



# Mark Scheme (Results)

Series: 1901

NQF BTEC Level 3  
Sector: Animal Management

Unit 2 Animal Biology

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## General Marking Guidance

- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.
- All marks on the mark scheme should be used appropriately.
- All marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if a candidate's response is not worthy of credit according to the mark scheme.
- Where some judgment is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- When examiners are in doubt about applying the mark scheme to a candidate's response, the team leader must be consulted.
- Crossed-out work should be marked UNLESS the candidate has replaced it with an alternative response.
- Phonetic spelling should be accepted.

Question Number	Answer	Mark
1a	<ul style="list-style-type: none"> <li>• Carbohydrates</li> <li>• Vitamins</li> </ul> <p>Listed in any order.</p>	2

Question Number	Answer	Mark
1b	Peristalsis/peristaltic motion/ peristaltic waves	1

Question Number	Answer	Mark										
1c	<table border="1"> <thead> <tr> <th>Name of organ</th> <th>Function</th> </tr> </thead> <tbody> <tr> <td>Crop</td> <td>Stores food</td> </tr> <tr> <td>Gizzard</td> <td>Mechanical digestion/ grinding food</td> </tr> <tr> <td>Proventriculus</td> <td>Chemical digestion/enzyme action/hydrochloric acid</td> </tr> <tr> <td>Cloaca</td> <td>Elimination of uric acid/ faeces/waste</td> </tr> </tbody> </table>	Name of organ	Function	Crop	Stores food	Gizzard	Mechanical digestion/ grinding food	Proventriculus	Chemical digestion/enzyme action/hydrochloric acid	Cloaca	Elimination of uric acid/ faeces/waste	4
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Question Number	Answer	Mark
2a	<p>Award <b>one</b> mark for each bone identified correctly:</p> <ul style="list-style-type: none"> <li>• A – Skull/cranium (1)</li> <li>• B - Sternum / breast bone / keel (1)</li> </ul>	2

Question Number	Answer	Mark
2b	<p>Award <b>one</b> mark for each identification and <b>one</b> mark for a linked expansion to a maximum of four:</p> <ul style="list-style-type: none"> <li>• Shape of the skeleton (1) short/light/compact(1)</li> <li>• Small number of bones (1) lighter for flying(1)</li> <li>• Hollow/pneumatic bones (1) reduces weight(1)</li> <li>• Fused bones (1) for strength/support (1)</li> <li>• Organs/large muscles near centre of gravity (1) provides better balance(1)</li> <li>• Skull narrow/beak/no jaw (1) aerodynamic shape(1)</li> <li>• Large muscles (1) for powered flight (1)</li> <li>• Wings/ phalanges (1) concave below/convex above/ provide lift(1)</li> <li>• No teeth/light bill (1) to reduce weight (1)</li> </ul> <p><b>Do not accept feathers.</b></p> <p><b>Accept any other appropriate answer.</b> <b>Accept specific examples.</b></p>	4

Question Number	Answer	Mark
2c	<p>Award up to a maximum of <b>two</b> marks.</p> <ul style="list-style-type: none"> <li>• Flight</li> <li>• Protection</li> <li>• Warmth / insulation</li> <li>• Stealth</li> <li>• Mating displaying/courtship</li> <li>• Avoiding predation/camouflage</li> </ul> <p><b>Do not accept water proof</b></p>	2

Question Number	Answer	Mark
2d	<p>Award up to a maximum of <b>three</b> marks.</p> <ul style="list-style-type: none"> <li>• Contract quickly (1)</li> <li>• Fatigue quickly (1)</li> <li>• Allow powerful burst of movement/sprinting (1)</li> <li>• Use anaerobic respiration (1)</li> <li>• Build-up of lactic acid (1)</li> <li>• Oxygen debt (1)</li> <li>• Low capillary density (1)</li> <li>• Longer recovery rate (1)</li> <li>• Less oxygen (1)</li> <li>• Lighter colour (1)</li> <li>• Lower myoglobin levels (1)</li> <li>• Fewer mitochondria (1)</li> </ul>	3

