

L3 Lead Examiner Report 1906

June 2019

**L3 Qualification in Animal
Management: Animal Biology**

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Grade Boundaries

What is a grade boundary?

A grade boundary is where we set the level of achievement required to obtain a certain grade for the externally assessed unit. We set grade boundaries for each grade, at Distinction, Merit and Pass.

Setting grade boundaries

When we set grade boundaries, we look at the performance of every learner who took the external assessment. When we can see the full picture of performance, our experts are then able to decide where best to place the grade boundaries – this means that they decide what the lowest possible mark is for a particular grade.

When our experts set the grade boundaries, they make sure that learners receive grades which reflect their ability. Awarding grade boundaries is conducted to ensure learners achieve the grade they deserve to achieve, irrespective of variation in the external assessment.

Variations in external assessments

Each external assessment we set asks different questions and may assess different parts of the unit content outlined in the specification. It would be unfair to learners if we set the same grade boundaries for each assessment, because then it would not take accessibility into account.

Grade boundaries for this, and all other papers, are on the website via this link:

<http://qualifications.pearson.com/en/support/support-topics/results-certification/grade-boundaries.html>

Animal Biology: 31645H

Grade	Unclassified	Level 3			
		N	P	M	D
Boundary Mark	0	12	24	40	56

Introduction

June 2019 was the fifth series of the new specification for Animal Management, when this mandatory unit has been assessed via an external assessment rather than via centre based internal assessment.

The question paper followed the format identified in the additional sample assessment materials published on the Pearson website.

The paper had seven questions. Each question was based on an area of the specification. Learners were required to demonstrate knowledge and understanding of a range of specification topics and to apply this knowledge to the specific question scenarios. The intention was to offer as broad coverage as possible for all areas of the unit content. Questions had varying weightings attached to them, with 1 to 3 marks for the lower demand questions and 4 to 8 marks for questions where an extended response was required.

The extended response, eight mark, questions were marked using a 'levels based' approach to assessment. The overall quality of the response was considered rather than the specific number of points gained.

There was also a focus on the use of suitable technical and vocational language and terminology within each response. The remainder of the questions on the paper were assessed using a range of indicative content and on the quality and clarity of the explanation provided.

Individual Questions

The following section considers each question on the paper, providing examples of popular learner responses and a brief commentary of why the responses gained the marks they did. This section should be considered with the live external assessment and corresponding mark scheme.

Question 1

Q1 (a)

The majority of learners scored two marks for question 1a through being able to recall the two missing groups in the classification ranking table as per section C3.1 in the unit content.

Answer ALL questions. Write your answers in the spaces provided.

1 Animals are classified into groups to identify them.

(a) Complete the **two** missing groups in the table below.

(2)

Kingdom
Phylum
Class
Order
Family
Species Genus
Species

2 marks

The two correct classification groups have been included in the table (albeit an incorrect spelling of 'species') to achieve 2 marks.

Answer ALL questions. Write your answers in the spaces provided.

1 Animals are classified into groups to identify them.

(a) Complete the **two** missing groups in the table below.

(2)

Kingdom
Phylum
Class
Order
Family
mammal vertebrate
mammalia

0 marks

Two incorrect answers given - no marks awarded.

Q1 (b)

majority of learners were able to recall the name of one vertebrate class from section C1.3 in the unit content. However when 'Mammals' / 'birds' / 'reptiles' were stated no marks could be awarded.

(b) State **one** vertebrate class.

(1)

mammalia.

1 mark

One vertebrate class correctly stated.

(b) State **one** vertebrate class.

(1)

Reptile

0 marks

'Reptile' is an incorrect answer as the term 'Reptilia' is required- no rewardable mark.

Q1 (c)

This was a two mark question from section C3.1 of the unit content i.e. 'difficulties in classification of unusual mammals'. Majority of learners scored one mark mainly for an answer of 'produce milk / give birth to live young' while the second answer was related to the whale not being a fish rather than exclusive to mammals i.e. 'warm blooded / have lungs'.

