case studies
- discuss various surgical techniques
- discuss various instruments and their usage
- interpret radiographs and techniques
- answer questions on radiation safety

Section 8: Reproduction - All species

You may be asked to discuss reproductive and productive strategies for breeding farms for all domestic animals, as well as cats and dogs, and discuss case studies of reproductive problems. You will also be expected to know some basic anatomical and physiological theory.

You may also be asked to

- examine an animal's reproductive system
- examine preserved specimens of a reproductive tract
- be familiar with obstetrical instruments
- perform a simple obstetrical procedure

Section 9: Pathology & Clinical pathology

The examination will assess practical ability as well as theoretical knowledge. A series of questions will be presented related to the pathological, parasitological and microbiological specimens. You will be allowed a specific time to examine each specimen and must move on to another specimen on the time signal.

The format for this examination involves static displays of gross and microscopic pathology specimens, as well as parasitological and microbiological specimens, with a time limit for the candidate at each station.

The candidate will have to provide written answers to questions regarding these display specimens at each station. In addition there may be case based questions which focus on analysis of clinical pathology/laboratory data.

This examination is designed to assess your ability to recognize abnormalities and the pathology of common diseases of all species, identify artefacts and establish a provisional diagnosis.

The specimens consist of some or all of the following:

- colour photographs of gross material;
- fresh abattoir specimens (**Note:** to ensure that each candidate will be provided with specimens in the same condition, handling or dissection of the specimens will not be permitted);
- microbiological specimens, in the form of stained smears, or cultures of common veterinary pathogens plated onto routine media and incubated overnight; and
- stained histological sections, a cytological smear and a blood film, set up on binocular microscopes, of common pathological conditions in domestic species, together with relevant laboratory medical data.

The disease conditions will cover as wide a range of domestic species as possible, including birds, as well as companion, agricultural and farm animals.

Section 10: Preventive and National/State Regulatory Medicine

The candidate will be expected to be able to discuss preventive medicine and National/State regulatory veterinary medicine as it operates in Australia. The areas that will be covered are the various disease control programs currently operating in Australia, and those that would be implemented if an emergency disease were to be diagnosed in Australia.

The candidate will be expected to understand the principles of disease control within a population, and apply the epidemiology of different diseases to control programs. They should understand diagnostic test characteristics and be able to calculate and explain sensitivity and specificity when given a simple two-by-two table. They will be expected to understand the principles of Australia's quarantine system and discuss reasons why Australia may choose to eradicate an exotic disease.

Candidates will be expected to discuss (including zoonotic aspects and differences in approach) exotic and endemic diseases of importance to Australia. They will need to outline the necessary steps to be taken by a veterinarian if these conditions are suspected, and principles of control or eradication. These include, but are not limited to:

a) Exotic diseases:

- Foot and Mouth Disease
- African Horse Sickness
- Screw worm fly
- Swine Fever
- Newcastle Disease or Avian Influenza
- Equine influenza
- Rabies

- African Swine Fever
- Tuberculosis
- Bluetongue
- Bovine Spongiform Encephalopathy

b) Endemic diseases:

- Anthrax
- Johne's Disease
- Sheep Footrot
- Strangles
- Hendra virus
- Leptospirosis

The candidate will be expected to be able to discuss:

- scheduling of veterinary drugs and agricultural chemicals;
- reporting adverse drug experience to the Australian Pesticides and Veterinary Medicines Authority;
- withholding periods for veterinary drugs, and agricultural and veterinary chemicals;
- significance of residues of veterinary drugs and agricultural and veterinary chemicals;
- legal requirements for the use of animals for scientific purposes;
- animal welfare legislation as applied to veterinarians.(Queensland legislation to be used as the model);
- legislation and codes of practice that apply to the veterinary profession in Australia.

Consult the resources pages of the Handbook for useful references.

Section 11: Practical Anaesthesia

You will be asked to:

- comment on various types of small anaesthetic machines
- carry out an inspection on one anaesthetic machine to check if it is correctly assembled
- carry out pre-use check for gas leaks and correct connections

You will be required to carry out a thorough clinical examination and assessment on a companion animal as to its suitability for anaesthesia.

You will be informed of the animal's weight.