Question Number	Answer	Mark
3a	<p>Award a maximum of <b>two</b> marks, <b>one</b> for cause and <b>one</b> for symptom.</p> <p>Cause:</p> <ul style="list-style-type: none"> <li>• Excessive volume of gas in the rumen (1)</li> <li>• Blockage (1)</li> <li>• Foreign object (1)</li> <li>• Reverse peristalsis (1)</li> <li>• Incorrect diet (1)</li> </ul> <p>Symptom:</p> <ul style="list-style-type: none"> <li>• Cow's stomach is distended/bigger/swollen (1)</li> <li>• Distress/discomfort/pain (1)</li> </ul> <p><b>Accept specific examples</b></p>	2

Question Number	Answer	Mark
3b	<p>Accept any stated length between 279-287 days.</p> <p><b>Accept nine months as an answer.</b></p>	1

Question Number	Answer	Mark
3c	<p>Award up to <b>three</b> marks.</p> <ul style="list-style-type: none"> <li>• Ovaries (1)</li> <li>• Oviduct/fallopian tube (1)</li> <li>• Uterus/uterine horn/ Womb (1)</li> <li>• Cervix (1)</li> <li>• Vagina (1)</li> <li>• Vulva (1)</li> <li>• Ovum (1)</li> </ul> <p><b>Accept any other relevant answer.</b>  <b>Answer must refer to ruminant animals</b></p>	3

Question Number	Answer	Mark
3d	<p>Award <b>two</b> marks per hormone. <b>One</b> mark for each descriptive point to a total of <b>four</b> marks.</p> <p>Oestrogen</p> <ul style="list-style-type: none"> <li>• Stops FSH production (1)</li> <li>• Stimulates pituitary gland (1) to release LH (1)</li> <li>• Builds up/ thickens uterine lining (1) allows implantation (1)</li> <li>• Causes thickening of the endometrium (1)</li> <li>• Improves elasticity /firmness of vagina (1)</li> </ul> <p>Oxytocin</p> <ul style="list-style-type: none"> <li>• Stimulated by suckling (1) allows release of milk/let down reflex (1)</li> <li>• Bonding of young (1)</li> <li>• Stimulates labour (1)</li> <li>• Increases of prostaglandins (1)</li> </ul>	4

Question Number	Answer	Mark
3e	<p>Award <b>one</b> mark for reference to any of the following, up to a maximum of <b>two</b> marks.</p> <ul style="list-style-type: none"> <li>• Growth (1)</li> <li>• Repair (1)</li> <li>• Reproduction / Formation of gametes/sperm/egg (1)</li> <li>• Allow immune response (1)</li> </ul>	2

Question Number	Answer	Mark
4a	<p>Award up to <b>four</b> marks.</p> <ul style="list-style-type: none"> <li>• Receptors detects stimuli (1)</li> <li>• Send impulse to CNS (1)</li> <li>• Spinal cord/ Brain/CNS processes message (1)</li> <li>• Send impulse to effector (1)</li> <li>• Effector generates response (1)</li> </ul> <p><b>Accept specific examples</b> <b>Accept any appropriate wording</b></p>	4

Question Number	Answer	Mark
4b	<p>Award up to <b>two</b> marks.</p> <ul style="list-style-type: none"> <li>• Dilates pupils (1)</li> <li>• Inhibits salivation (1)</li> <li>• Increases heart rate (1)</li> <li>• Inhibits digestion (1)</li> <li>• Stimulates glucose release (1)</li> <li>• Relaxes bladder (1)</li> <li>• Prepares body for fight or flight (1)</li> </ul> <p><b>Accept any other appropriate response.</b></p>	2



