Examiners' Report/
Lead Examiner Feedback

Summer 2017

BTEC Level 3 National in Animal Management

Animal Biology

Unit 2: 31645H

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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, Pass and Near 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. Given 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://www.edexcel.com/iwantto/Pages/grade-boundaries.aspx

Animal Biology: Unit 2 31645H

Grade	Unclassified	Level 3			
		N	P	M	D
Boundary Mark	0	11	23	37	52

Introduction

May 2017 was the first series of the new specification for Animal Management, and as such, the first time that 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.

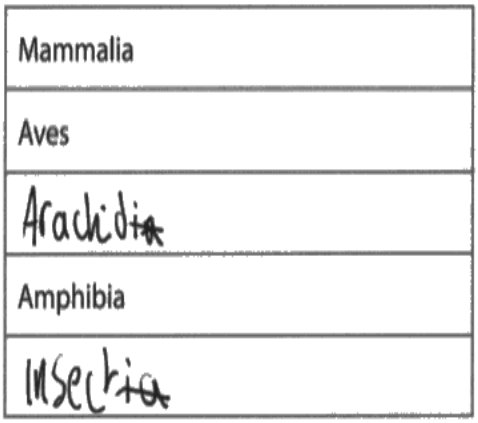
Question 1

Where learners lost marks in question 1, it was often due to incorrect terminology caused by inaccurate reading of the question or a failure to recall basic facts precisely.

Q01(a)

Scientific taxonomies are used to classify animals to species level.

1 (a) Give the missing **two** vertebrate classes. (2)



0 marks

The learner has identified two groups of invertebrates, the question asked for the missing vertebrate classes. The learner has misread the question and gained no marks.

Answer ALL questions. Write your answers in the spaces provided. 2 Q01a

Scientific taxonomies are used to classify animals to species level.

1 (a) Give the missing **two** vertebrate classes.

(2)

Mammalia
Aves
Reptilia
Amphibia
Pisces

2 marks

The learner has accurately identified the two missing vertebrate classes, Reptilia and Pisces.

Q01(b)

(b) Define the term 'species'. 1 Q01b
(1)

A Group of animals that can Breed and produce offspring

1 mark

The learner has identified that the correct response is a group of animals that can interbreed, gaining one mark. Poor responses often identified a species as a group that has similar characteristics, a definition that can apply to any group at any level of a classification system.

Q01(c)

(c) State **two** ways evolution takes place. 2 Q01c
(2)

1 The animal that has adapted well has produced offspring.
2 The offspring with those genetics have passed it on to their offspring.

2 marks

The learner has identified that evolution takes place when animals produce offspring and their characteristics are inherited through subsequent generations, thus gaining two marks.

Poor responses often gave examples of adaptations without suggesting ways they are evolved and a significant number of learners gave incorrect examples of Lamarckian evolution (giraffes stretch their necks when feeding so their young have longer necks etc.)

Q01(d)

(d) The table below shows an incomplete taxonomic hierarchy. 2 Q01d

Complete the **two** missing grouping levels.

(2)

Kingdom
Phylum
Class
order
Family
Genus
Species

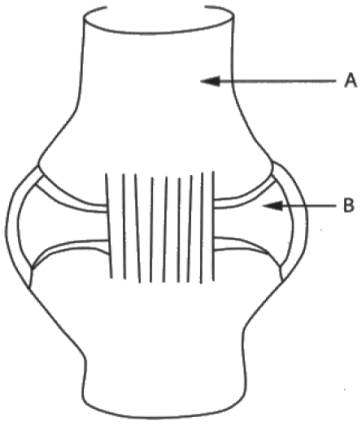
2 marks

This learner has identified the missing levels and gained full marks. Some responses were examples of particular groups within a level, e.g bony fish, Homo sapiens. This was a direct recall question from the specification and learners often either knew either responses, or neither.

Q02(a)

Learners who did well on this had a good recall of basic facts and could apply them to the question. Many learners seemed to struggle with applying specific terms, they often had remembered the terminology but could not apply effectively. Many learners got ligaments and tendons wrong way around, stating that tendons held bones together, or they did not identify differences. Many learners did not seem to know about the joint cavity of synovial fluid and guessed responses for that label.

Below is a diagram of a joint. 1 Q02a



2 (a) Label structures A and B on the joint. **(2)**

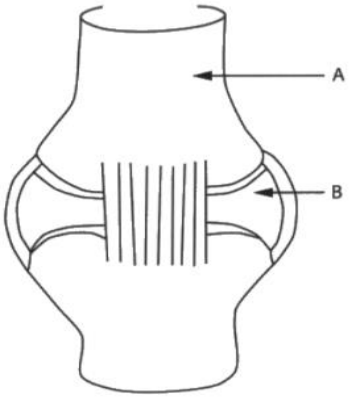
A compact bone

B Tendon

1 mark

Bone identified correctly.