(c) State **two** reasons why whales are classified as mammals.

(2)

1 They give birth to live young

2 They feed young with milk

2 marks

Two correct answers related to mammals as per the mark scheme.

(c) State **two** reasons why whales are classified as mammals.

(2)

1 They are warm blooded

2 Their skin isnt scaly

0 marks

The answers provided are not exclusive to mammals - no rewardable marks.

Q1 (d)

This was a two mark question from section C3.3 of the unit content i.e. 'purpose, recognition and interpretation of phylogenetic trees'.

(d) Describe a phylogenetic tree.

(2)

A diagram that shows an animal and the species it is related to.

2 marks

This concise answer accurately describes a phylogenetic tree as 'a diagram' and what it shows i.e. 'the relationship between species', as per the mark scheme.

(d) Describe a phylogenetic tree.

(2)

A phylogenetic tree is the ordering of vertebrates and invertebrates.

0 marks

No marks were awarded for an incorrect description.

Question 2

Q2 (a)

This was a memory recall question from section A2.2 of the unit content with the majority of learners scoring the two available marks.

2 The diagram below shows the skull of a cow



(a) Give the names of the structures labelled **A** and **B**.

(2)

A ~~the~~ incisors.
B molars

2 marks

The two structures have been named correctly for two marks.

2 The diagram below shows the skull of a cow



(a) Give the names of the structures labelled **A** and **B**.

(2)

A ~~incisors~~ dental pad.
B pre-molars

0 marks

Two incorrect answers given – no rewardable marks

Q2 (b)

This four mark question from section A2.2 in the unit content was answered well with the majority of the learners scoring either 3 or 4 marks and the average mark was 2. A good knowledge of the oral cavity of a cow was demonstrated.

(b) Explain **two** ways a cow's mouth is adapted to eat grass.

(4)

1 Lack of upper incisor, they have a dental pad that they use to grasp their food

2 lack of canine teeth, large molars and premolars to grind their food

4 marks

A complete explanation of two ways a cow's mouth is adapted to eat grass (as per the mark scheme) to be awarded 4 marks.

(b) Explain **two** ways a cow's mouth is adapted to eat grass.

(4)

1 Its jaw can move out of place slightly to allow all of it's teeth to chew the grass easier.

2 The front of the mouth is ~~an~~ empty to allow the cow to ~~eat~~ get more grass into ~~its~~ its mouth.

0 marks

A vague understanding of the cow's mouth but inaccurate – no rewardable marks.

Q2 (c)

The majority of learners knew the name of the teeth adapted to rip meat in carnivores to score one mark.

(c) State which teeth are adapted to rip meat in carnivores.

(1)

The canine teeth

1 mark

The correct name for the teeth has been stated.

(c) State which teeth are adapted to rip meat in carnivores.

(1)

The incisors are designed to cut through muscle with ease due to their pointed edge.

0 marks

An incorrect answer – no rewardable mark.

Q2 (d)

This three mark question from section A2.2 of the unit content was answered well majority of learners scored 3 marks. One mark was lost for including 'crop' instead of 'gizzard'.

(d) Explain **one** way birds break down their food without having teeth.

(3)

They consume grit which aids mechanical digestion in the gizzard. The grit acts like teeth and grinds down the food whilst the gizzard churns.

3 marks

This response clearly explains that the bird 'consumes grit' which 'grinds down the food' in 'the gizzard' to gain 3 marks.

(d) Explain **one** way birds break down their food without having teeth.

(3)

They use there tounge as it has lots of muscles in to push it to the back of there ~~throat~~^{throu} so that it can just be swallowed.

0 marks

This response is incorrect- no rewardable marks available.

Q2 (e)

This was a memory recall question from section A2.1 of the unit content regarding the role of proteins. Majority of learners scored one mark.