Question Number	Answer	Mark
4c	<p>Award up to <b>two</b> marks for each process to a total of <b>four</b> marks.</p> <p>Vasoconstriction</p> <ul style="list-style-type: none"> <li>• Happens when animal gets cold (1)</li> <li>• Arterioles/blood vessels constrict (1)</li> <li>• Less blood to skin/diverted to core (1)</li> <li>• Reduce heat loss/warms up (1)</li> </ul> <p>Vasodilation</p> <ul style="list-style-type: none"> <li>• Happens when animal gets hot (1)</li> <li>• Arterioles dilate/blood vessels (1)</li> <li>• Increased blood flow to the skin (1)</li> <li>• Decreases body temperature/cooling down (1)</li> </ul>	4

Question Number	Answer	Mark
4d	<p>Award up to <b>two</b> marks.</p> <ul style="list-style-type: none"> <li>• Sensory neurons/ afferent (1)</li> <li>• Interneurons/ relay neurons/ unmyelinated (1)</li> <li>• Motor neurons/ efferent(1)</li> </ul> <p><b>Accept myelinated if sensory/motor is not identified (award 1 mark)</b></p>	2

Question Number	Answer	Mark
5a	<p><b>One</b> mark for identification and <b>one</b> mark for expansion.</p> <ul style="list-style-type: none"> <li>• Flattened disc/doughnut/bi concave disc (1) to increase surface area (1)</li> <li>• No nucleus (1) to carry more haemoglobin (1)</li> <li>• Contains haemoglobin (1) to carry oxygen (1)</li> <li>• Small/flexible (1) fits through narrow blood vessels (1)</li> </ul>	2

Question Number	Answer	Mark
5b	<p>Award up to <b>one</b> mark.</p> <ul style="list-style-type: none"> <li>• Pacemaker (1)</li> <li>• Send out electrical impulse (1)</li> </ul>	1

Question Number	Answer	Mark
5c	<p>Award up to <b>four</b> marks for a description that makes reference to the following:</p> <ul style="list-style-type: none"> <li>• Leaking mitral valve / doesn't close (1)</li> <li>• Reduced efficiency of heart (1)</li> <li>• Heart failure (1)</li> <li>• Heart murmur (1)</li> <li>• Blood flows back into atrium (1)</li> <li>• Left side of heart not pumping blood properly (1)</li> <li>• Coughing / short of breath / weak (1)</li> <li>• Swishing/sound of blood through stethoscope (1)</li> </ul> <p><b>Accept any other appropriate answer.</b></p>	4

Question Number	Indicative content		Mark
5d	<p>Answers will be credited according to the learner's demonstration of knowledge and understanding of the material using the indicative content and levels descriptors below. The indicative content that follows is not prescriptive.</p> <p>Answers may cover some/all of the indicative content but should be rewarded for other relevant answers.</p> <ul style="list-style-type: none"> <li>Anaerobic respiration does not use oxygen to produce energy</li> <li>Animal's respiratory system adapts to short-term anaerobic respiration when insufficient oxygen from heart and lungs for aerobic respiration in muscles</li> <li>Less energy is released from anaerobic respiration</li> <li>Breakdown of glucose is incomplete during anaerobic respiration</li> <li>Lactic acid is formed during anaerobic respiration – it is poisonous and stops muscles working if it builds up</li> <li>An oxygen debt is created, which is not enough oxygen needed to oxidise lactic acid to carbon dioxide and water</li> <li>The animal's breathing increases to allow sufficient oxygen to break down the lactic acid formed from short term anaerobic respiration</li> </ul>		8
Level	Mark	Descriptor	
Level 0		<b>No rewardable material</b>	
Level 1	1-2	<ul style="list-style-type: none"> <li>Demonstrates isolated elements of knowledge and understanding, there will be major gaps or omissions</li> <li>Few of the points made will be relevant to the context in the question</li> <li>Limited discussion which contains generic assertions rather than considering different aspects and the relationship between them</li> </ul>	
Level 2	3-5	<ul style="list-style-type: none"> <li>Demonstrates some accurate knowledge and understanding, with only minor gaps or omissions</li> <li>Some of the points made will be relevant to the context in the question, but the link will not always be clear</li> <li>Displays a partially developed discussion which considers some different aspects and some consideration of how they interrelate, but not always in a sustained way</li> </ul>	
Level 3	6-8	<ul style="list-style-type: none"> <li>Demonstrates mostly accurate and detailed knowledge and understanding</li> <li>Most of the points made will be relevant to the context in the question, and there will be clear links</li> <li>Displays a well-developed and logical discussion which clearly considers a range of different aspects and considers how they interrelate, in a sustained way</li> </ul>	