Below is a diagram of a joint. 2 Q02a



2 (a) Label structures A and B on the joint. **(2)**

A Bone

B ~~[illegible]~~ capsule with synovial fluid.

2 marks

Both labels correctly identified.

Q02(b)

This question continued the theme of joints and required that learners state two types of joint apart from fibrous joints. This response gained 2 marks, overall learners responded well to this question. In this example, the learner was given full marks, one mark for synovial and one mark for cartilaginous. Other learners were given marks for hinge, with some learners receiving marks for ball and socket joint.

(b) There are three types of joint. One type is fibrous joints. 2 Q02b

State the **two** other types of joint.

(2)

1 Synovial joints

2 Cartilogenious joints

2 marks

Two other types of joint correctly identified.

(b) There are three types of joint. One type is fibrous joints. 0 Q02b

State the **two** other types of joint.

(2)

1 Epithlum

2 Synaes

0 marks

In the above response, epithelium is a layer of skin and the other word does not appear to relate to animal anatomy. This learner gained 0 marks as they have not correctly state 2 other types of joints. It would indicate that some learners were not prepared adequately and had limited or no knowledge of joint types

Q02(c)

This was a 3 mark question asking the learners to give three layers of the skin. There was no extension required and the learners were asked clearly to give three layers. There was a variety of responses for this question and it was marked positively with nothing deducted for incorrect spelling. Where the learner had made an attempt to spell the name of layers of the skin, marks were gained in a positive way. This example of a typical learner response was given 1 mark for Epidermis.

(c) Give **three** layers of the skin. 1 Q02c

(3)

1 Keratynocite cells

2 Epidermus tissue

3 Lipids

1 mark

One layer correctly identified, the other two terms are constituents of skin but are not layers, therefore one mark was given.

(c) Give **three** layers of the skin. 3 Q02c

(3)

1 epidermis

2 dermis

3 hypodermis

3 marks

The three layers are correctly identified.

Q02(d)

This question required the learners to state two differences between tendons and ligaments. While this was well attempted and many responses were seen, there was some major confusion within learners responses on what the actual function of tendons and ligaments were. The information learners provided in the response was factual about attachment of part of the anatomy but, no marks were given as the differences between tendons and ligaments was not fully understood.

(d) State **two** differences between tendons and ligaments. **(2)** 0 Q02d

1 tendons hold ~~the~~ bones together whereas ligaments don't.

2 ~~ligaments~~ tendons are stronger than ligaments

0 marks

The first point has confused tendons and ligaments, the second is incorrect.

(d) State **two** differences between tendons and ligaments. **(2)** 2 Q02d

1 tendons join muscle to bone, whereas ligaments join bone to bone.

2 tendons have a blood supply and nerves, ligaments do not.