You will have a choice to indicate a suitable anaesthesia procedure.

You will calculate the required dosage in consultation with the examiner, and carry out the anaesthesia to the point where the animal is stable under the anaesthetic process. All steps in the process are monitored by the examining anaesthetists.

Section 12: Practical Small Animal Surgery

You are asked to perform a common surgical procedure such as an ovariohysterectomy or cystotomy using full aseptic surgical procedures. Assessment is made on:

- aseptic preparation of both surgeon and patient;
- surgical technique;
 - (i) tissue handling and haemostasis
 - (ii) instrument dexterity and competence
 - (iii) suture selection and knot security
 - (iv) overall appreciation for reason for time restraint for surgery
- knowledge of surgical anatomy; and
- 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 – this may include a written discharge instruction sheet to the owner.

Note: Sections 11 and 12 are usually combined and can take up to 3 hours in total.

If the surgery component takes more than 2 hours, the examiners may terminate the examination on humane grounds due to animal welfare concerns.

6.3 Pass Marks for the Final Examination

Each of the twelve sections of this examination is marked as a pass or fail. There are three result categories in the final examination:

- (a) PASS, a pass in all sections is required;
- (b) SUPPLEMENTARY, where at least eight sections are passed. The failed sections must be re-taken at the **next available** examination session; and
- (c) FAIL, where fewer than eight sections are passed. The next attempt must be taken at the next available examination session and be within five years of achieving a pass in the Preliminary Examination.

NOTE: Any candidates who fail one subsection (a) or (b) in Section 3 or 4 will only be required to re-sit that specific subsection.

6.4 Number of Attempts at the Final Examination

If a candidate for the Final (Clinical) Examination has not been successful in two attempts, further attempts must be approved by the Board of Examiners. The candidate will be required to provide evidence that they will, or have undertaken appropriate activities that will enhance their veterinary knowledge and experience. In making an application for approval to the Board of Examiners, the candidate must endeavour to maintain proficiency in all areas covered by the Final examination.

If a candidate were to fail a supplementary examination, only one more attempt at that supplementary exam will be granted. If the candidate fails the second attempt at a supplementary exam then the candidate will have to repeat the entire final clinical examination and would have to abide by the rules of the clinical examination including time limits, validation of English proficiency, and the terms of a conditional pass.

The Final Examination must be completed within five years of passing the Preliminary Examination otherwise the candidate will be required to re-start the NVE process.

7. EXAMINATION RESULTS

The results of the Preliminary and Final Examinations will usually be made known to you formally by mail from AVBC within six to eight weeks of the date of each of these examinations.

8. APPEALS

AVBC will consider appeals where a candidate has been prevented by circumstances from performing in an examination at their true level. If you believe you have grounds for appeal against the process in any section of the NVE Preliminary or Final Examination, an appeal can be made to AVBC. Before making an appeal, you should contact the Executive Officer of AVBC on (03) 9620 7844.

Appeals should be submitted in writing, giving the grounds for the appeal and any other relevant information. An appeal must be submitted within 28 days of notice of examination results. A fee for lodging an appeal will be applied. Further details concerning the guidelines on Counselling and Appeals are available from the Executive Officer.

If you have particular difficulties on the day of the examination, such as sickness, please tell the supervisor or the chief examiner, and then write with supporting evidence, immediately after the exam, to the Executive Officer at the address below. In the case of sickness, a medical certificate must be obtained and included.

Executive Officer
Australasian Veterinary Boards Council Inc (AVBC)
Level 8, 470 Collins Street
MELBOURNE VIC 3000
Tel: (03) 9620 7844

PRIVACY STATEMENT

AVBC Inc. Is committed to protecting your privacy. Your personal information will not be disclosed to a third party with the exception of providing your information to the providers of the examinations or Australian Veterinary Registration Boards. The information provided will include contact details, results of previous examinations and where qualifications were undertaken. The AVBC Inc. will not disclose your information to other state institutions and authorities except if required by law or other regulation. We have implemented technology and security policies, rules and measures to protect the personal information that AVBC Inc. has under its control from unauthorized access, improper use, alteration, unlawful or accidental destruction and accidental loss. AVBC Inc. will remove personal information from our systems where it is no longer required.

