

Qualification name: 7457-43 Level 3 Diploma in Small Animals Veterinary Nursing
Exam name: Level 3 Anatomy and Physiology Knowledge Test – Paper 3
Exam Version Name: March 2020

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| Q1 | Define the following anatomical directional terms: a. Caudal. (1 mark) b. Contralateral. (1 mark) c. Plantar. (1 mark) | | |
| | Acceptable answer(s) | Guidance | Max marks |
| | 1 mark each for any of the following, to a maximum of 3 marks: a. Caudal - away from the directional of head (directed towards the tail) (1) b. Contralateral - of, or pertaining to the other side (1) c. Plantar - ventral aspect of hindpaw (1) | Similar wording acceptable | 3 |

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| Q2 | State the following boundaries of the thoracic cavity: a. Cranial. (1 Mark) b. Lateral. (1 Mark) c. Caudal. (1 Mark) | | |
| | Acceptable answer(s) | Guidance | Max marks |
| | <i>One mark for each of the following, to a total of 3 marks</i> a. The thoracic inlet (1) b. Ribs (1) c. Diaphragm (1) | Candidates may say abdomen as the question does not refer to species such as; Bird or Reptile. | 3 |

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| Q3 | Name one palpable artery and state where it is anatomically positioned in a dog. (2 marks) | | |
| | Acceptable Answer(s) | Guidance | Max Marks |
| | <p><i>1 mark for artery and 1 mark for the position;</i></p> <ul style="list-style-type: none"> • Sublingual artery (1) ventral aspect of tongue (1). • Labial (1) upper lip (1). • Carotid artery (1) ventrolateral aspect of neck (1). • Brachial artery (1) medial aspect of elbow (1). • Femoral artery (1) medial aspect of femur/upper hindlimb (1). • Tarsal/carpal (1) carpus/tarsus of lower limbs (1). • Dorsal metatarsal artery (1) dorsum of the metatarsal area (1). • Palmar/plantar digital (1) below carpal pad of forelimb (1). • Coccygeal artery (1) ventral aspect of base of tail (1). <p><i>Any other acceptable answer</i></p> | Similar wording acceptable | 2 |

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| Q4 | State the function of the following organelles in an animal cell: a. Mitochondrion. (1 mark) b. Ribosomes. (1 mark) c. Lysosomes. (1 mark) | | |
| | Acceptable answer(s) | Guidance | Max marks |
| | <p><i>1 mark each for any of the following, to a maximum of 3 marks:</i></p> <ul style="list-style-type: none"> a. Mitochondrion – power house / releases energy / energy production (1) b. Ribosomes – protein synthesis/production (1) c. Lysosomes – phagocytosis/cell digestion/defence (1) | Similar wording acceptable | 3 |

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| Q5 | Explain the function of the following glands: a. Exocrine. (2 marks) b. Endocrine. (2 marks) | | |
| | Acceptable Answer(s) | Guidance | Max marks |
| | <p><i>One mark for each of the following, to a total of 2 marks</i></p> <p>a. Exocrine glands produce and secrete substances locally on to an epithelial surface (1) by means of a duct (1)</p> <p>b. Endocrine glands produce and secrete hormones directly into the blood (1) rather than through ductless glands (1)</p> | Similar wording acceptable | 4 |

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| Q6 | Explain the role and function of the liver and gall bladder in the digestion and metabolism of fats. (4 marks) | | |
| | Acceptable Answer(s) | Guidance | Max Marks |
| | <p>The liver is responsible for the production of bile (1) which is transported via the bile duct. (1)</p> <p>The gall bladder releases the bile into the small intestine/ duodenum (when needed) (1) where it is use to digest/ emulsify fats (1).</p> | Similar wording acceptable | 4 |

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| Q7 | Explain the function of the following components of the peripheral nervous systems: (a) Somatic nervous system. (2 mark) (b) Autonomic nervous system including the parasympathetic and sympathetic nervous systems. (6 marks) | | |
| | Acceptable Answer(s) | Guidance | Max Marks |
| | <p>(a) <i>Two marks for the following;</i></p> <p>The somatic nervous system is associated with the voluntary control (1) of (body movements) innervating skeletal muscles (1)</p> <p>(b) <i>One mark for each of the following functions, to a total of 6 marks;</i></p> <p>The autonomic nervous system is associated with the involuntary control (1) of (body movements) innervating smooth and cardiac muscles (1)</p> <p>The parasympathetic nervous system is involved in maintaining the body in a calm/relaxed state (1) digestive activity increased (1)</p> <p>The sympathetic nervous system is involved in preparing the body for physical action (excitable state)/is often referred to as the fight-or-flight response (1) digestive activity decreased (1)</p> | Similar wording acceptable | 8 |

