

## 0172 Level 3 Technicals in Animal Management – 0172-545/045 (Science)

Underline essential technical terms to be seen in the answer

Embolden **and**, **not** or **or** within the answer to clarify requirements for the mark,

Use brackets to indicate text that is extraneous for the mark (but supports examiner understanding)

Use slash to separate alternative/equivalent acceptable terms within an answer

**Standard wording:**

*Do **not** accept..... (Expected responses that are incorrect but close)*

*Answer must focus on..... and **not**..... (Clarification of the required focus/ clarifies boundary between acceptable and unacceptable – word ‘focus’ can be replaced as appropriate – capture, explain, elicit, highlight etc)*

*Allow..... (Answers that may be on the boundary of acceptable – elaborate to clarify if necessary – usually added at standardisation)*

Q	Acceptable answer(s)	Guidance	Max mks	Ref
<b>1a</b>	1 mark for the following, maximum of 2 marks. Dys means difficult or defective (1) e.g. dystocia (1)		<b>2</b>	315 1.1 AO1
<b>1b</b>	1 mark for the following, maximum of 2 marks. Itis means inflammation (1) e.g. mastitis, an inflammation of the udder (1)		<b>2</b>	315 1.1 AO1
<b>2a</b>	1 mark for each sign, maximum of 2 marks. Signs: pale gums (1) yellow colour in mouth (1) and whites of eyes (1) enlarged lymph nodes (1) upper respiratory infection (1) weight loss (1) loss of appetite (1) poor coat condition (1) fever (1) weakness (1) diarrhoea (1) reproduction problems (1) stomatitis (1) weakened immune system (1) causes tumours (1) and other abnormal tissue growths (1) anaemia (1)	Allow Lethargy	<b>2</b>	315 1.4 AO2
<b>2b</b>	1 mark for each treatment, maximum of 2 marks. Treatments: drip to rehydrate (1) neuter (1) blood transfusions (1) chemotherapy (1)  Award mark for stating no known cure (1) or euthanasia (1)  Any other appropriate response.	Allow isolation, antiviral	<b>2</b>	315 1.4 AO2

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<p><b>3</b></p>	<p>1 mark for stating each check, 1 mark available for each explanation per check (maximum of 2 per check), maximum of 6 marks.</p> <ul style="list-style-type: none"> <li>• Pre anaesthetic checks (1): check blood pressure, heart rate, respiration rate (1) to check that they are all within the normal parameters (1)</li> <li>• Pre anaesthetic blood checks (1): liver and kidney functionality/diabetes/underlying medical conditions (1) to ensure it is safe to carry out the operation (1) or additional precautions are required (1)</li> <li>• Surgery plan/admittance checks (1): ensure consent has been given (1) check animal hasn't eaten (1) with exception of rabbits/guinea pigs/small mammals and birds (1) patient history (1) record owners contact number (1)</li> </ul> <p>Any other appropriate response.</p>	<p>Allow check weight</p>	<p><b>6</b></p>	<p><b>315 2.2 AO2</b></p>
<p><b>4a</b></p>	<p>1 mark per control measure, maximum of 2 marks</p> <p>Substance must not be disposed down a drainage system (1) store in appropriate labelled container before and after use (1) must not come into contact with aquatic and plant life (1)</p> <p>Any other appropriate response.</p>	<p>Allow PPE</p>	<p><b>2</b></p>	<p><b>318 1.1 AO1</b></p>
<p><b>4b</b></p>	<p>1 mark per control measure, maximum of 2 marks</p> <p>wear eye protection/appropriate PPE (1) wash any spills off their skin/eye immediately (1) inform staff members of spills or contaminations (1) store in appropriate labelled container (1) have appropriate eye wash facilities available (1)</p> <p>Any other appropriate response.</p>		<p><b>2</b></p>	<p><b>318 1.1 AO1</b></p>

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<p><b>5</b></p>	<p>1 mark for any of the following, maximum of 8 marks.</p> <ul style="list-style-type: none"> <li>• A control is required (1) so that the effects of the parameters that are changed in the experiment can be compared to each other (1) and compared to the control (1)</li> <li>• Any equipment used (such as pH meters or colorimeters) must be calibrated (1) to ensure accuracy of results (1)</li> <li>• Only one parameter should be changed at a time (1) so that any differences can be attributed to this parameter (such as temperature) (1)</li> <li>• The results should be able to be recorded in a format that can be represented graphically (1) to make the results easier to review and compare (1)</li> <li>• If known or normal values are available for the experiment they should be referred to (1) for accurate interpretation of findings (1)</li> </ul>	<p>1 mark for any unexplained factor, up to 4 marks. Additional marks awarded for explanation of each factor, up to 8 marks.</p>	<p><b>8</b></p>	<p><b>318 2.1 AO2</b></p>
<p><b>6a</b></p>	<p>1 mark for each of the following, maximum of 2 marks. Mitochondria - respiration in the cell (1) releasing energy for metabolism (1)</p>		<p><b>2</b></p>	<p><b>321 1.1 AO1</b></p>
<p><b>6b</b></p>	<p>1 mark for each of the following, maximum of 2 marks. The plasma membrane - the movement of substances into and out of the cell (1) by the processes of diffusion and osmosis (1)</p>		<p><b>2</b></p>	<p><b>321 1.1 AO1</b></p>
<p><b>7</b></p>	<p>1 mark for any of the following, maximum of 6 marks.</p> <ul style="list-style-type: none"> <li>• It is made up of a double helix (1)</li> <li>• There are two complimentary chains of nucleotides (1)</li> <li>• Composed of phosphoric acid (1) a pentose sugar (deoxyribose) (1) and four nitrogenous bases (1) consisting of two purines and two pyrimidines (1)</li> <li>• Complementary chains are held together by hydrogen bonds (1) which are easily broken (1)</li> <li>• Adenine is paired with thymine (1) and guanine with cytosine (1)</li> <li>• The two strands run in opposite directions (1)</li> <li>• Carries negative charge (1)</li> </ul>		<p><b>6</b></p>	<p><b>321 2.1 AO1</b></p>