(e) State the name of the nutrient that provides amino acids in the diet.

(1)

Protein.

1 mark

The correct nutrient has been named for 1 mark.

(e) State the name of the nutrient that provides amino acids in the diet.

(1)

glucose.

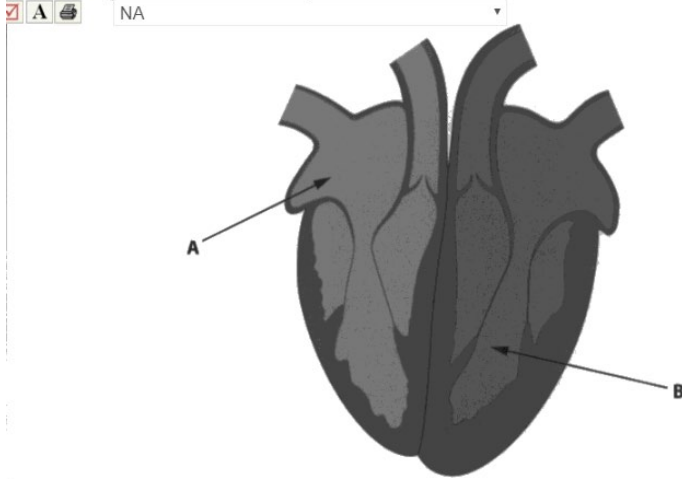
0 marks

An incorrect answer – no rewardable mark

Question 3**Q3 (a)**

This is a two mark question about the structures in the heart from section A4.2 of the unit content with majority of learners gaining the two available marks.

3 The diagram below shows a dog's heart.



(a) Give the names of structures labelled **A** and **B**.

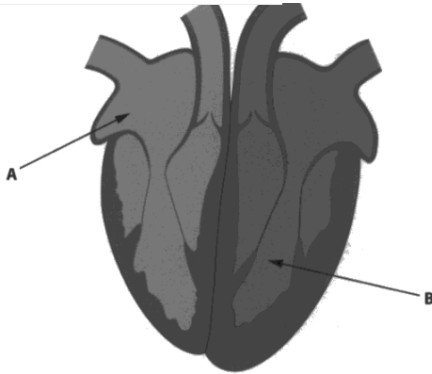
(2)

A Right atrium.

B left ventricle.

2 marks

The two correct structures have been identified for two marks



(a) Give the names of structures labelled **A** and **B**.

(2)

A left ventricular chamber
 B right ventricular chamber

0 marks

The 'right' and 'left' sides have been confused and the structures incorrectly stated – no rewardable marks.

Q3 (b)

This was a memory recall, pass targeted question and majority of learners did not know / unable to recall the name of the largest artery of the heart.

(b) State the name of the largest artery of the heart.

(1)

Aorta

1 mark

Accurate recall of the name of the artery to score 1 mark.

(b) State the name of the largest artery of the heart.

(1)

Right artery

0 marks

An incorrect response – no rewardable mark.

Q3 (c)

This three mark question from section A4.2 in the unit content was aimed at merit and distinction. Majority of learners scoring 1 mark and some demonstrating a complete understanding of the double circulatory system to gain the three available marks

(c) Give **three** advantages of a double circulatory system.

(3)

- 1 blood can be pumped around the body at a higher pressure
- 2 Oxygen can reach muscles quicker in the body
- 3 gaseous exchange can be completed quicker.

3 marks

Three advantages have been correctly stated as per the mark scheme to achieve 3 marks.

(c) Give **three** advantages of a double circulatory system.

(3)

- 1 A double circulatory system covers the whole body.
- 2 A double circulatory system, allows for better circulation, as both sides of the body are part of the double circulatory system
- 3 A double circulatory system, allows the body to have a stronger immune system.

0 marks

Three incorrect answers have been stated with no rewardable marks.

Q3 (d)

Majority of learners scored 0 for this four mark question on the function of the lymphatic system from section A4.13 of the unit content which clearly demonstrated a lack of understanding of the role of this system.