2 marks

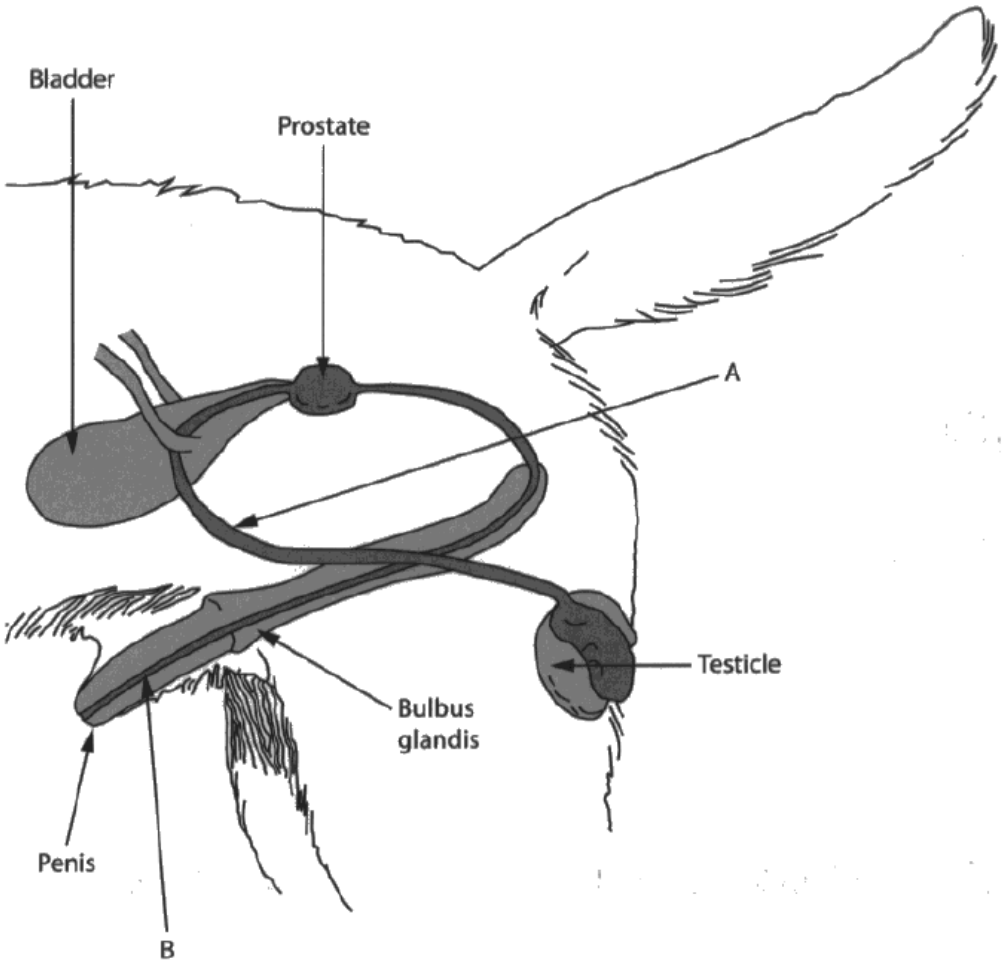
In the learner response above, the structures connected correctly identified (one mark) the difference in blood supply identified (one mark) total of two marks given.

Q03a

The responses for question 3 did not meet the criteria for a level three standard. At level three there is an expectation of a more accurate and technical level of response.

3 Below is a diagram of the reproductive system of a dog.

0 Q03a



(a) Label structures A and B.

(2)

