



# Australian and New Zealand College of Veterinary Scientists

## Membership Examination

June 2018

## Avian Health (Poultry)

## Paper 1

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

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

Answer **ALL FOUR (4)** questions

Answer **FOUR (4)** questions, each worth 30 marks.....total 120 marks

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# Paper 1: Avian Health (Poultry)

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Answer all four (4) questions

1. Answer **all** parts of this question:

- a) Describe the internal **and** external components of a normal fertile chicken egg at oviposition. You may use a labelled diagram to illustrate your answer. Briefly discuss the role/function of each component. *(10 marks)*
- b) List **four (4)** infectious diseases that could affect the external appearance of a normal fertile chicken egg. *(4 marks)*
- c) For **two (2)** of the diseases listed in question 1 b), describe the aetiology, pathogenesis **and** clinical signs. *(10 marks)*
- d) For **each** of the **two (2)** diseases described in question 1 c), discuss the impact and implications for the flock. *(6 marks)*

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

- a) Describe the gross anatomy of the avian urinary system. You may include a labelled diagram to illustrate your answer. *(10 marks)*
- b) Compare and contrast the microscopic anatomical features of the **two (2)** types of nephron within the avian kidney. *(10 marks)*
- c) With reference to the components described in question 2 b), explain how urine is produced within the avian kidney. Include in your answer a comparison of the function of **each** nephron type. *(10 marks)*

Continued over page

3. Feather loss is one measure used to assess the welfare state of commercial chickens.

Answer **both** parts of this question:

- a) Discuss the options available to mitigate feather loss induced by pecking. Include an evaluation of the economic impact of each of the options discussed. (14 marks)
  
- b) Explain the aetiology of **three (3)** other common causes of feather loss in table-egg-layer and broiler-breeder flocks, excluding aggressive pecking. (16 marks)

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

- a) Compare and contrast the pathogenesis and epidemiology of *Campylobacter* infection in broiler chickens **and** in table-egg-layer chickens. (12 marks)
  
- b) Discuss the use of bacterial culture to confirm a diagnosis of *Campylobacter* in the two populations described in question 4 a). (6 marks)
  
- c) Discuss the human health and food safety implications of *Campylobacter* infections with regard to the two populations described in question 4 a). (12 marks)

**End of paper**



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## Paper 2

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Answer **ALL FOUR (4)** questions

Answer **FOUR (4)** questions, each worth 30 marks.....total 120 marks

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## Paper 2: Avian Health (Poultry)

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Answer all four (4) questions

1. You have been asked to visit a multi-age, free-range table-egg-layer farm to review flock health and management.

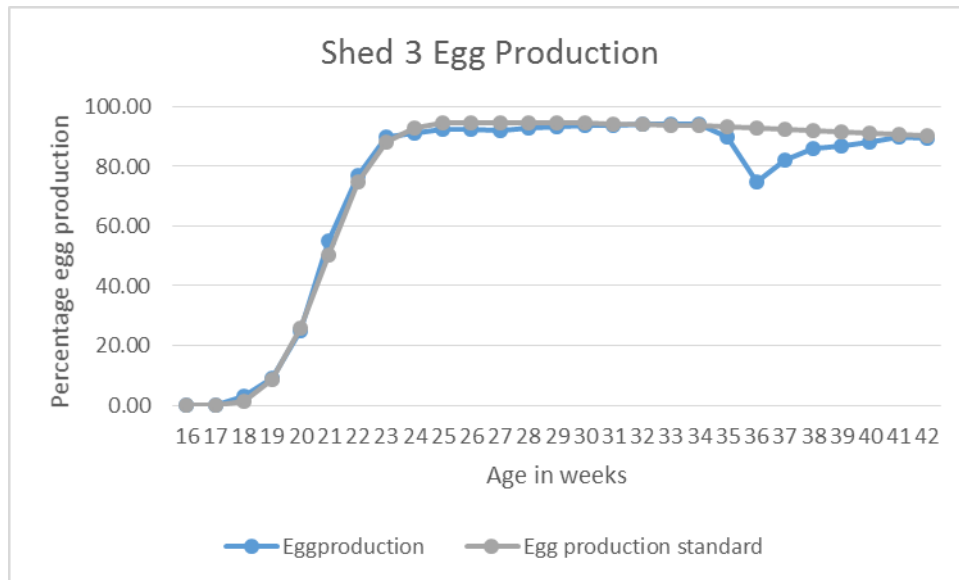
While on the farm, you reviewed the egg production data from Shed 3.