(d) Explain **two** functions of the lymphatic system.

(4)

- 1 ~~Drains and~~ The lymphatic system is able to filter out lymph. This is done via the lymph nodes ~~as~~ which is part of the immune system to filter out pathogens from the body.
- 2 The lymphatic system is responsible for the ^{creation} ~~creation~~ of cells ~~responsible~~ ~~is~~ involved in the immune response.
~~The~~ The Thymus gland, for example, is where B cells mature.

4 marks

Two functions of the lymphatic system have been explained as per points included in the mark scheme to achieve full marks.

(d) Explain **two** functions of the lymphatic system.

(4)

- 1 to supply oxygen to muscles
- 2 to help nerve tissue.

0 marks

Two incorrect answers provided which demonstrate no understanding of the lymphatic system

Q3 (e)

This memory recall, one mark, pass targeted question did not perform as expected. The average mark was 0.28 with only few learners scored the full two marks by correctly stating two symptoms of von Willebrand disease in dogs from section A4.14 in the unit content. Many learners provided generic symptoms such as 'fatigue' and 'weakness'.

(e) State **two** symptoms of von Willebrand disease in dogs.

(2)

1 Lots of blood loss in faeces and urine

2 Long healing process

2 marks

Two accurate symptoms of the disease have been stated as per the mark scheme to score 2 marks.

(e) State **two** symptoms of von Willebrand disease in dogs.

(2)

1 lethargy

2 diet changes.

0 marks

This response is incorrect with one generic symptom included plus an incorrect 'cause' not a 'symptom' – no rewardable marks.

Question 4

Q4 (a)

The average mark for this four mark question was 2.06 with learners able to demonstrate a complete understanding of cell organelles from section B1.1 of the unit content to score four marks.

4 All living organisms are made up of cells that are the building blocks of life.

(a) Complete the table below to show the names and functions of the cell organelles.

(4)

Name of cell organelle	Function
Nucleus	contains DNA of cell and controls cell function.
Ribosomes	manufactures proteins
mitochondria	The site of cellular respiration
smooth endoplasmic reticulum.	The synthesis and transport of lipids and steroids

4 marks

All parts of the table completed as per the mark scheme to be awarded 4 marks

4 All living organisms are made up of cells that are the building blocks of life.

(a) Complete the table below to show the names and functions of the cell organelles.

(4)

Name of cell organelle	Function
Nucleus	Produces ribosomes
Ribosomes	Energy production
mitochondria	The site of cellular respiration
r	The synthesis and transport of lipids and steroids

1 mark

This response was awarded 1 mark for 'mitochondria' as 'the site of cellular respiration' all other answers are incorrect / not attempted.

Q4 (b)

This question was considered a memory recall question from section B2.3 of the unit content regarding 'awareness of prokaryotic cells' and majority of learners scored 0. An understanding of the term 'prokaryotic' was beneficial in identifying 'bacteria' as a correct response.

(b) Give an example of a prokaryotic cell.

(1)

bacteria cell.

1 mark

'Bacteria cell' is correct to be awarded 1 mark

(b) Give an example of a prokaryotic cell.

(1)

A cell with no nucleus.

0 mark

This response has not answered the question with 'an example' - no mark awarded.

Q4 (c)

This was a four mark question with two marks awarded for an explanation of endocytosis and two marks for an explanation of exocytosis from section B3.4 of the unit content. This question did not perform as expected with 57.8% of learners scoring 0 and a mean mark of 1.06. Learners were credited with knowing that materials were taken into the cell for endocytosis and materials removed from the cell for exocytosis.

(c) Explain the following processes:

(i) endocytosis

(2)

endocytosis is the movement of a molecule into a cell. This occurs when the molecule binds with the membrane and is surrounded by a vesicle that buds off into the cell. Examples of this are pinocytosis + phagocytosis.

(ii) exocytosis.