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| Q8 | Describe the structure and function of the following components of the eye: a. Cornea. (2 marks) b. Iris. (2 marks) c. Retina. (2 marks) | | |
| | Acceptable Answer(s) | Guidance | Max Marks |
| | <p><i>One mark for the structure and one mark for the function to a total of 2 marks;</i></p> <p>Cornea Structure - Curved (bi-concave) transparent layer (at the front of the eye) (1) Function - Bends and refracts the light to the retina / controls and focuses entry of light into the eye (1)</p> <p><i>One mark for the structure and one mark for the function to a total of 2 marks;</i></p> <p>Iris Structure - The coloured part (at the front of the eye) contains the pupil. It is made up of smooth muscle (1) Function – Responds/controls the amount of light entering the eye by constriction and dilation of the pupil (1)</p> <p><i>One mark for the structure and one mark for the function to a total of 2 mark;</i></p> <p>Retina Structure - The inside layer at the back of the eye contains the light sensitive cells called rods and cones (1) Function - Rods respond to black and white (night vision). Cones respond to coloured light (day time) (1)</p> | Similar wording acceptable | 6 |

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| Q9 | State four anatomical features specific to the digestive system of a Passerine bird. (4 marks) | | |
| | Acceptable Answer(s) | Guidance | Max marks |
| | <p><i>Any of the following, for a total of 4 marks;</i></p> <p>Presence of a Beak (1) Crop (1) enzymatic stomach/proventriculus (1) muscular stomach/ventriculus/gizzard (1) Cloaca (1)</p> | | 4 |

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| Q10 | Describe the following terms in relation to respiration: a. External respiration. (1 mark) b. Internal respiration. (1 mark) c. Tidal volume. (1 mark) d. Minute volume. (1 mark) e. Obligate nasal breathing. (1 mark) | | |
| | Acceptable Answer(s) | Guidance | Max Marks |
| | <p><i>One mark for each of the description, for a total of 5 marks;</i></p> <p>(a) External respiration – the process of breathing in and out of the lungs (1)</p> <p>(b) Internal respiration – the process of oxygen being diffused into the cells from the blood and the uptake of carbon dioxide from the cells back into the blood (tissue respiration) (1)</p> <p>(c) Tidal volume - volume of air breathed in and out of the lungs during a respiration cycle (1)</p> <p>(d) Minute volume – tidal volume x number of breaths per minute (1)</p> <p>(e) Obligate nasal breathing – ability to breathe through the nose rather than the mouth whilst feeding (1)</p> | Similar wording acceptable | 5 |

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| Q11 | Name the three extrinsic muscles of the forelimb. (3 marks) | | |
| | Acceptable Answer(s) | Guidance | Max Marks |
| | <p><i>Any of the following, for a total of 3 marks;</i></p> <p>Brachiocephalicus (1) Trapezius (1) Latissimus dorsi (1)</p> <p>Any other acceptable answer</p> | <p>Incorrect spelling can be accepted provided the marker is satisfied with the candidate's knowledge</p> | 3 |

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| Q12 | List three functions of the kidney. (3 marks) | | |
| | Acceptable Answer(s) | Guidance | Max Marks |
| | <p><i>Any of the following, for a total of 3 marks;</i></p> <ul style="list-style-type: none"> • Controls fluid balance (1) • Controls electrolyte balance/levels (1) • Excretion of nitrogenous waste (1) • Regulates blood pressure / blood volume (1) • Regulates pH (1) • Converts fat soluble vitamin D to a water-soluble form (1) • Releases erythropoietin/erythropoietin in anaemic patients (1) • RAA system in relation to homeostasis (1) <p>Any other appropriate answer</p> | | 3 |

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| Q13 | Explain the sequential pathway of an electrical impulse during each stage of the cardiac cycle in mammalian physiology. (12 marks) | | |
| | Acceptable Answer(s) | Guidance | Max Marks |
| | <p>Band 1 (1 – 4 marks) The candidate gave limited responses in relation to the sequential electrical conduction of the heart during the stages of the cardiac cycle. No firm knowledge of heart receptors or electrical impulses through the heart chambers</p> <p>Band 2 (5 – 8 marks) The candidate produced a more detailed description of the source of stimuli to receptors and the pathway of electrical conduction through the heart chambers They were able to relate this to the stages of the cardiac cycle such as systole and diastole</p> <p>Band 3 (9 – 12 marks) The candidate provided detailed information on the source and stimuli of receptors and the electrical conduction pathways through the heart. They were able to relate this to the stages of the cardiac cycle and include terms such as the bundle of His and Purkinje fibres. They used terminology such as the stages of depolarisation and repolarisation accurately.</p> | <p>Indicative content</p> <ul style="list-style-type: none"> • Electrical impulse to the SA node from hypothalamus • Pathway across atria • Electrical impulse to the AV node • Split pathway bundles across ventricles • Cardiac cycle - systole and diastole | 12 |