9. READING LIST

Please note that the AVBC is unable to provide you with these texts or to act on your behalf in their purchase.

The Preliminary and Final Examinations are set on the assumption that you have undertaken some reading revision. The following lists have been compiled to help you in that regard. The most recent edition at the time of publication has been listed. If this is not available it is appropriate to use an older edition but this may not contain information that is current.

If the Preliminary Examination is attempted overseas, the list may be unavailable. You should then consult a school of veterinary science in your country for equivalent texts.

KEY REFERENCES

Andriessen, E.H, *Meat Safety Quality and Veterinary Public Health in Australia*, 8TH Ed, 2006

Animal Health Australia, *Accreditation Program for Australian Veterinarians: initial accreditation training program*, 2003 (available from the AVBC)

Bowman, D.D., *Georgi's Parasitology for Veterinarians*, 8th Ed, 2003

Carter, G.R. & Wise, D.J., *Essentials of Veterinary Bacteriology and Mycology*, 6th Ed, 2004

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

Fubini, S.L. & Ducharme, N., *Farm Animal Surgery*, 2004

Jones, T.C., Hunt, R.D., & King, N.W., *Veterinary Pathology*, 6th Ed, 1997

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

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

Robinson, N.E., *Current Therapy in Equine Medicine* 5, 5th Ed, 2003

Saif, Y.M., Barnes, H.J. et al (eds), *Diseases of Poultry*, 11th Ed, 2003

Slatter, D.H., *Textbook of Small Animal Surgery*, Vols 1 & 2, 3rd Ed, 2002

Smith, B.P., *Large Animal Internal Medicine*, 3rd Ed, 2002

Thrall, D.E., *Textbook of Veterinary Diagnostic Radiology*, 4th Ed, 2002

Thrusfield, M., *Veterinary Epidemiology*, 3rd Ed, 2005

White, N.A. & Moore, J.N., *Current Techniques in Equine Surgery and Lameness*, 2nd Ed, 1998

Youngquist, R.S. & Threlfall, W.R., *Current Therapy in Large Animal Theriogenology*, 2nd Ed, 2007

GENERAL REFERENCES

Aiello, S.E., *The Merck Veterinary Manual*, Merck & Co., 9th Ed 2005. Also available online at: <http://www.merckvetmanual.com>.

Blood, D.C., Studdert, V.P. & Gay, C.C., *Saunders Comprehensive Veterinary Dictionary*, 3rd Ed, 2006

*Brightling, P. & Blood, D.C., *Multiple Choice Questions in Veterinary Medicine*, 1996

Everist, S.L., *Poisonous Plants of Australia*, Rev Ed, 1981.

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

Saunders Comprehensive review for the NAVLE CD_ROM is available from Elsevier Australia <http://shop.elsevier.com.au>

*may be out of print

Candidates may also consult:

- Australian faculty handbooks or university calendars which indicate the scope of the curricula used in Australian veterinary education. Handbooks or Calendars may be obtained from Australian universities with faculties of veterinary science.
- the Centre for Veterinary Education which has a list of publications on its website www.cve.edu.au
- prominent veterinary periodicals, for information about new treatments. Textbooks can be correct in principle but out of date.
- The following journals may be useful:
 - * Australian Veterinary Journal
 - * Compendium of Continuing Veterinary Education
 - * Australian Veterinary Practitioner
 - * Equine Veterinary Journal
 - * Journal of the American Veterinary Medical Association
 - * Journal of the American Animal Hospital Association
 - * Journal of Small Animal Practice
 - * Veterinary Record
 - * Theriogenology
- APAV manual (Accreditation Program for Australian Veterinarians) which helps to provide an awareness of national regulations, policies and issues in the area of animal health in Australia. This manual can be purchased from the AVBC.