(2)

This is the movement of a molecule out of a cell. The vesicle containing the molecule buds with the cell membrane and is released into the environment out of the cell.

4 marks

A complete and accurate explanation of both processes to gain 4 marks.

(c) Explain the following processes:

(i) endocytosis

(2)

allows food molecules ~~not~~ that cannot be made in the cell via a semi-permeable membrane

(ii) exocytosis.

(2)

allows water molecules into the cell via a semi-permeable membrane

0 marks

The explanations are both incorrect - no rewardable marks.

Q4 (d)

This three mark question required learners to demonstrate an understanding of the term 'osteogenesis imperfecta' which is from section B3.3 in the unit content. 53.2% of learners were unfamiliar with the term and scored 0 marks. Many learners incorrectly described oestrous / ovulation in females.

(d) Describe osteogenesis imperfecta in dogs.

(3)

genetical mutation where it affects
the bones of the dog making them
brittle meaning they are weak
and can easily break.

3 marks

This response was awarded one mark for each of 'genetic mutation', 'brittle bones' and 'easily broken bones' as per the mark scheme to gain 3 marks.

(d) Describe osteogenesis imperfecta in dogs.

(3)

Osteogenesis imperfecta is when a female dog has
problems producing oestrogen, meaning it is much harder for
them to complete the oestrous cycle successfully. This
inhibits reproduction due to the lack of ~~oestrogen~~ hormone
production and therefore an unsuccessful ovulation.

0 marks

This response is incorrect demonstrating no understanding of the condition and scored 0 marks.

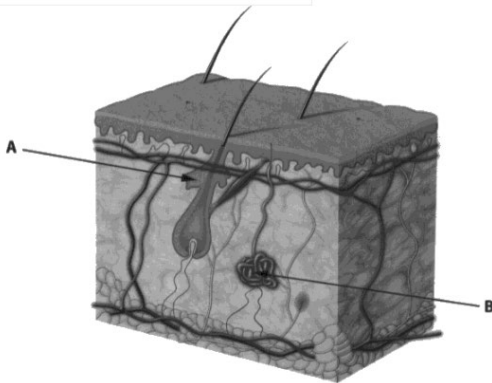
Question 5

Q5 (a)

This two mark question required learners to know the structure of skin from section A1.3 in the unit content and majority of learners were unable to identify a gland. Few learners knew both glands in the diagram to score two marks.

5 The diagram below shows the structure of skin.

NA



(a) Identify the glands labelled A and B.

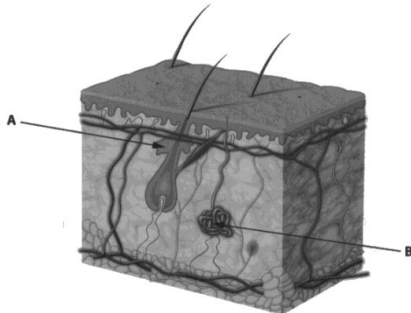
(2)

A oil gland
 B sweat gland

2 marks

Two correct glands have been identified as per the mark scheme to score 2 marks.

5 The diagram below shows the structure of skin.



(a) Identify the glands labelled A and B.

(2)

A ~~sebaceous gland~~ sweat gland
 B sebaceous gland

0 marks

Unfortunately this response has the glands identified the wrong way round and scores 0 marks.

Q5 (b)

This four mark question related to the previous question plus the diagram.

(b) Describe **two** layers of the skin.

(4)

1. The Epidermis is the outer layers of skin which defend the body against diseases etc - it is a protective layer.

2. The Dermis is the next layer down and contains the blood vessels, glands, the erector muscles for the hairs and different neurons.

4 marks

A complete, accurate description of two layers of the skin as per the mark scheme to be awarded 4 marks.

(b) Describe **two** layers of the skin.

(4)

1. Dermis is the outer layer.

2. Subcutaneous is the third layer.

1 mark

One mark was awarded for 'subcutaneous is the third layer' but 'dermis is the outer layer' is incorrect.

