



# Australian and New Zealand College of Veterinary Scientists

## Membership Examination

June 2019

## Veterinary Public Health Paper 1

Perusal time: **Fifteen (15)** minutes

Time allowed: **Two (2)** hours after perusal

Answer **ALL FOUR (4)** questions

Answer **FOUR** questions, each worth 30 marks ..... total 120 marks

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# Paper 1: Veterinary Public Health

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Answer all four (4) questions

1. An abattoir in South Australia slaughters up to 10,000 sheep and 5,000 feral goats every day. There is often only limited information available regarding their origin and health status. As their consultant veterinarian, the abattoir managers have asked you to help them develop a strategy to minimise the risk of exposure of the workers to zoonotic diseases.

Answer **all** parts of this question:

- a) Provide a list of the **five (5)** most likely zoonotic agents that could be expected to be present at an abattoir in South Australia. *(5 marks)*
- b) Construct a risk mitigation plan for the most significant likely zoonosis, covering all workers employed on the plant. Include in your answer the relevant aspects of the organism's epidemiology. *(15 marks)*
- c) The abattoir lies about a kilometre from the local town. Assess the zoonotic risk for the agent most likely to affect the population living there and suggest appropriate measures to minimise the risk to the townspeople. *(10 marks)*

2. Answer **both** parts of this question:

- a) Review and discuss the evidence that feeding antimicrobials to intensively reared production animals contributes to the emergence of antimicrobial resistance in human populations. *(20 marks)*
- b) Residues of food safety concern can significantly impact trade and public confidence. Discuss the management of these risks in Australia or New Zealand. *(10 marks)*

**Continued over page**

3. Answer **both** parts of this question:

a) The World Organisation for Animal Health (OIE) classifies surveillance in a number of ways based on different activities and data sources.

Discuss, using examples, the types of surveillance that can be undertaken for animal diseases. *(15 marks)*

b) Identify and briefly discuss four to five factors identified by the OIE as critical elements of disease surveillance. *(15 marks)*

4. Answer **both** parts of this question:

a) There are a number of ways that 'eradication' can be interpreted in an animal disease context. Explain what these are. *(10 marks)*

b) Discuss briefly the main features of **two (2)** of the strategies of quarantine, slaughter and vaccination, in the control and eradication of exotic diseases. *(20 marks)*

**End of paper**



# Australian and New Zealand College of Veterinary Scientists

## Membership Examination

June 2019

## Veterinary Public Health Paper 2

Perusal time: **Fifteen (15)** minutes

Time allowed: **Two (2)** hours after perusal

Answer **ALL FOUR (4)** questions from **one (1) Elective only - A or B**

**Elective A:** Answer **FOUR** questions, each worth 30 marks ..... total 120 marks

OR

**Elective B:** Answer **FOUR** questions, each worth 30 marks ..... total 120 marks

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# Paper 2: Veterinary Public Health

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## Elective A: Answer all four (4) questions

1. Meat quality and inspection

Answer **both** parts of this question:

- a) Identify where and how meat quality can be compromised during the process of slaughter, from the off-loading of live cattle at an abattoir to the dispatch of cartoned meat. Explain how these quality issues can be controlled or prevented during the entire slaughter process. (20 marks)
- b) Describe the basic aims of ante-mortem inspection and post-mortem examination, and briefly discuss any weaknesses associated with each procedure. (10 marks)

2. Meat preservation

Answer **both** parts of this question:

- a) Explain the principle of meat preservation by canning and describe the critical control point(s) and associated critical limit(s) in the process for *Clostridium botulinum*, a hazard typically associated with these products. (15 marks)
- b) Describe the principles of preservation of uncooked fermented meat (UCFM), and describe the critical control point(s) and associated critical limit(s) in the process for *E. coli*, a hazard typically associated with these products. (15 marks)

**Elective A - continued over page**

3. Hazard analysis and critical control points (HACCP).

Answer **all** parts of this question:

- a) Explain the concept of food hygiene and how it relates to good hygiene practice (GHP) and good manufacturing practices (GMP). (10 marks)
- b) Use the production of beef in an abattoir as an example to explain and illustrate the relationship between GHP, GMP and a HACCP plan. (15 marks)
- c) Explain the strengths and weaknesses of a HACCP plan. (5 marks)

4. On-site factors affecting food borne pathogens

Salmonella is a risk for humans when consuming table eggs and can occasionally be a risk when consuming raw milk. Raw cow milk is not legally available for human consumption in Australia, but it is in New Zealand.

Answer **both** parts of this question:

- a) Compare and contrast the primary prevention factors in a free-range chicken layer unit **and** a raw cow milk dairy farm, that influence the risk of salmonella to the consumer. (20 marks)
- b) Discuss how secondary prevention (post-harvest) is used to control these risks for both. (10 marks)

**End of Elective A**

**Elective B starts on the next page.**

**Do not complete Elective B if you have completed Elective A.**

## **Elective B: Answer all four (4) questions**

1. When laboratory tests are assessed for their utility, they are usually evaluated for four diagnostic attributes: sensitivity, specificity, positive predictive value and negative predictive value.

Answer **all** parts of this question:

- a) Define each of these four attributes of diagnostic tests and explain why the consideration of each of these attributes is important for the correct interpretation of diagnostic tests. *(10 marks)*
  - b) Compare and contrast the impact of these four attributes when laboratory tests are used for diagnosis in suspect disease outbreaks and when they are used in surveillance for the presence of disease in populations. You may use examples (real or theoretical) to illustrate your answer. *(20 marks)*
2. During the international trade of live animals and food commodities, each member government of the World Trade Organisation has the right to take measures necessary to protect human, animal or plant life or health.  
Use examples to explain the key concepts of how this can be achieved under the Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Measures) while still facilitating international trade. *(30 marks)*

**Elective B - continued over page**

3. Discuss the perceived benefits and challenges associated with 'cultured' or 'clean' meat. Include in your answer the main regulatory challenges presented by synthetically produced meats. *(30 marks)*
  
4. The application of the geographical information system (GIS) has gained increasing attention within veterinary science.

Answer **both** parts of this question:

- a) Explain how data are collected and stored in the GIS. *(10 marks)*
  
- b) Identify and discuss the main advantages and disadvantages of using GIS as a disease investigation tool. *(20 marks)*

**End of Elective B**

**End of Elective Paper**