USEFUL WEBSITES

- University of Sydney Veterinary Information Portal <http://vip.vetsci.usyd.edu.au/>
- ANIMAL HEALTH AUSTRALIA www.animalhealthaustralia.com.au
- **Ausvetplan summary document and manuals**
http://www.animalhealthaustralia.com.au/programs/eadp/ausvetplan/ausvetplan_home.cfm
You can download articles and summaries of a wide selection of diseases and disease strategy. These contain excellent descriptions of the diseases. You can also open the "Publications" link to find the annual reports which provide an overview on regulatory, trade and production diseases of livestock.
- **Australian code of practice for the care and use of animals for scientific purposes:**
http://www.nhmrc.gov.au/health_ethics/animal/issues.htm#a1
- **Information on chemical residues and adverse experiences -**
<http://www.apvma.gov.au>

- Standard Uniform Schedule of Medicines and Poisons - <http://www.tga.gov.au/ndpsc/susdp.htm>
- **MIMS IVS Annual** (www.mims.com.au) - contains product and prescribing information for veterinary practitioners and information on withholding periods, export slaughter intervals, adverse experience report forms, and exotic disease outbreak protocols.
[You would have to buy this (AUD108). The information is available on the APVMA site, the VPRBV guideline 6 (for Vic specifics) and via the SUSMP (<http://www.tga.gov.au/ndpsc/susdp.htm>)]
- **Information on Emergency Animal Diseases**
'What are emergency animal diseases?' Queensland Department of Employment, Economic Development and Innovation
http://www.dpi.qld.gov.au/4790_12934.htm
- DISEASES ACQUIRED FROM ANIMALS
<http://www.ascc.gov.au/nr/rdonlyres/8b1a735d-830c-4374-affc-571b19d5e0cb/0/diseasesacquiredanimals.pdf>
- STATE REGISTRATION BOARDS websites (see Appendix B)
You can view the current and relevant Acts and Regulations applicable to veterinarians in each State and Territory
- The Glass Horse www.3dglasshorse.com which illustrates the major anatomical features of the abdominal cavity and demonstrates commonly occurring gastrointestinal tract lesions
- The NAVLE website <http://www.nbvme.org/?id=23&page=Sample+Questions> has sample questions and the answers. Note that the MCQ does not use diagrams or slides.
- The International Veterinary Information Service
www.ivis.org
www.wormboss.com.au
- Food Hygiene and Large animals
www.mla.com.au
www.wool.com.au
- The Veterinary Board review with practice questions (available on CDROM) by Paul Pratt, plus the Mosby series of Review Questions and Answers for Veterinary Boards by Paul Pratt are available on many websites including Borders on-line.
- Saunders Comprehensive review for the NAVLE CD_ROM is available from

- Elsevier Australia <http://shop.elsevier.com.au>
- Veterinary school websites which may contain a detailed description of units of study
 - Centre for Veterinary Education (CVE) www.cve.edu.au. This organization is an excellent resource for further veterinary education
 - NAVLE website for practice questions
<http://nbvme.org/?id=80&page=Practice+Versions-NAVLE>
 - PAVE website for practice questions
<http://nbvme.org/?id=35&page=QE+Sample+Questions>

BRIDGING COURSES

Candidates are responsible for their own individual arrangements for any bridging education that they require.

There are no formal bridging courses currently available but there are other courses offered at some of the accredited Australian veterinary schools. These offer opportunities for NVE candidates to access training in veterinary subjects. These courses are usually **full fee paying**. Candidates should address all enquiries concerning bridging opportunities to the veterinary schools listed in Attachment A in this Handbook.

The University of Sydney Centre for Veterinary Education is a centre for continuing veterinary education. Their mission is to provide world class, unbiased professional development to the veterinary profession. They provide a wide range of professional resources to veterinarians world-wide including 10-month Distance Education programs, week-long major courses, day refresher courses, online Vetbookshop, and research databases. They are a not-for-profit organisation accepting no sponsorship for scientific content, ensuring that this is as unbiased as possible. However, all of their services will incur some cost to candidates. See www.cve.edu.au for more information.

LIBRARY FACILITIES

If you are in Australia you may be able to access the library facilities of the veterinary schools. Please contact the individual libraries. Below is a summary of the current services available to NVE candidates.

● UNIVERSITY OF MELBOURNE

You may become a paying member of the library which entitles you to borrow a certain number of low-use books (those not required by students or staff). The latest editions of texts are not available if required by staff or students but older editions may be available.

