



Australian and New Zealand College of Veterinary Scientists

Membership Examination

June 2014

Animal Reproduction

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 markstotal 120 marks

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Paper 1: Animal Reproduction

Answer all four (4) questions

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

a) Describe the process of gender differentiation during embryological development, resulting in the chromosomal, gonadal and phenotypic features of the male eutherian mammal. Your answer should address the following headings in dot-point form:

i. Chromosomal gender. (4 marks)

ii. Gonadal gender and development of the male gonad. (10 marks)

iii. Phenotypic gender, describing development of the male accessory sex glands and external genitalia. (10 marks)

b) Answer **both** of the following:

i. Describe what is meant by the term karyotype. (4 marks)

ii. Describe a clinical situation in which this test may be used. (2 marks)

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2. Answer **both** parts of this question:
- a) Gonadotrophin releasing hormone (GnRH), luteinising hormone (LH), oestradiol and prostaglandin $F_{2\alpha}$ are all hormones with important reproductive functions. Describe **each** of these **four (4)** hormones under the following **two (2)** headings, highlighting any important differences between males and females:
 - i. Location of synthesis and storage. (8 marks)
 - ii. Reproductive function. (12 marks)
 - b) Provide a diagram of the bovine oestrous cycle to illustrate follicular waves and follicle development. Mark on the diagram, and support with brief notes in dot point form, the hormones involved at the different stages of follicle development. (10 marks)
3. Puberty is an important stage of reproductive development. Describe puberty in the bovine utilising the following headings:
- a) Define puberty in **both** the male and female bovine. (5 marks)
 - b) Describe the reproductive events leading to, and during, puberty in the female and male bovine. (15 marks)
 - c) List factors affecting the onset of puberty in cattle and provide an indication of their relative importance. (10 marks)
4. Maternal recognition of pregnancy is necessary in most domestic species if pregnancy is to be maintained:
- a) Define what is meant by maternal recognition of pregnancy. (2 marks)
 - b) Describe the mechanisms of maternal recognition of pregnancy in **each** of the following: cow, sow, mare and alpaca. (24 marks)
 - c) With regard to maternal recognition of pregnancy, why is the bitch different from all other species? (4 marks)

End of paper



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Paper 2

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Answer **ALL FOUR (4)** questions

Answer **FOUR** questions each worth 30 markstotal 120 marks

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Paper 2: Animal Reproduction

Answer all four (4) questions

1. Briefly discuss **each** clinical condition listed in the subsections below (each worth a total of *10 marks*), under the headings:
 - Aetiology (*1 mark*)
 - Diagnosis (*4 marks*)
 - Differential diagnoses (*2 marks*)
 - Treatment (*2 marks*)
 - Prognosis (*1 mark*)
 - a) Ovarian remnant syndrome in the bitch. (*total 10 marks*)
 - b) A mare that shows signs of oestrus every few days for three weeks in September. (*total 10 marks*)
 - c) Penile haematoma in the bull. (*total 10 marks*)
2. Answer **both** of the following:
 - a) The accurate timing of ovulation is critical to obtaining pregnancies in the bitch associated with frozen-thawed semen insemination. With regard to breeding bitches with frozen-thawed semen:
 - i. List methods associated with the monitoring of oestrus that are considered useful for the timing of artificial insemination with frozen-thawed semen in the bitch. (*4 marks*)
 - ii. For **each** method that you list in part a i) above, provide brief descriptions for **each** of the assessment criteria and how they relate to ovulation. (*8 marks*)
 - iii. What is the optimal site of deposition of frozen-thawed semen in the bitch (*1 mark*) **and** list **three (3)** insemination techniques whereby this can be achieved (*3 marks*).

Question 2 continued over page

- b) With regard to methods used for the termination of pregnancy in the mare:
- i. State the length of gestation (2 marks)
 - ii. Provide:
 - A **list** of pregnancy termination techniques. (2 marks)
 - An outline of the timing of the termination treatment in relation to stage of gestation. (2 marks)
 - A dot-point description of the mode of action for **each** termination technique. (8 marks)
3. If you wish, you may use a table format to assist you in answering this question. With regard to pregnancy diagnosis in the bitch, cow and mare:
- a) **List** techniques used for pregnancy diagnosis. (6 marks)
 - b) For **each** species, state the duration of gestation during which pregnancy diagnosis is effective for **each** technique listed in 3 a). (6 marks)
 - c) List the advantages and disadvantages of pregnancy diagnosis for **each** technique listed in 3 a). (18 marks)

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4. With regard to the condition of pyometra:

a) Define pyometra. (2 marks)

b) Answer **each** point below:

i. Discuss the aetiology of pyometra in the bitch **and** cow. (6 marks)

ii. Discuss the signalment, history, clinical signs and diagnosis of pyometra in the bitch **and** cow. (10 marks)

iii. Discuss treatment options for pyometra in the bitch **and** cow. (8 marks)

iv. Discuss the prognosis for pyometra (with regard to systemic health of the female and for future fertility) in the bitch **and** cow. (4 marks)

End of paper