Question Number	Answer	Mark
5e	Award up to <b>one</b> mark. <ul style="list-style-type: none"> <li>• Mitochondrion (1)</li> </ul>	1

Question Number	Answer	Mark
5f	Award up to <b>three</b> marks. <ul style="list-style-type: none"> <li>• Mouth (1)</li> <li>• Nose (1)</li> <li>• Epiglottis (1)</li> <li>• Trachea / wind pipe (1)</li> <li>• Lungs (1)</li> <li>• Bronchi (1)</li> <li>• Bronchioles (1)</li> <li>• Alveoli (1)</li> <li>• Diaphragm (1)</li> <li>• Ribcage / ribs (1)</li> <li>• Intercostal muscles (1)</li> </ul> <p><b>Accept identified muscles of the thorax</b></p>	3

Question Number	Answer	Mark
6a	<p>Award up to <b>four</b> marks for each descriptive point. Award no more than <b>three</b> marks for one animal.</p> <ul style="list-style-type: none"> <li>• Pangolins are mammals (1)</li> <li>• Armadillo are mammals (1)</li> <li>• Pangolins have scales/hard protective cover (1)</li> <li>• Armadillo have scales/hard protective cover (1)</li> <li>• Pangolins can climb (1), armadillos remain on the ground (1)</li> <li>• Armadillo larger (1) pangolin are smaller (1)</li> <li>• Genetically not closely related (1)</li> <li>• Armadillo order cingulate, pangolin order pholidota (1)</li> <li>• Pangolins live in tropical areas (1) Armadillo live in the warm/temperate regions (1)</li> </ul> <p><b>Accept any other appropriate answer.</b></p>	4

Question Number	Answer	Mark
6b	<p>Award <b>one</b> mark for each to a total of <b>four</b> marks.</p> <ul style="list-style-type: none"> <li>• Ectothermic / cold blooded (1)</li> <li>• Scales / keratin (1)</li> <li>• Have lungs/breath air (1)</li> <li>• Internal fertilisation of egg (1)</li> <li>• Offspring resemble adults from birth (1)</li> <li>• No metamorphosis to adulthood (1)</li> </ul> <p><b>Accept any other appropriate answer.</b></p>	4

Question Number	Answer	Mark
6c	<p>Award <b>one</b> mark for each to a total of <b>three</b> marks.</p> <ul style="list-style-type: none"> <li>• Survival of the fittest / natural selection (1)</li> <li>• More likely to breed (1)</li> <li>• Advantageous genes passed on (1)</li> <li>• Improves chance of survival (1)</li> <li>• Gene mutation (1)</li> </ul> <p><b>Accept specific examples illustrating these points.</b></p>	3

Question Number	Indicative content	Mark
7	<p>Answers will be credited according to the learner's demonstration of knowledge and understanding of the material using the indicative content and levels descriptors below. The indicative content that follows is not prescriptive.</p> <p>Answers may cover some/all of the indicative content but should be rewarded for other relevant answers.</p> <ul style="list-style-type: none"> <li>• Includes skin, hair, scales, feathers, hooves, glands and nerves</li> <li>• Skin covers external surface of body for protection – made up of three layers</li> <li>• Epidermis – waterproof outer layer keeps pathogens out</li> <li>• Dermis – middle layer contains hair follicles, blood vessels and glands – regulates body temperature</li> <li>• Hypodermis / subcutaneous layer- connective tissue containing fat for insulation and shape</li> <li>• Exocrine glands – sudoriferous and ceruminous secrete sweat, sebaceous secretes sebum</li> <li>• Receptor /sensory organs for detecting stimuli</li> <li>• Synthesises vitamin D</li> </ul>	8
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Ofqual



Llywodraeth Cynulliad Cymru  
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