The flock was 42 weeks of age at the time of the visit.

Mortality has been below standard for the entire life of the flock.

No antibiotic treatments have ever been administered to the flock.

A graph of the flock egg production in Shed 3 versus standard egg production is shown below:



Answer **all** parts of this question:

- a) Describe the abnormality in the flock egg production graph provided above. (1 mark)
- b) List **two (2)** possible non-infectious causes for the flock egg production change. (2 marks)

**Question 1 continued over page**

The vaccination program of the flock is shown below. The flock has received no other vaccinations.

<b>Shed 3 - floor reared Hy-Line Brown</b>		
<b>Age (weeks)</b>	<b>Vaccination Applied</b>	<b>Vaccine</b>
day old	Mareks - Double Rispens	Live
	Infectious Bronchitis Virus	Live
	Coccidiosis - Paracox 8	Live
1		
2		
3		
4	Infectious Laryngotracheitis Virus	Live
5	Infectious Bronchitis Virus	Live
6	Newcastle Disease V4	Live
7		
8	Infectious Laryngotracheitis Virus	Live
9		
10		
11		
12	Newcastle Disease	Inactivated
	Fowl Pox	Live
13		
14		
15	Infectious Bronchitis Virus	Live
16		

Serological monitoring of the flock is shown below:

Lab No	Flock Code	Age	MG RSAT	MS RSAT	IBV ELISA	NDV HI	EDS HI
		Weeks			Titre	Log 2	Log 2
1	3	17	-	-	2068	9	0
2	3	17	-	-	2201	9	1
3	3	17	-	-	8162	2	1
4	3	17	-	-	1708	3	2
5	3	17	-	-	3008	10	0
6	3	17	-	-	4662	9	0
7	3	17	-	-	3466	9	0
8	3	17	-	-	2163	10	0
9	3	17	-	-	7318	10	0
10	3	17	-	-	2718	10	0
Mean Flock Titre					3747	8.1	0.4
%CV					61	37	175
High Positive			++++/+++	++++/+++			
Positive			++	++	> 834	≥ 3	≥ 3
Low Positive			+	+			
Negative			-	-	< 833	< 3	< 3

**Question 1 continued over page**

**Question 1 continued:**

- c) Using the flock history, egg production graph, and vaccination and serological information provided above, list **two (2)** likely infectious causes **and** discuss your diagnostic approach to **one (1)**, as a possible cause of the egg production change. *(15 marks)*
  - d) Discuss the appropriateness of the provided vaccination program given that this farm is located in New South Wales. What changes would you make to future flock vaccination programs on this farm? *(6 marks)*
  - e) Interpret the serological results provided. What changes would you make to future flock serological monitoring programs on this farm? *(6 marks)*
2. You are notified by the broiler service man that the mortality in a 45-day-old broiler flock of 20,000 birds has risen from 20 birds per day, yesterday, to 400 birds per day, today. The service man also reports seeing birds with respiratory signs.

Answer **all** parts of this question:

- a) List **two (2)** infectious and **two (2)** non-infectious causes of respiratory signs and elevated mortality in 45-day-old broiler chickens. *(4 marks)*
- b) Describe the legal, ethical and financial considerations you would make in prescribing S4 antibiotics as a treatment for bacterial respiratory infection in this broiler flock. *(10 marks)*
- c) Discuss the conditions under which an unregistered antibiotic product may be used 'off-label' for the treatment of any type of commercial poultry. *(16 marks)*

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3. A flock of broiler-breeder birds, now aged 45 weeks, have experienced a mortality rate of 1.5% per week for the past three weeks. On post-mortem, three out of five birds showed excess abdominal fluid with caseous masses in the abdomen.

Answer **all** parts of this question:

- a) List **two (2)** differential diagnoses for this presentation. *(2 marks)*
  
  - b) Explain the predisposing factors for **each** of the differential diagnoses listed in question 3 a). Include any farm records that you would request to see and the observations that you would make on the farm. *(10 marks)*
  
  - c) For **one (1)** of your differential diagnoses, discuss the treatment and management recommendations that you would give to the farm manager. *(10 marks)*
  
  - d) For the same differential diagnosis, discuss the treatment and management options for a pet chicken. *(8 marks)*
4. The broiler hatchery manager has reported an increase in exploding eggs ('bangers') from one of four supplying breeder farms. Discuss your approach to investigating and resolving this issue. Ensure that you include hatchery, transport and farm factors in your response. *(30 marks)*

**End of paper**