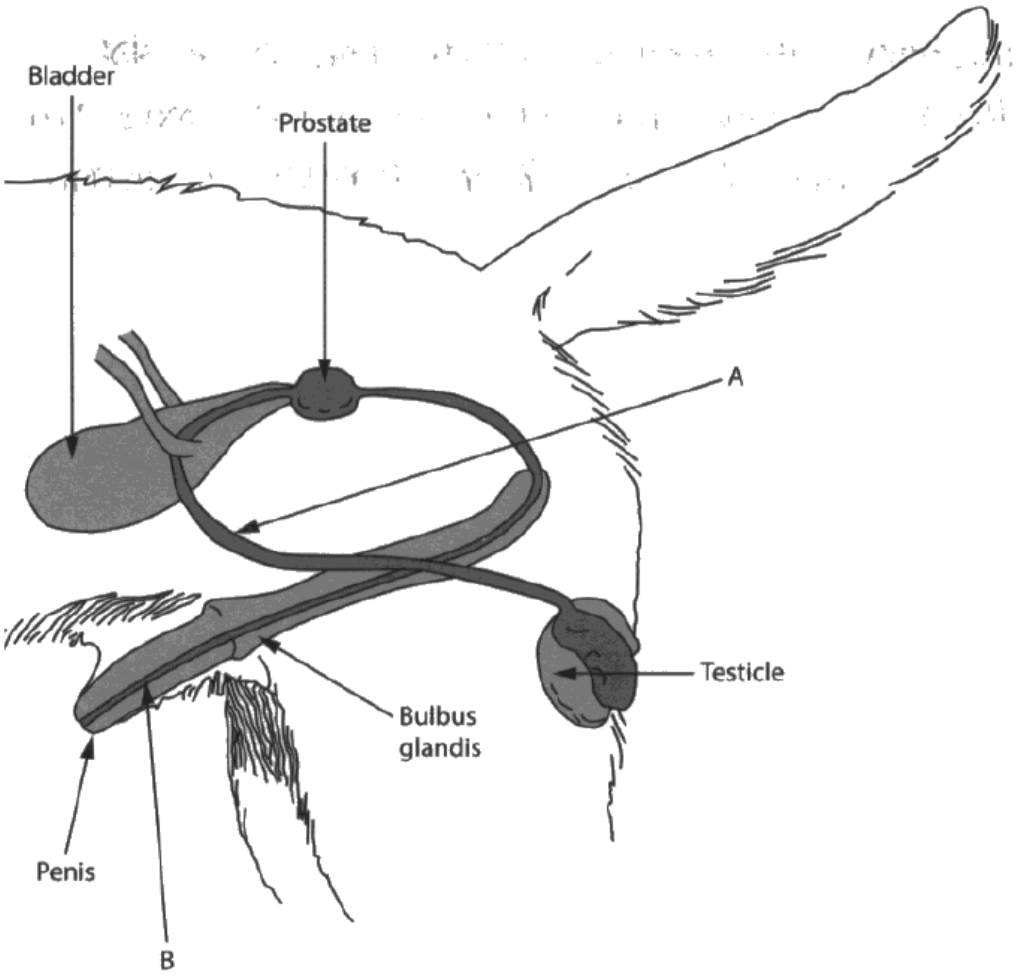
A urinary tract

B urinary tract

0 marks

This learner has included an overall descriptive term for a part of the structure shown, but has not demonstrated knowledge of the particular structures identified.

3 Below is a diagram of the reproductive system of a dog. 1 Q03a



(a) Label structures A and B.

(2)

A Vas deferens

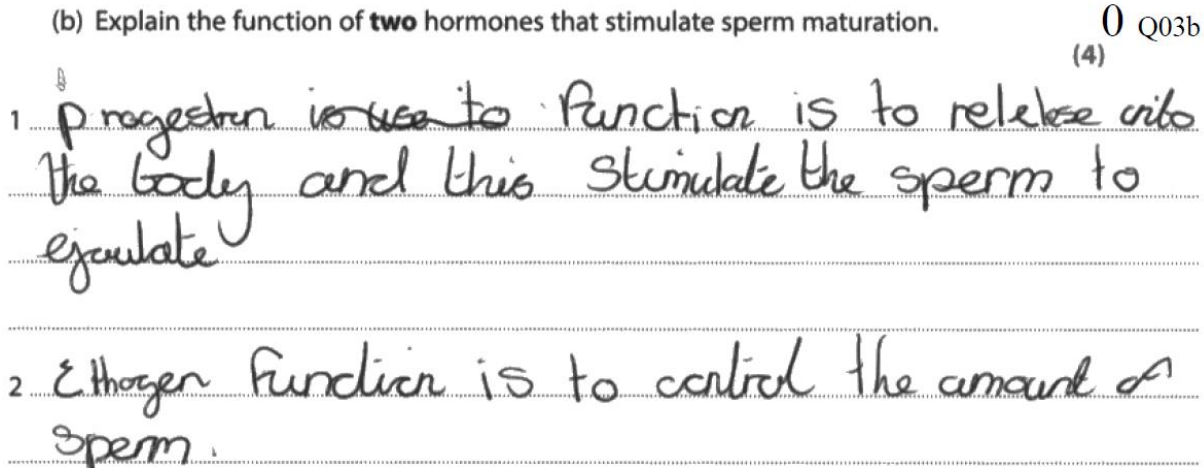
B Vas deferens

1 mark

This learner has correctly identified the Vas Deferens, however they have repeated the term which suggests that they were not confident with their knowledge of the reproductive system, so they have gained one of the two available marks. To gain full marks the learner should have identified structure B as the urethra.

Q03(b)

The role and effects of the changing levels of these hormones are identified in the specification. However, most learners did not demonstrate the knowledge required for level three response.



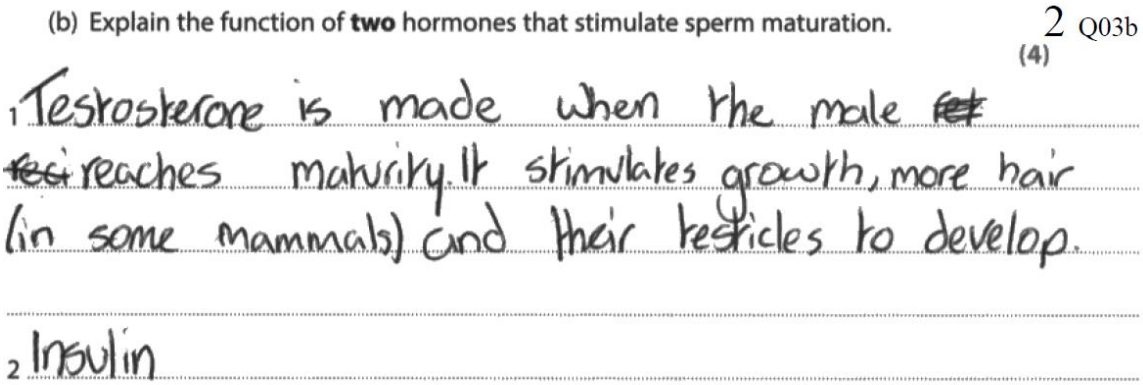
(b) Explain the function of **two** hormones that stimulate sperm maturation. **(4)** 0 Q03b

1 progestron is use to function is to release into the body and this stimulate the sperm to ejaculate

2 Ethogen function is to control the amount of sperm.

0 marks

This learner has identified progesterone, a hormone with a role in the female reproductive system and 'ethogen' which may be a misspelling of oestrogen, also a hormone in the female reproductive system.



