Mark Scheme (Results)

Series: 1906

NQF BTEC Level 3
Sector: Animal Management and
Animal Management with Science

Unit 2 Animal Biology

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June 2019
Publications Code 31645H_1906_MS

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 judgement 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	Award up to a maximum of **two** marks. Genus (1) Species (1)	2

Question Number	Answer	Mark
1b	Award up to a maximum of **one** mark. Mammalia (1) Aves (1) Reptilia (1) Amphibia (1) Pisces (1)	1

Question Number	Answer	Mark
1c	Award up to a maximum of **two** marks. • Four chambered heart (1) • Produce milk/ mammary glands (1) • Feed young on milk (1) • Give birth to live young (1) • Hair/fur (1) • Difference type of teeth /dentition (1) • Have a diaphragm (1) • Single jaw bone (1) • Three small bones in ear (1)	2

Question Number	Answer	Mark
1d	Award up to a maximum of **two** marks. • A diagram (1) to represent evolutionary relationships amongst a group of organisms (1) • A branching tree (1) to show descent from a common ancestor / common DNA / similar genetics (1) • A family tree (1) representing relationship between species (1) **Accept any other appropriate response and reverse arguments.**	2

Question Number	Answer	Mark
2a	Award **one** mark for each structure identified correctly up to a maximum of **two** marks. A – Incisors (1) B – Molars (1)	2

Question Number	Answer	Mark
2b	Award **two** marks for each explanation referring to the following adaptations up to a maximum of **four** marks. • Long /rough tongue (1) grasps grass (1) • Sharp front teeth / incisors (1) pull / bite grass (1) • Dental / horny pad (1) to grip the grass (1) • Flat teeth (1) to allow side to side chewing (1) • Large teeth / molars (1) grind grass (1) **Accept any other appropriate response.**	4

Question Number	Answer	Mark
2c	Canines (1)	1

Question Number	Answer	Mark
2d	Award up to **three** marks. • They have a gizzard (1) to grind the food (1) with stones / grit they have swallowed (1) • They have a beak (1) to tear / crack food (1) to reduce the size (1) • They have claws/talons (1) to grasp/cut/slice prey (1) to allow them to fit into mouth (1) • Hold food with feet (1) so they can tear with beak (1) to get small pieces (1) **Accept any other appropriate response.**	3

Question Number	Answer	Mark
2e	Protein (1)	1

Question Number	Answer	Mark
3a	Award **one** mark for each structure identified correctly up to a maximum of **two** marks. A – Right atrium (1) B – Left ventricle (1)	2

Question Number	Answer	Mark
3b	Aorta (1)	1

Question Number	Answer	Mark
3c	Award up to **three** marks. • Higher blood pressure (1) • Greater blood flow to tissues (1) • More efficient supply of oxygen for respiration/exercise (1) • Oxygenated blood from lungs pumped to organs and tissues / systemic circuit (1) • Deoxygenated blood from body pumped to lungs / pulmonary circuit (1) • Efficient gaseous exchange in the lungs (1) • Blood pumped twice (1) • Allows for greater body size (1) **Accept any other appropriate response.**	3

Question Number	Answer	Mark
3d	Award up to **two** marks for each explanation referring to the following functions. • Drains excess tissue fluid (1) as lymph(1) • Contains/Filters lymph (1) to remove toxic materials (1) • Produces / transports antibodies (1) part of the immune system (1) • Lymphocytes/ white blood cells/T cells (1) to fight disease (1) • Transports white blood cell (1) to lymph nodes (1) • Absorption of fatty acids from digestive system (1) transports fats to circulatory system (1) **Accept any other appropriate response.**	4

Question Number	Answer	Mark
3e	Award **one** mark for reference to any of the following up to a maximum of **two** marks. • haemorrhaging (1) • Nose bleeding (1) • Blood in faeces / urine (1) • Bleeding gums (1) • Bruised skin (1) • Lack of blood clotting / difficulty healing wounds (1) • Lameness in joints (1) • Anaemia / weakness from blood loss (1) **Accept any other appropriate response.**	2