Q5 (c)

This one mark, memory recall, pass targeted question from A1.1 in the unit content about the definition of haematopoiesis as 'a major function of the skeleton' required learners to know that the term means 'formation of (red) blood cells'. Very few learners provided a correct response to score one mark.

(c) Define the term **haematopoiesis**.

(1)

the production of red blood cells

1 mark

This response is an accurate definition of the term haematopoiesis to be awarded 1 mark.

(c) Define the term **haematopoiesis**.

(1)

Blood

0 marks

This was a common answer but scored 0 marks because it only identified that 'haem' means 'blood'.

Q5 (d)

This was the first of two competency based questions with marks awarded for the response being at Level 1, Level 2 or Level 3. If no rewardable material was evident the learner scored 0 marks. Majority of learners provided a partially developed discussion with some accurate knowledge and understanding and consideration of inter relationships between the structure and function of feathers.

Birds have several kinds of feather, each with a specific role.

(d) Discuss the structure and function of different feather types.

(8)

~~Flight feathers~~ The seven functions of feathers are flight, protection of skin, warmth, protection against predators, stealth, mating/attracting a mate and finally walking.

- flight feathers are long and hollow, which allows the bird to weigh less and be able to take off easier.

Feathers protect the skin by being short and close to the skin, which allows the birds to prevent any nits from scratching the surface.

The warmth that feathers are from small fluffy feathers called down feathers, often found on chicks.

Protection from predators is because of the colour of the feathers, helping them to camouflage themselves out of sight.

stealth is provided by feathers through being pointed and streamlined allowing birds to sneak up on prey unheard.

Attracting a mate is done through brightly colored and often long feathers which are stood on end and flaunted.

Finally walking is helped by long short feathers that are attached to the feet, spreading the bird's weight across ice or sand, helping it to move faster and more efficiently.

8 marks

This learner has demonstrated accurate knowledge of the structure and function of feather types through a well-developed, logical discussion which includes relevant points and how structure and function interrelate. This is a Level 3 answer which was credited with 8 marks.

Birds have several kinds of feather, each with a specific role.

(d) Discuss the structure and function of different feather types.

(8)

Birds have multiple kinds of feathers, all in there are six types of feather, these are the flight feather, the filoplume feather,

The role of the flight feather is to help control the direction of flight.

The different roles of each of the feathers are to help insulate the body, help streamline the body, help aid flight, for some birds, attract mates and to aid balance. Other roles are to remove the presence of water.

2 marks

This learner has attempted the question demonstrating isolated knowledge and understanding of the subject with only the role of one type of feather mentioned as a generic assertion with no development of a discussion or linking to structure or other feather types. This is a Level 1 answer and was awarded 2 marks.

Q5 (e)

This question from section A1.2 of the unit content required learners to state one function of cartilage.

(e) State **one** function of cartilage.

(1)

provides a cushion in joints to reduce wear and tear on bones and allow them to move against each other

1 mark

The correct function of 'provides a cushion' has been stated to gain 1 mark.

(e) State **one** function of cartilage.

(1)

It can hold muscle in place

0 marks

This is an incorrect response – no mark awarded.

Q5 (f)

This three mark question is from section B4.6 of the unit content where the three types of muscle tissue are mentioned. Majority of learners scored 0.

(f) Give **three** types of muscle tissue.

(3)

1. Skeletal
2. cardiac.
3. Smooth

3 marks

The three correct types of muscle tissue have been given for 3 marks.

(f) Give **three** types of muscle tissue.

(3)

1. Connective
2. Epithelial
3. Muscle

0 marks

There are no correct answers in this response so no rewardable marks.

Question 6

Q6 (a)

Learners had to 'compare' the removal of nitrogenous waste in mammals and birds for this four mark, distinction targeted question from section A6.3 of the unit content. The majority of learners were able to recognise that 'mammals excrete urine and faeces separately' / 'birds produce one solid waste' to gain one / two marks as per the mark scheme.