(b) Explain the function of **two** hormones that stimulate sperm maturation. **(4)** 2 Q03b

1 Testrosterone is made when the male ~~fet~~ ~~testi~~ reaches maturity. It stimulates growth, more hair (in some mammals) and their testicles to develop.

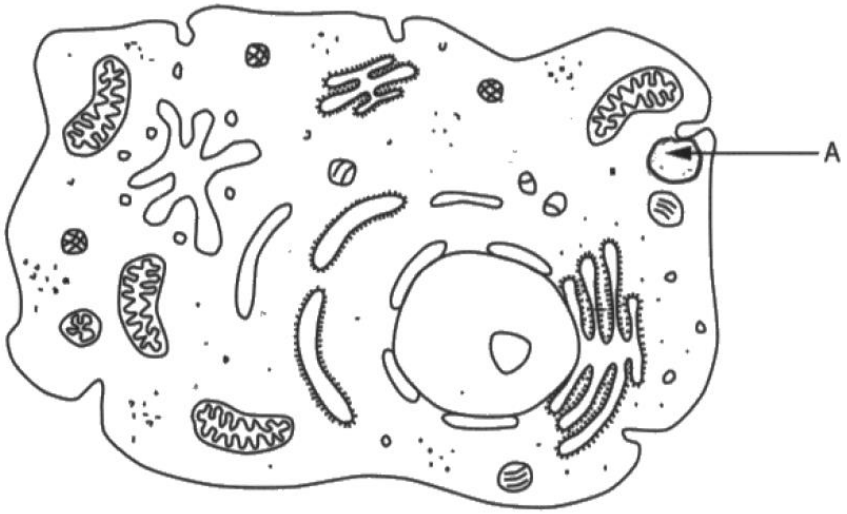
2 Insulin

2 marks

In the response above, the learner has successfully identified testosterone and its role in developing male reproductive tissue (testis). They should have identified follicle stimulating hormone (fsh) and its role in stimulating the production of androgen binding protein or the formation of the blood-testis barrier to gain full marks.

Q03c

Below is a diagram of an animal cell.



(c) State the name of the constituent labelled A.

0 Q03c

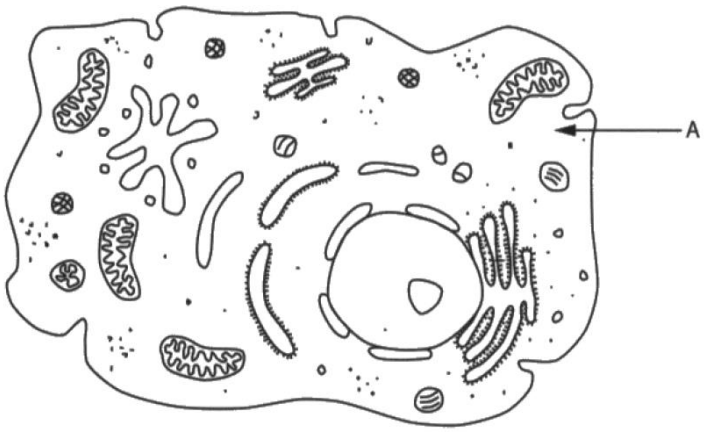
(1)

D.N.A

0 marks

This learner has misidentified the structure as DNA, many learners identified different cellular structures, other than cytoplasm, demonstrating a lack of accuracy in their knowledge of cells.

Below is a diagram of an animal cell.



(c) State the name of the constituent labelled A.

1 Q03c

(1)

Cytoplasm

1 mark

The learner has correctly identified the constituent as cytoplasm, gaining one mark.

Q03d

(d) Describe the function of the nucleus. **(2)** 0 Q03d

The nucleus is the small cyclie that is protected by nucleus membrane the function of the nucleus is to protect

0 marks

The learner has identified the role of the nucleus, then misidentified the function of the nucleus as protection.

(d) Describe the function of the nucleus. **(2)** 1 Q03d

The nucleus carries/holds the genetic information.
It's where life begins to grow.