<table>
<tr><th>Question Number</th><th>Answer</th><th>Mark</th></tr>
<tr><td>4a</td><td>Award one mark for each correct row to a maximum of four marks.
<table>
<tr><th>Name of cell organelle</th><th>Function</th></tr>
<tr><td>Nucleus</td><td>The information centre of the cell / control centre/ contains DNA/Chromosomes (1)</td></tr>
<tr><td>Ribosomes</td><td>The site for protein synthesis (1)</td></tr>
<tr><td>Mitochondria (1)</td><td>The site of cellular respiration</td></tr>
<tr><td>Smooth endoplasmic reticulum / sER (1)</td><td>The synthesis and transport of lipids and steroids</td></tr>
</table></td><td>4</td></tr>
</table>

Question Number	Answer	Mark
4b	Award up to **one** mark. • Bacteria (1) • Archaea (1)	1

Question Number	Answer	Mark
4c i	Award up to **two** marks for an explanation that makes reference to the following: • The cell membrane engulfs particles / droplets (1) so materials are taken into the cell / requires energy/active transport (1) • Pathogens are sealed off in a vesicle (1) then digestive enzymes destroy the particle (1) **Accept any other appropriate response and examples.**	2

Question Number	Answer	Mark
4c ii	Award up to **two** marks for an explanation that makes reference to the following: • Golgi complex/secretory vesicle (1) Materials / enzymes exported out of the cell / requires energy/active transport (1) • Vesicle fuses with the plasma membrane (1) so contents are released safely (1) **Accept any other appropriate response and examples.**	2

Question Number	Answer	Mark
4d	Award up to **three** marks for a description that makes reference to the following: • Genetic mutation (1) • Inherited disease/caused by inbreeding (1) • Impairs development of collagen (1) • Causes brittle/weak bones (1) • Weak / brittle teeth (1) • Bone deformities (1) • Frequently / easily broken bones (1) • Loose joint / hip dysplasia (1) • Lameness /walking difficulty (1) **Accept any other appropriate response.**	3

Question Number	Answer	Mark
5a	Award **one** mark for each structure identified correctly up to a total of **two** marks. A – Sebaceous /oil gland (1) B – Sweat/ eccrine/apocrine gland (1)	2

Question Number	Answer	Mark
5b	Award **one** mark for each descriptive point up to a total of **two** marks for each layer. Epidermis: • top/outer layer (1) protective (1) waterproof (1) elastic (1) gives skin colour (1) sweat/oils present (1) Dermis: • middle layer (1) contains nerves (1) blood vessels (1) glands (1) hair follicles (1) Subcutaneous/hypodermis: • bottom layer (1) made of connective tissue (1) fat stores for insulation (1) fat for shape (1) blood vessels (1) **Accept any other appropriate response.**	4

Question Number	Answer	Mark
5c	• The formation/production of blood cells	1

Question Number	Indicative content	Mark
5d	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. Answers may cover some / all of the indicative content but should be rewarded for other relevant answers. • All feathers have a hollow shaft with vanes on the two halves of the feather made of thousands of branches called barbs • Filoplumes are very small, sensory feathers that are attached to nerve endings and send information to the brain about feather alignment • Contour feathers are the outside feathers, which are long and overlap giving the bird shape and colour plus keep the body dry and insulated • Flight feathers are strong, stiff contour feathers on the wings and tail supporting the bird during flight (primary, secondary and tertiary) • Semiplume found underneath contour feathers for insulation • Down feathers are small, soft and fluffy and provide insulation • Ptarmigan walking in snow • Mating display / stealth / avoiding predators / camouflage	8

Level	Mark	Descriptor
Level 0	0	No rewardable material.
Level 1	1–2	Demonstrates isolated elements of knowledge and understanding, with only minor gaps or omissions. Few of the points made will be relevant to the context in the question. Limited discussion which contains generic assertions rather than considering different aspects and the relationships between them.
Level 2	3–5	Demonstrates some accurate knowledge and understanding, with only minor gaps or omissions. Some of the points made will be relevant to the context in the question, but the link will not always be clear. Displays a partial developed discussion which contains some different aspects and some consideration of how they interrelate, but not always in a sustained way.
Level 3	6–8	Demonstrates mostly accurate and detailed knowledge and understanding. Most of the points made will be relevant to the context in the question, and there will be clear links. Displays a well-developed and logical discussion which clearly considers a range of different aspects and considers how they interrelate, in a sustained way.

