Australian and New Zealand College of Veterinary Scientists

Fellowship Examination

June 2021

Small Animal Medicine

Paper 1

Perusal time: **Twenty (20)** minutes

Time allowed: **Four (4)** hours after perusal

Answer **ALL** **<u>FIVE (5)</u>** questions

All five (5) questions are of equal value.

Answer **<u>FIVE (5)</u>** questions, each worth 48 marks ....total 240 marks

Paper 1: Small Animal Medicine

Answer all five (5) questions

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

    a) Describe the anatomical structure of the pleura of species with a type 2 (thin) pleura, such as a dog or cat, and the composition of healthy pleural fluid. Describe the dynamics of pleural fluid in and out of the pleural space and its functions in health.   *(22 marks)*

    b) For each of the following aetiologies, describe the basic, initial pathophysiological mechanisms whereby pleural effusion forms and which of the following components (water, protein, cells, lactate) are initially increased.
    (6 marks)

          i. lung lobe torsion

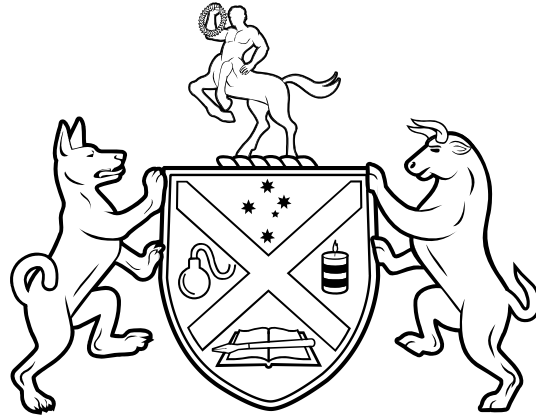   ii. pyothorax

        iii. lymphangiectasia.

    c) Describe the pathophysiological mechanisms that can lead to the development of hypoxaemia, include in your answer examples of diseases for each mechanism and the changes seen to $PaCO_2$ and A:a gradient.   *(20 marks)*

2. The term feline triaditis describes the occurrence of pancreatic, intestinal and hepatic inflammation concurrently. Describe the proposed pathogenesis of triaditis, focusing on the interactions between these conditions.   *(48 marks)*

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

   a) Describe the physiology of insulin release at the level of the beta cell. A diagram may be used in your answer.   *(12 marks)*

   b) Compare and contrast the aetiopathogenesis of diabetes mellitus in dogs and cats.   *(36 marks)*

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

   a) Answer **both** parts of this sub-question:

      i.   Discuss the proposed pathophysiology of feline idiopathic cystitis (FIC). You may incorporate a diagram to illustrate your answer.   *(20 marks)*

      ii. Describe the rationale for using the proposed term Pandora syndrome, instead of FIC.   *(4 marks)*

   b) Answer **both** parts of this sub-question:

      i.   List the abnormalities that comprise nephrotic syndrome.   *(2 marks)*

      ii. Discuss the pathogenesis of each of the previously listed abnormalities of nephrotic syndrome.   *(22 marks)*

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

   a) Using a diagram, outline the mammalian cell cycle.   *(8 marks)*

   b) Describe the hallmarks of cancer development using relevant examples where appropriate.   *(40 marks)*

End of paper

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Paper 2

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Answer **ALL** <u>**FIVE (5)**</u> questions

All **five (5)** questions are of equal value.

Answer <u>**FIVE (5)**</u> questions, each worth 48 marks ....total 240 marks

Paper 2: Small Animal Medicine

Answer all five (5) questions

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

     a) List the potential clinical manifestations of portal hypertension in dogs.
     (2 marks)

     b) Discuss the management of each of the clinical manifestations of portal hypertension in dogs. Include the rationale behind recommended therapeutics and possible adverse effects.   *(46 marks)*

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

     a) Discuss the indications and contraindications of pimobendan in cats with hypertrophic cardiomyopathy.   *(22 marks)*

     b) Based on the recent ACVIM consensus statement guidelines for the classification, diagnosis, and management of cardiomyopathies in cats (Luis Fuentes et al., J Vet Int Med 2020), list the differential diagnoses for the hypertrophic cardiomyopathy phenotype.   *(5 marks)*

     c) Discuss the use of ACE inhibitors in a dog with ACVIM stage C myxomatous mitral valve degeneration.   *(21 marks)*

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

     a) Discuss the application and limitations of C-reactive protein in the diagnosis and monitoring of the following diseases:

          i.   bacterial respiratory diseases   *(15 marks)*

          ii. canine steroid responsive meningitis arteritis.   *(15 marks)*

     b) Discuss the utility of therapeutic drug monitoring of cyclosporine; including advantages and limitations of each assay.   *(18 marks)*

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

     a) Critically evaluate the evidence for the use of immunomodulatory drugs in dogs with protein losing enteropathies.   *(32 marks)*

     b) Discuss the evaluation of cobalamin status in dogs and briefly outline evidence for the different routes of supplementation in dogs.   *(16 marks)*

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

a) A two-year-old male neutered domestic shorthair cat presents to a local veterinarian with a severe non-regenerative anaemia (PCV 10%, reticulocytes 0%), with clinical signs of anaemia that are severe enough to warrant prompt transfusion. The veterinarian immediately and rapidly (over 4 hours) transfuses with 50 mLs of fresh whole blood collected from an in clinic feline donor.

Thirty minutes after completion of transfusion, the recipient cat is markedly depressed, and urinates dark brown-black urine. Subsequent examination of a spun haematocrit tube from the recipient confirms that the haematocrit has not increased from pre-transfusion levels, and that there is marked haemoglobinaemia (recipient plasma was clear prior to transfusion).

Answer **all** parts of this sub-question:

i.   List, in order from most likely to least likely, the potential causes of this suspected transfusion reaction.   *(4 marks)*

ii. Justify the order of the potential causes listed in part 5 a) i, with reference to the underlying pathophysiology.   *(16 marks)*

iii. Describe how to best manage the patient.   *(10 marks)*

iv. List the recommendations you would make to the veterinarian to prevent the same scenario happening again in the future.   *(6 marks)*

b) A two-year-old male neutered Dalmatian also presents to a local veterinarian with a severe non-regenerative anaemia (PCV 12%, reticulocytes 0%), with clinical signs of anaemia that are severe enough to warrant prompt transfusion. The veterinarian immediately and rapidly (over 4 hours) transfuses with 250 mLs of packed red blood cells that were stored in the clinic refrigerator.

Thirty minutes after completion of transfusion, the recipient dog is markedly depressed, and urinates dark brown-black urine. Subsequent examination of a spun haematocrit tube from the recipient confirms that the haematocrit has not increased from pre-transfusion levels, and that there is marked haemoglobinaemia (recipient plasma was clear prior to transfusion).

Answer **both** parts of this sub-question:

i.   List, in order from most likely to least likely, the potential causes of this suspected transfusion reaction.   *(4 marks)*

ii. Discuss how and why the most likely differentials for this dog differ from the most likely differentials for the previously described cat.
                                                                    (8 marks)

End of paper