Parkville Veterinary Science Library 03- 8344 7353

Werribee Veterinary Science Library 03- 9731 2331

● MURDOCH UNIVERSITY

Any person can use the resources within the library. If you wish to borrow material from the library then you need to join as a community borrower. There is a cost involved. Many of the major texts are kept in a reserve section where they can only be borrowed overnight. Murdoch University Library 08- 9360 2298

● UNIVERSITY OF QUEENSLAND

You may join as a community member. A cost is involved. You may have access to the materials on site but you must be a member to borrow.

Biological Sciences Library St Lucia campus 07- 3346 4384
Gatton campus 07 – 5460 1276

● UNIVERSITY OF SYDNEY

NVE applicants are eligible for community borrower membership. There is a fee involved. This allows you to borrow from any University of Sydney library. There is a limit of 10 items per time.

University of Sydney Library 02- 9351 3775

● CHARLES STURT UNIVERSITY

Wagga Wagga NSW 02- 6933 2334

● JAMES COOK UNIVERSITY

Townsville QLD 07 – 4781 5500

**FACULTIES OF VETERINARY SCIENCE IN
AUSTRALIAN UNIVERSITIES**

Faculty of Veterinary Science
University of Sydney
NSW 2006
Tel: (02) 9351 2222

Website: www.usyd.edu.au

Faculty of Natural Resources, Agriculture
and Veterinary Science
The University of Queensland
Gatton Campus
QLD 4343
Tel: (07) 5460 1834

Website: www.uq.edu.au/gatton

School of Veterinary Science
University of Melbourne
Parkville Campus
VICTORIA 3052
Tel: (03) 9731 2261

Website: www.vet.unimelb.edu.au

School of Veterinary and Biomedical
Sciences
Murdoch University
MURDOCH WA 6150
Tel: (08) 9360 2636

Website: www.murdoch.edu.au

School of Animal and Veterinary Science
Charles Sturt University
Boorooma St
NORTH WAGGA NSW 2650
Tel: 02 6933 4353

Website: www.csu.edu.au

School of Veterinary and Biomedical
Sciences
James Cook University
TOWNSVILLE QLD 4811
Tel: 07 4781 4449

Website: www.jcu.edu.au

AUSTRALIAN VETERINARY SURGEONS BOARDS

NEW SOUTH WALES

Registrar
Veterinary Practitioners Board of NSW
PO Box 6391
ALEXANDRIA NSW 2015

Tel: (02) 8338 1177

www.vpb.nsw.gov.au

VICTORIA

Registrar
Veterinary Practitioners Registration Board of Victoria
Level 11, 470 Collins Street
MELBOURNE VIC 3000

Tel: (03) 9620 7444

www.vetboard.vic.gov.au

QUEENSLAND

Registrar
Veterinary Surgeons Board of Queensland
C/- Department of Primary Industries
GPO Box 46
BRISBANE QLD 4001

Tel: (07) 3239 3600

www.vsb.qld.gov.au

SOUTH AUSTRALIA

Registrar Veterinary Surgeons Board of South Australia
185 Fullarton Rd
DULWICH SA 5065

Tel: (08) 8331 9433

www.vsbsa.org.au

WESTERN AUSTRALIA

Registrar Veterinary Surgeons Board of Western Australia
PO Box 8235
Angelo St
SOUTH PERTH WA 6151

Tel: (08) 9367 4674

www.vsbwa.org.au

TASMANIA

Registrar Veterinary Surgeons Board of Tasmania

PO Box 183

HUONVILLE TAS 7109

Tel: (03) 6239 6823

www.dpiwe.tas.gov.au

AUSTRALIAN CAPITAL TERRITORY

Registrar ACT Veterinary Surgeons Board
Locked Bag 5

WESTON CREEK ACT 2611

Tel: (02) 6205 1700

www.health.act.gov.au

NORTHERN TERRITORY

Registrar Veterinary Board of the Northern Territory
C/- Department of Resources

GPO Box 3000
DARWIN NT 0801

Tel: (08) 8999 2028

www.nt.gov.au/d/vetboardnt

OTHER USEFUL ADDRESSES**NVE Coordinator****Australian Veterinary Boards Council Inc (AVBC)**

