Mark Scheme

Series: Jan 2022

RQF BTEC Animal Management and Animal Management with Science

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 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	Aves / Avian (1) Amphibia / Amphibian (1) Accept phonetic spelling	2

Question Number	Answer	Mark
1b	Species	1

Question Number	Answer	Mark
1c	Award **one** mark for each base identified correctly up to a maximum of **four** marks. • Adenine (1) • Thymine (1) • Cytosine (1) • Guanine (1) Accept these responses in any order and phonetic spellings	4

Question Number	Answer	Mark
2a	Simple squamous / squamous / epithelial (1)	1

Question Number	Answer	Mark
2b	Award up to **two** marks for each separate cell, up to a maximum of **four** marks. **Neuron** • Nerve cell / specialised cells (1) • conduct information / transmit messages / signals / create impulses (1) • description of structure (1) **Glial** • Nervous tissue (1) • Surround neurons / provide protection / support / nutrients / insulation / like glue (1) • cleans up debris / maintains homeostasis (1) • description of structure (1) Do not accept named examples or diagrams without annotations	4

	Accept any other appropriate response.	

Question Number	Answer	Mark
2c	Award up to **two** marks. • Epithelial • Connective • Nervous • Muscular	2

Question Number	Answer	Mark
2d	Award up to a maximum of **four** marks for each descriptive point. • Large / charged molecules (1) • glucose / sodium ions / potassium ions (1) • in and out of cell (1) • through channel (1) • help of carrier proteins (1) • along or down a concentration gradient / from high concentration to low concentration (1) • without energy / passive (1) Accept any other appropriate wording.	4

Question Number	Answer	Mark
3a	• Systole / Systolic (1) • Diastole / diastolic (1)	2

Question Number	Answer	Mark
3b	Award up to a maximum of **four** marks for each descriptive point. • diffuses into blood (1) • in capillary beds / venules (1) • travels in blood /veins (1) • through alveoli / bronchi / in the lungs (1) • moves to trachea / windpipe (1)	4

	• exhaled / breathed out / through mouth or nose (1) Accept any other appropriate response.	

Question Number	Answer	Mark
3c	• Nares / nostrils (1) • Larynx (1) • Trachea / windpipe (1) • Lungs (1) • bronchi (accept specific examples) (1) • Air sacs (accept specific examples) (1) • Air capillaries (1) • Ribs / ribcage (1) Credit specific examples of air sacs / bronchi separately, do not credit air sac / bronchi by itself if a specific example has been given.	3

Question Number	Answer	Mark
3d	Award **one** mark for the identification and **one** additional mark for the appropriate expansion up to a maximum of **two** marks. Foetal haemoglobin has: • Higher affinity to bind oxygen / (1) accesses / steals oxygen from mother's blood (haemoglobin) / more effective (1) • Different structure (1) higher oxygen carrying capacity (1) Accept any other appropriate wording.	2

Question Number	Answer	Mark
3e	Vena cava (1)	1

<table>
<tr><th>Question Number</th><th>Answer</th><th>Mark</th></tr>
<tr><td>4a</td><td>Award one mark for each row up to a maximum of four marks.

<table>
<tr><th>Name of food type</th><th>Function</th></tr>
<tr><td>Protein</td><td>Provides amino acids / growth / muscle / repair / enzymes / hormones / haemoglobin / source of energy (1)</td></tr>
<tr><td>Fibre</td><td>Aids passage of food through digestive tract / bulk / bowel movement (1)</td></tr>
<tr><td>Carbohydrate (1)</td><td>Provides energy</td></tr>
<tr><td>Fats / lipids (1)</td><td>Stored energy, protection and insulation</td></tr>
</table>
</td><td>4</td></tr>
</table>

Question Number	Answer	Mark
4b	Award **one** mark for the identification and **one** additional mark for the appropriate expansion up to a maximum of **two** marks. • Produces bile (1) for emulsification of fats in the intestine / aids digestion (1) • Stores glycogen / vitamins / minerals / nutrients (1) for use when needed by the body (1) • Detoxifies / removes chemicals (1) from blood (1) • Fat metabolism (1) produces energy (1) • Involved in maintaining blood glucose levels (1) glucose production / glycogen breakdown (1) Accept any other appropriate response.	2

Question Number	Answer	Mark
4c	Award up to **two** marks. • Ingestion of foreign body / hardware disorder (1) • Diarrhoea / scour (1) • Bloat (1) • Impaction / Constipation (1) • Twisted gut / Colic (1) • Gastric ulcers / inflammation of gut (1)	2