6 The excretory system allows waste products to be removed from the body. Urea
uric acid

(a) Compare the removal of nitrogenous waste in mammals and birds. (4)

In mammals, amino acid^{from protein} is broken down into ammonia. This is toxic to the body and so the body dilutes it with water to become urea. In birds, the same process happens but it is instead mixed to create uric acid. This is still slightly harmful & so is passed through the bird's cloaca.

4 marks

This response demonstrates an understanding of 'ammonia produced which is toxic', 'ammonia removed as urea in mammals', 'urea soluble in water', 'birds produce uric acid which is less toxic' allowing 4 marks to be awarded.

6 The excretory system allows waste products to be removed from the body.

(a) Compare the removal of nitrogenous waste in mammals and birds. (4)

Mammals remove nitrogenous waste by expelling it from the mouth or nose. Birds excrete this by either expelling it from their nostrills or storing it and removing it in their waste products (faeces). Mammals can remove this waste immediately whereas birds cannot - it takes several hours to remove from their system.

0 marks

No understanding of the concept of nitrogenous waste removal has been shown in this response- no rewardable marks.

Q6 (b)

This one mark question required an element of understanding of the process of osmoregulation to be able to identify the name of the hormone involved from section A6.2 of the unit content. It was a distinction targeted question although only very few learners provided the correct response.

(b) State the hormone involved in osmoregulation.

(1)

Anti-Diuretic Hormone

1 mark

A correct response to score 1 mark

(b) State the hormone involved in osmoregulation.

(1)

LSH

0 marks

An incorrect response - no rewardable mark.

Q6 (c)

This four mark question is from section A6.2 of the unit content. It was targeted at merit and distinction with few learners achieving four marks. Learners were rewarded with one mark for recognising that the loop of Henle is longer in camels.

(c) Describe **two** roles of the loop of Henle.

1 descending loop of henle role is to ~~reabsorb~~ ^{reabsorb⁽⁴⁾} water back into the blood stream

2 the ascending loop of henle role is to reabsorb salts and other minerals back into the blood stream.

4 marks

This is a good example of an accurate description of two roles of the loop of Henle as per the mark scheme to be awarded 4 marks.

(c) Describe **two** roles of the loop of Henle.

1 helps to regulate water and salt intake ⁽⁴⁾

2 provides up information from nephrons

0 marks

There are no rewardable marks from this inaccurate description of the role of the loop of Henle

Q6 (d)

This two mark question from section A7.3 of the unit content related to 'cooling mechanisms employed to lose heat'.

(d) State **two** ways animals lose body heat.

(2)

1 Panting

2 Vaso-dilation

2 marks

Two correct responses stated for two marks

(d) State **two** ways animals lose body heat.

(2)

1 panting in dogs

2 moulting of one hair / changing thickness of coat

1 mark

'Panting' is a correct response for 1 mark but 'moulting' is incorrect.

Question 7

Q7

This was the second competency based question and the last question on the paper which had eight available marks awardable for the overall accuracy, detailed knowledge and understanding plus a well-developed discussion with relevant points about the compartments of the ruminant's stomach and how they interrelate regarding the digestion of food in ruminants.

Learners had some accurate knowledge and understanding about the ruminant's stomach and provided partially / well developed discussions of this topic which is from section A2.3 of the unit content.

7 Ruminant animals, such as cows, have digestive systems that allow them to gain nutrients from grass.

Discuss the digestion of food in ruminants.