1 mark

The learner has correctly identified that the nucleus contains genetic information however, the second point is a generic reference to cell/nuclear division and is not creditworthy.

Q04

Questions on the role of protein in the pregnant bitch and dental structures performed better with some good responses that were given the full mark allocation. Some responses were lacking in terminology and understanding, so only scored 1 or 2 marks. The 8-mark question had some good responses with relevant links throughout. There were a small minority that had poor responses and were given none to 2 marks that demonstrated little understanding or very basic knowledge.

Q04(a)

In this question, the learner was expected to explain the role of protein in the diet of a pregnant bitch and on the whole, there were some accurate and detailed responses. In this response which was not typical, the learner has been given 1 mark out of a possible 4 as there was only identification that the pregnant bitch needed protein to support the puppies growing and developing. The learner should have explained about the repair and maintenance of body tissue.

4 (a) Explain the role of protein in the diet of a pregnant bitch. **(4)** 1 Q04a

for a female dog that is pregnant the amount of protein it gets in its diet needs to be increased because she is not only feeding herself but about 4 or more puppies and she needs to be eatting regularly to help with the development of her young. The protein helps keep her healthy and helps in the development.

1 mark

One mark given for supporting the development of the young.

4 (a) Explain the role of protein in the diet of a pregnant bitch.

(4)

3 Q04a

Protein is need to the growth of new cells including neurons. As the foetus is growing inside her she and the foetous will need higher amounts of protien to regenerate and produce new cells and formation of new tissues. Protien is broken down into amino acids, needed for replication of cells. Protien gives strength to both of them

3 marks

One mark for the growth of new tissue, one for amino acids needed to build new cells and one for the foetus having a high demand for proteins as they are growing quickly.

Q04(b)(i)

Learners tended to make very generic statements that could have applied to both carnivores and herbivores. The question was looking for specific features adapted to the particular diet.

(b) (i) Explain a feature of the dental structure for a herbivore.

(2)

0 Q04bi

A herbivores teeth are not as sharp as they dont need to peirce through any flesh.

0 marks

No marks given, as sharp teeth are needed to cut plant material as exemplified by rodents.

(b) (i) Explain a feature of the dental structure for a herbivore.

(2)

2 Q04bi

A herbivore ~~For~~ will have flat teeth with a rigid edge to grind up vegetation.

2 marks

'Flat teeth', 1 mark 'designed to grind' 1 mark, total of 2 marks.

Q04(b)(ii)

(ii) Explain a feature of the dental structure for a carnivore. **(2)** 1 Q04bi

Carnivore have canes to grind down meats and bones, which mean the canies are sharp. This mean Carnivores would have more canies then Molars and premolars.

1 mark

Sharp canines one mark. The number of canines does not vary, it is their role that varies (with the exception that some herbivores have lost their canines)

Q04(c)

There are several roles that learners could have identified. Very few learners identified the production of enzymes or buffers, the correct responses seen were generally about the role in glucose metabolism.

(c) Explain **one** function of the pancreas. **(2)** 0 Q04c

Pancreas Secreates glucose into the blood Stream for energy. Pancreas does this when the body needs energy.

0 marks

Although the learner has realized that the pancreas has a role in glucose metabolism, the learner has confused glucose and insulin.

(c) Explain **one** function of the pancreas. **(2)** 2 Q04c

Pancreas Secretes the hormone insulin to aid in the regulation of glucose levels in the blood.

2 marks
The learner has identified secretion of insulin (one mark) to control blood sugar levels (one mark).

Q04(d)

This question was about how mechanical and chemical digestion work together to fulfill the overall function of digestion. This was linked to the example of a rabbit. Many learners gave a description of digestion without linking the two types, thus limiting them to level 1 responses.

(d) Discuss how mechanical and chemical digestion work together in a rabbit. **(8)**

0 Q04d

Mechanical digestion takes place in the mouth. This creates a partial breakage in the food, allowing fermentation to take place easier in the stomach. Due to the rabbits diet being high in fibre, sometimes the chemical digestion cannot fully seperate the food. This is why rabbits eat caecotraphs. Mechanical digestion aids chemical digestion again here, by allowing the rabbit to reconsume any nutrients it may have missed the first time.

0 marks

A confused response making some points about digestion in rabbits but none of the points made link to the question asked, no rewardable response.