Question Number	Answer	Mark
4d	Award up to **two** marks for each separate hormone, up to a maximum of **four** marks. Insulin: • secreted when blood glucose levels are high (1) • Glucose removed from the blood (1) • Glucose / glycogen stored in liver / muscles (1) • Glucose levels in blood decreased (1) Glucagon: • secreted when blood glucose levels are low (1) • Glycogen converted to glucose (1) • Glucose from liver into blood (1) • Glucose levels in blood increased (1)	4

Question Number	Answer	Mark
5a	Award up to a maximum of **three** marks. A. Air cell / sac / pocket (1) B. Chalaza/e (1) C. Yolk (1) Accept phonetic spelling	3

Question Number	Answer	Mark
5b	Infundibulum / funnel / oviduct Do not accept oviduct**s**	1

Question Number	Answer	Mark
5c	Award **one** mark for identification and **one** additional mark for an appropriate expansion up to a maximum of **four** marks. • The shell (1) protects against toxins / damage (1) • The amnion / membrane / extra embryonic membrane (1) absorbs shock / cushions (1) • The Albumen (1) protects against bacteria / absorbs shock (1) Accept any other appropriate response.	4

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. • Fluid mosaic model • Phospholipids with hydrophilic head (likes water) and hydrophobic tail (repels water) • Forms a bilayer containing many proteins • Phospholipids control what enters the cell • Integral protein transports molecules across the membrane • Glycoproteins and glycolipids receptors for cell recognition / cell signalling • Peripheral protein – enzymes • Cholesterol for cell stability • Partially permeable – separates contents of cell from outside • Allows cells to signal each other • Allows other cells to recognise the cell belongs to the body • Allows molecules to bind to receptors in the membrane	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 partially 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.

Q**uestion Number**	**Answer**	**Mark**
5e	• Osmosis (1)	1

Q**uestion Number**	**Answer**	**Mark**
5f	Award **one** mark for identification and **one** additional mark for an appropriate expansion up to a maximum of **two** marks. • Storage (1) of cell's RNA (1) • Production (1) of ribosomes (1)	2

Question Number	**Answer**	**Mark**
6a	Award **one** mark for identification and **one** additional mark for an appropriate expansion up to a maximum of **two** marks for each structure. **Arteries** • Have thick walls (1) to absorb high pressure (1) • Contain elastic tissue (1) to allow expansion (1) • Are muscular / small lumen (1) to maintain blood pressure / pulse (1) **Capillaries**	4

	• Have thin walls (1) to allow diffusion / absorb nutrients (1) • Permeable (1) for efficient gas exchange (1) • Form a network / capillary bed (1) to reach all tissue (1) Accept any other appropriate wording.	

Question Number	Answer	Mark
6b	Haematopoiesis (1) Accept phonetic spelling	1

Question Number	Answer	Mark
6c	Award **one** mark for identification and **one** additional mark for an appropriate expansion up to a maximum of **two** marks for each component. **Platelets** • Form clots / scab (1) to stop bleeding / repair damage / allow healing / prevent pathogens from entering (1) **Plasma** • Transports hormones / nutrients / waste / carbon dioxide / blood cells (1) around the body / homeostasis / excretion (1) • Absorbs / releases heat (1) maintain body temperature / thermoregulation (1) • Contains immunoglobulin (1) to help fight infection (1) • Transports glucose (1) to provide energy (1) Accept any other appropriate response.	4

Question Number	Answer	Mark
6d	Award **one** mark for identification and **one** additional mark for an appropriate expansion up to a maximum of **two** marks. • Prevent backflow (1) keep blood flowing in one direction / to increase the efficiency of the heart (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 and diagrams. • Endothermic animals (warm blooded) such as birds and mammals use metabolic heat to maintain a stable internal temperature • Evaporative cooling mechanisms such as sweating, panting, gular fluttering • Warming up through shivering / muscles contacting and relaxing rapidly / erector pili muscles trap air in hair / feathers • Brown adipose tissue in new-borns and hibernating animals to maintain heat • Seasonal coat / plumage changes • Vasodilation / constriction of arterioles at skin surface to cool down / heat up • Counter current mechanism controlling heat exchange in the blood • Ectothermic animals (cold blooded) such as lizard / snakes / reptiles use the temperature of the environment to regulate their body temperature • Behavioural changes – curling up / stretching out / lying in shade / sunshine	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 partially 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.