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<p><b>8a</b></p>	<p>1 mark for explanation and 1 mark for an example of gene interaction. Co-dominance (or incomplete dominance) is when two alleles for a particular characteristic are equally dominant in the phenotype (1) <b>Example:</b> such as coat colour in cattle when red and white coats are co-dominant and the roan coat colour results (1) Any other appropriate response.</p>		<p><b>2</b></p>	<p><b>321 3.2 AO2</b></p>
<p><b>8b</b></p>	<p>1 mark for explanation and 1 mark for an example of gene interaction. A sex linked trait is carried only on sex chromosomes (1) on the X chromosome and not the Y chromosome (1) and as the male has only one and not two X chromosomes it has a greater chance of inheriting the trait (1) <b>Example:</b> An example is colour blindness in mice (1) Any other appropriate response.</p>		<p><b>2</b></p>	<p><b>321 3.2 AO2</b></p>
<p><b>8c</b></p>	<p>1 mark for explanation and 1 mark for an example of gene interaction. A lethal gene, if inherited will cause the death of the embryo or animal (1) If the gene is recessive as is most common, then only homozygous recessive individuals will not survive (1)  When two copies are inherited by off spring (1), lead to death in womb or death after birth (1)  <b>Example:</b> an embryonic lethal is the AY allele in mice with yellow coat colour (1) Any other appropriate response.</p>		<p><b>2</b></p>	<p><b>321 3.2 AO2</b></p>

<b>9</b>	<p>1 mark for any of the following, maximum of 6 marks.</p> <p><b>Sensory neurones:</b></p> <ul style="list-style-type: none"> <li>• Sensory nerves have a long dendron and a short axon (1) which are wound around each other (1)</li> <li>• The cell body is found towards the middle of the neuron (1)</li> <li>• Conduct nerve impulses from receptors (1) e.g. eyes/muscles and carry them towards the CNS (1)</li> <li>• Situated outside the CNS (1)</li> </ul> <p><b>Motor neurones:</b></p> <ul style="list-style-type: none"> <li>• Motor nerves have no dendrons and a long axon (1)</li> <li>• Situated inside the spinal cord (1)</li> <li>• The cell body is located towards one end of the cell (1) where the dendrites are located (1)</li> <li>• Conduct nerve impulses away from the CNS towards effector organs (1) e.g. muscles/glands (1)</li> </ul>	<p>(Maximum of 3 marks for sensory neurones descriptions and maximum of 3 marks for motor neurones descriptions).</p> <p>Allow responses either explaining the structure or function</p>	<b>6</b>	<b>321 4.4</b> <b>AO2</b>
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10	<p><b>Banding:</b></p> <p><b>Band a (1 – 4 marks):</b> The candidate briefly discussed the importance of blood sampling in the diagnosis of common medical conditions, but points may not all be valid. Key points in relation to the topics were described, but clear gaps in knowledge were present and limited understanding of the topics shown. Technical terminology is used either infrequently or inaccurately. To access the higher marks within the band, the candidate will have attempted to describe the relationship between the equilibrium of liquids and gases across membranes, diffusion and named animal tissues.</p> <p><b>Band b (5 - 8 marks):</b> The candidate discussed the importance of blood sampling in the diagnosis of common medical conditions in detail and most points are valid. Key points in relation to the topics were described, with some gaps in knowledge present but a good understanding of the topics shown. Technical terminology is used frequently and mostly accurately. To access the higher marks within the band, the candidate will have provided detailed descriptions of the relationship between the equilibrium of liquids and gases across membranes, diffusion and named animal tissues.</p> <p><b>Band c (9 - 12 marks):</b> The candidate comprehensively discussed the importance of blood sampling in the diagnosis of common medical conditions and considered valid points throughout. Key points in relation to the topics were described, minor gaps in knowledge may be evident, but a thorough understanding of the topics shown. Technical terminology is used frequently and accurately throughout. To access the higher marks within the band, the candidate will have provided coherent descriptions of the relationship between the equilibrium of liquids and gases across membranes, diffusion and named animal tissues.</p> <p>For no awardable content, award 0 marks.</p>	<p><b>Indicative content:</b></p> <ul style="list-style-type: none"> <li>• Common Medical conditions</li> <li>• Named conditions and how it is confirmed by test</li> <li>• Infectious diseases</li> <li>• Principles of experimental design</li> <li>• Equilibria of liquids and gases across membranes</li> <li>• Cell components of a mammalian cell</li> <li>• Functions of the organelles and life cycle of a cell</li> <li>• Comparison of cell types</li> <li>• Structure and function of epithelial tissue</li> <li>• Structure and function of connective tissue</li> <li>• Blood oxygen levels</li> </ul>	12	<p>(315) 1.2, 1.3 and 1.4</p> <p>(318) 2.2 and 2.4</p> <p>(321) 1.2, 1.3, 4.1 and 4.2</p>
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