Level 8,
470 Collins Street
Melbourne VIC 3000 Australia
Tel: (03) 9620 7844
Email: nve@avbc.asn.au
www.avbc.asn.au

OET- For information about the OET contact:

The OET Centre
GPO Box 372
Melbourne VICTORIA 3001, Australia
Tel: + 61 3 9825 3800
Email: oet@oet.com.au
Website: www.occupationalenglishtest.org

IELTS Subject Officer**University of Cambridge**

Local Examinations Syndicate
1 Hills Road
Cambridge CB1 2EU
United Kingdom
Tel: 01223 553311
Fax: 01223 460278
Email: gutmer.l@ucles.org.uk

**British Council
(IELTS) Enquiries)**

Medlock Street
Manchester
M15 4AA
United Kingdom
Tel: 0161 957 7755
Fax: 0161 957 7762
Email: ed@britcoun.org

The Manager, IELTS Australia

IDP Education Australia
GPO Box 2006
Canberra ACT 2601 Australia
Tel: 61 2 6285 8222
Fax: 61 2 6285 3036
Email: info@idp.com

Australian Veterinary Association

Unit 40, 6 Herbert Street,
St Leonards NSW 2065
Australia
Tel: 02 9431 5000
Fax: 02 9437 9068
Email: members@ava.com.au

SAMPLE MCQ QUESTIONS (NVE)

Please note that the following sample MCQ questions are intended to provide candidates with an example of the type of questions and format used in the MCQ. They do not reflect the degree of difficulty of questions in the exam papers.

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 the series of books published by Mosby titled:

Mosby's Review Questions and Answers for Veterinary Boards ISBN 0-8151-7462-4

Veterinary medicine - United States - Examinations, questions etc
I. Pratt, Paul W. II. Series. Second edition.

The Veterinary Board Review (CD Rom) is also available. See reference under useful websites. **(If the Mosby series is unavailable try Saunders Comprehensive Review for the NAVLE).**

Also try the NAVLE and PAVE websites for more practice questions.

PAPER 1: COMPANION ANIMALS

1. 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

2. 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

3. 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
4. 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
5. 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
6. 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
7. 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

8. A volatile anaesthetic agent which should **NOT** be used with soda lime is
- A* trichlorethylene
 - B ether
 - C chloropane
 - D halothane
9. Carbohydrate is the sole source of energy in the
- A* neurons
 - B myocardium
 - C skeletal muscle
 - D kidney
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 colic in middle aged, obese horses
12. In 'developed' countries where dog populations are controlled, the principal vehicle or 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 iodophors preparation containing 1% free iodine
 - C* Moxidectin pour-on 0.5mg/kg
 - D 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 Aujesky'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
 - E 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
 - E 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
 - E enlarged maternal caruncles
25. The diagnosis of pregnancy in the sow can **BEST** be assisted by
- A blood gonadotrophin levels
 - B* vaginal biopsy and trans-rectal B-mode ultrasound at 30 days
 - C Doppler instrument at 20 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. 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
29. 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
30. 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

31. *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
32. 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*)
33. 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%
34. 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

35. Human beings 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
36. 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
37. *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
38. 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

39. 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
40. 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
41. *Toxocara canis* eggs in fresh dogs' faeces are
- A thin shelled, unembryonated
 - B thin shelled, embryonated
 - C* thick shelled, unembryonated
 - D thick shelled, embryonated
42. 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
43. 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

44. 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
45. 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
46. 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
47. The primary pathological lesion produced by *Brucella ovis* infection in rams is
- A seminal vesiculitis
 - B* epididymitis
 - C orchitis
 - D balanoposthitis
 - E urethral rupture
48. 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

49. 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
50. 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
51. Fatty change mainly affects the
- A nucleus
 - B* cytoplasm
 - C nucleolus
 - D mitochondria
 - E endoplasmic reticulum
52. 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
53. 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 severs acute pulmonary oedema
 - D* *Cl. perfringens* type D toxin in the small intestine as determined by ELISA tests

54. 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*
55. 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*
56. 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
57. *Psoroptes equi* causes
- A* sensitivity about the ears
 - B severe pruritus
 - C uneasiness and foot stamping
 - D a skin lesion characterised by exudate and scab formation