(d) Discuss how mechanical and chemical digestion work together in a rabbit. **(8)** 8 Q04d

A rabbit mastcates its fibrous diet first, mechanically breaking down the food. The bolous goes through the oesophagus via h peristalsis and then in the stomach, further mechanical breakdown occours by the stomach churning and moving. The small intestinie has enzymes that break down and absorb the nutrients then between the small intestinie and the large intestinie, the cecum takes and sorts some undigestable product which is plant cellulose that is hard to break down. The cecum contains enzymes and symbiotic bacteria that ferments the fibre and cellulose. Then this is released into the large intestines and is excreted as ceal droppings. These are then re-ingested by the rabbit when the full amount of nutrients can be absorbed.

(Total for Question 4 = 18 marks) 17

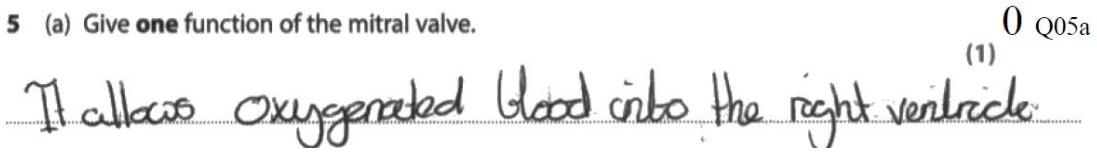
8 marks

This is an accurate and thorough knowledge demonstrated; evidencing comprehensive linkages and the reasoning is supported by relevant level three evidence.

Q05

Learners were asked to apply their knowledge on the lymphatic system and immune response. Many learners could not correctly identify the difference between foetal and adult haemoglobin so did not access the marks available.

Q05(a)

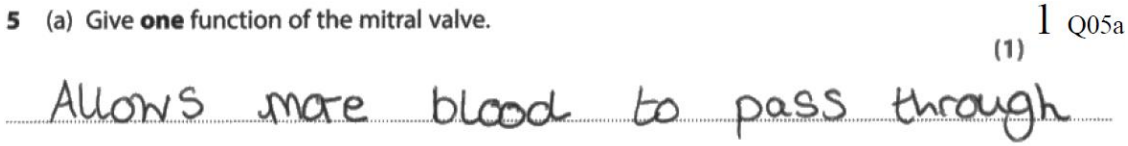

5 (a) Give **one** function of the mitral valve. 0 Q05a

(1)

It allows oxygenated blood into the right ventricle.

0 marks

The learner did not identify that the mitral valve allows blood to move from the atrium into the ventricle. They also incorrectly identified it as being in the right side of the heart. The correct response would have been to state that it prevents backflow.


5 (a) Give **one** function of the mitral valve. 1 Q05a

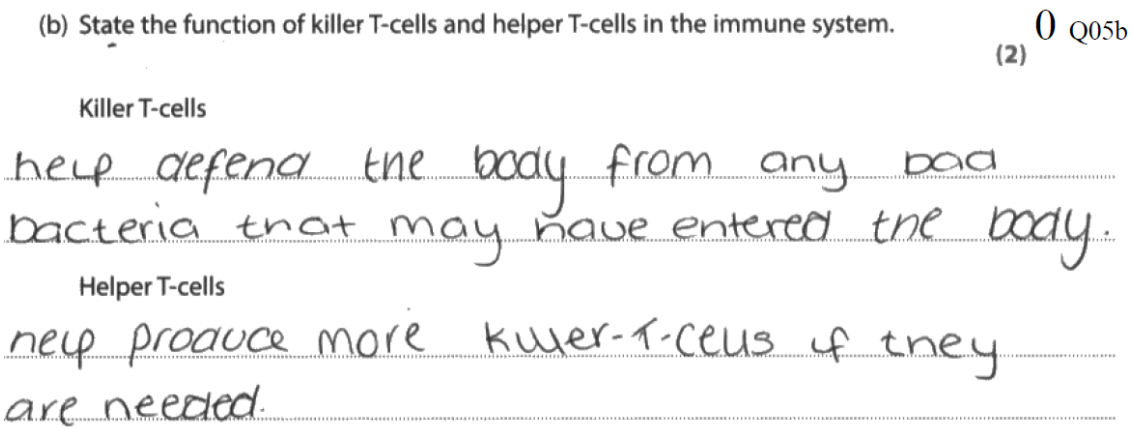
(1)

Allows more blood to pass through

1 mark

The learner has identified that the valve opens to allow an increase in blood pressure by increasing the amount of blood passing through.

Q05(b)


(b) State the function of killer T-cells and helper T-cells in the immune system. 0 Q05b

(2)

Killer T-cells

help defend the body from any bad bacteria that may have entered the body.

Helper T-cells

help produce more kuler-T-cells if they are needed.