The first step of digestion is mechanical, which involves the animal ripping the grass out with the use of teeth and ^{dental pad} tongue and then this is mixed with saliva which would be chemical digestion. This then goes down the oesophagus and into the rumen (pushed by tongue) where enzymes are added. This is where ^{chemical digestion:} fermentation occurs in the rumen. The food is then passed into the reticulum where larger particles are broken down to smaller. This also helps with the regurgitation process pushing the food back up the oesophagus into the mouth where the teeth break the food up further through mechanical

RETICULUM
OMASUM
ABOMASUM

~~Abomasum~~
Rumen 1
Abomasum 4
Omasum 3

digestion. The cow then swallows this for a second time
 this time entering the Omasum, ~~the~~ ^{then} ~~large~~ and Abomasum
 where stomach acid enzymes and bile from the liver
 can be added before passing on to the large intestines
 which ~~is a fitted~~ ~~with~~ ~~has~~ ~~a~~ ~~thin~~ has an inner lining
 with specific sized holes
 making it able to absorb extra nutrients ~~or water~~ from the food
~~water~~. This then goes to the small intestines where
 it's passed to the rectum as a storage of waste until it is
 secreted through the anus as waste/faeces

8 marks

The learner has demonstrated accurate and detailed knowledge of the digestion of food through the tract with a well-developed and logical discussion. It includes all relevant points about the passage of the food through the compartments of the stomach and how they link and interrelate. This is a Level 3 answer which was credited with 8 marks.

7 Ruminant animals, such as cows, have digestive systems that allow them to gain nutrients from grass.

Discuss the digestion of food in ruminants.

Ruminants have a diet that is mostly plant based meaning they must be able to extract the ~~at~~ nutrients they need from the plants. In order to do this they must have an adapted digestive system. Their stomachs have four compartments that allow them the nutrients they need. The first compartment is where ~~and~~ any heavy / large bits of food or foreign object fall. The second compartment is where the nutrients from

the grass is extracted and chemical digestion begins. The third compartment, the oesum, absorbs the water from the food. And the final compartment, the abosum, finishes the breakdown and gets rid of any waste products.

Mechanical digestion begins in the mouth where the animal grinds up the grass enough to swallow and is the start of chemical digestion ~~from~~ because of the saliva.

~~abosum~~ Many ruminant species like cows don't have top teeth instead have a rough plate that makes it easier for them to grind the grass.

The nutrients from grass is extracted in ~~the~~ one of the four chambers that is specialised in the break down of grass. The nutrients are absorbed into the stomach lining and then distributed to where they need to be in order to keep the cow healthy and fit.

4 marks

The learner has demonstrated some accurate knowledge i.e. the stomach has four compartments with some functions identified, but there are gaps and omissions. The discussion is partially developed with some consideration of different aspects of the digestion of the food in the mouth and the stomachs. This is a mid-Level 2 response and was awarded 4 marks.

Unit Summary

Based on the performance on this paper learners should:

- Be familiar with diseases / conditions / terms from the unit content such as 'von Willebrand', 'osteogenesis imperfecta', 'haematopoiesis', 'prokaryotic' 'endocytosis' and 'exocytosis'.
- Be able to differentiate between cell organelles and their functions.
- Know the order of the 'taxonomic groups' and correct terms for 'vertebrate classes' plus specific features within classes.
- Know the purpose / function of each of the nutrients in food.
- Understand the structure of the heart and the process of the circulatory system including the lymphatic system.
- Be able to recall the sequence for the passage of food through the compartments of a ruminant's stomach.
- Read the question to ensure the answer given reflects what has been asked i.e. 'structure **and** function'.
- Practice the levels-based, extended response questions to ensure a Level 3 answer includes a well-developed and logical discussion with accurate knowledge relevant to the context of the question plus clear links which consider a range of different aspects and inter-relationships with body systems. This will then gain the 6-8 marks for each of the two levels-based questions included in the paper.
- Responses should be based on the command verb in the question i.e. 'state' / 'give' do not require expansion of a point but 'explain' / 'describe' do.
- Identify the marks allocated to the question and the space available to guide the extent of the response required and ensure the answer is included in the appropriate point / label.
- Practise papers from previous series to become familiar with the style of questions asked.

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