Question Number	Answer	Mark
5e	Award up to a maximum of **one** mark. • Provides support/strength/elasticity/structure (1) • Allows some flexibility of movement (1) • Provides cushioning / absorbs concussion/shock absorber (1) • Protects bone (1) **Accept any other appropriate response.**	1

Question Number	Answer	Mark
5f	Award up to a maximum of **three** marks. • Cardiac (1) • Smooth (1) • Skeletal (1) • Striated (1) • Non-striated (1)	3

Question Number	Answer	Mark
6a	Award **one** mark for each descriptive point up to a maximum of **three** marks for either mammals or birds up to a total of **four** marks. • Mammals produce urine (1) • Mammals excrete urine and faeces separately (1) • Birds produce solid waste/urine and faeces combined (1) • Mammals remove ammonia as urea (1) • Birds remove ammonia as uric acid (1) • Uric acid is insoluble / no water (1) • Urea is soluble in water (1) • Uric acid less toxic/more acidic than urea (1) • Uric acid reduces water loss / need for water in birds (1) **Accept any other appropriate response.**	4

Question Number	Answer	Mark
6b	Antidiuretic Hormone /ADH/vasopressin (1)	1

Question Number	Answer	Mark
6c	Award **one** mark for each descriptive point up to a maximum of **four** marks. • Conducts urine (1) along U shaped portion of tubule in nephron (1) • Reabsorbs water (1) prevents dehydration (1) in descending limb (1) longer loop in camel (1) • Reabsorbs ions / sodium chloride / (1) in ascending limb(1) / into blood stream (1) • Concentrated urine produced (1) counter current multiplier mechanism (1) • Osmoregulation (1) by controlling urine concentration (1) **Accept any other appropriate response.**	4

Question Number	Answer	Mark
6d	Award up to a maximum of **two** marks. • Sweat production/ sweat through paws (1) • Flapping ears (1) • Gular fluttering (1) • Panting/respiring (1) • Vasodilation/through the surface of the skin (1) • Wallowing / bathing (1) • Moving into shade / away from heat (1) • Through excretion (1) **Accept any other appropriate response.**	2

Question Number		Indicative content	Mark
7		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. Answers may cover some/all of the indicative content but should be rewarded for other relevant answers. • Foregut fermenter • The rumen is the first and largest compartment where saliva allows bacteria and enzymes to survive and digest cellulose – chemical • Reticulum next to rumen is honeycombed to trap large feed particles. Food formed into cud – mechanical • Regurgitation by mechanical process of peristalsis moves cud into mouth where it is re-chewed • Omasum is the filter where mechanical processes squeeze water out and grind down • Abomasum is the true stomach where enzymes / hydrochloric acid break down microbial protein – chemical • Small intestine where enzymes complete the breakdown	8
Level	**Mark**	**Descriptor**	
Level 0	0	No rewardable material.	
Level 1	1–2	Demonstrates isolated elements of knowledge and understanding, with only minor gaps or omissions. Few of the points made will be relevant to the context in the question. Limited discussion which contains generic assertions rather than considering different aspects and the relationships between them.	
Level 2	3-–5	Demonstrates some accurate knowledge and understanding, with only minor gaps or omissions. Some of the points made will be relevant to the context in the question, but the link will not always be clear. Displays a partial developed discussion which contains some different aspects and some consideration of how they interrelate, but not always in a sustained way.	
Level 3	6–8	Demonstrates mostly accurate and detailed knowledge and understanding. Most of the points made will be relevant to the context in the question, and there will be clear links. Displays a well-developed and logical discussion which clearly considers a range of different aspects and considers how they interrelate, in a sustained way.	

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