0 mark

This learner had remembered some generic statements about the immune system, however, they could not identify the specific role of helper and killer T cells. The learner could have identified that Killer T cells destroy infected cells in the body and helper T cells trigger the immune response.

Q05(c)

(c) State **two** structures of the lymphatic system. **(2)** 0 Q05c

1 pancreatic

2 Syslematic

0 mark

The learner has identified the pancreas as a structure in the body, unfortunately it does not have a role in the lymphatic system. Systematic is not the name of a structure.

(c) State **two** structures of the lymphatic system. **(2)** 2 Q05c

1 lymph nodes

2 Thoratic lymphatic Duct.

2 marks

The learner has correctly identified lymph nodes and the thoracic duct as structure in the lymphatic system.

Q05(d)

(d) Explain the role of the lymphatic system in immune response. **(4)** 1 Q05d

The lymphatic system is the second immune response, after the skin. It produces lymph fluid which helps detect and fight of foreign bodies. It also releases the white blood cells when it has detected something harmful.

1 mark

The learner has identified that the lymphatic system supports the immune response by transporting white blood cells, they have not gone into any more accurate detail about the lymphatic system.

(d) Explain the role of the lymphatic system in immune response. 4 Q05d
(4)

lymph vessles bve close to blood vessels and ~~they~~ by diffusion and osmosis they ~~remove~~ filter the liquid in the blood and blood plasma. in the lymph nodes that are located around the body. They look out for foriegn bodies and invaders and neutralize them. The thymus, spleen + tonsils produce lymphocytes, NK cells and T cells + B cells which attack antigens.
harmfull

4 marks

The learner has explained that lymphatic system filters, is the first line of defense against disease, it produces lymphocytes and other cells that target antigens.

Q05(e)

(e) Give **two** advantages of a double circulatory system in mammals. 1 Q05e
(2)

1 Have more Oxygenated blood

2 Blood travels around the body faster.

1 mark

The learner has identified that a double circulatory system allows a greater flow of blood around the body. The learner could have gone on to say that this also means a lower blood pressure in the lungs.

Q05(f)

(f) Describe the differences between foetal haemoglobin and adult haemoglobin. **(4)** 0 Q05f

Foetal haemoglobin is only present when the baby is inside the mother and a little bit after birth. Adult haemoglobin is only present when the child is over a few days old. Foetal haemoglobin is a lot more quicker at transporting oxygen to muscles. Whereas adult is a bit slower at transporting oxygen to muscles.

0 mark

The learner has not demonstrated any accurate knowledge of the differences between the two forms of haemoglobin, they have offered some very basic description that is inaccurate.

The learner could have identified that foetal haemoglobin has a higher affinity for oxygen than adult haemoglobin, this means that it will have a stronger bond at a lower partial pressure of oxygen, so it will take oxygen from the adult at the placental interface, ensuring the foetus has an adequate oxygen supply.

Q06

Some learners confused hypothermia and hyperthermia, resulting in low marks. A significant number used their general knowledge but gave responses that are particular to humans, e.g. red faced. These responses cannot be ok on an animal biology paper.

Q06(a)

6 (a) Explain the effect of the vasodilation of arterioles next to the skin. **(4)** 2 Q06a

The arterioles dilate (become ~~smaller~~ larger) which exposes a larger amount of blood below the skin because of larger surface area. This means more blood can be cooled by the air. quicker.

2 marks

In order to gain full marks for this question, learners were expected to state symptoms of hypo and/or hyperthermia. Unfortunately, some responses got this confused, which resulted in poor allocation of marks for a basic knowledge question.

6 (a) Explain the effect of the vasodilation of arterioles next to the skin. **(4)** 4 Q06a

Vasodilation is when the arterioles expand meaning the arterioles are closer to the skin. It also allows for more blood to pass through the arteriole. Heat is will be lost through diffusion ~~from an high concentration temperature~~ down a temperature gradient, from a high temperature in the blood to a low temperature outside ~~from~~ the skin. As the arteriole dilates the pressure of the blood will be lowered further (blood will be slowed down).

4 marks

The learner has identified that vasodilation allows an increase on blood flow, but a decrease in blood flow, allowing more heat loss.

Q06(b)

(b) State **two** symptoms of hypothermia. **(2)** 2 Q06b

1 low temperature

2 Shivering

2 marks

One mark given for being cold, and one mark given for shivering.

Q06(c)

(c) State **two** symptoms of hyperthermia. **(2)** 0 Q06c

1 Shivering

2 increased ~~slow~~ blood circulation

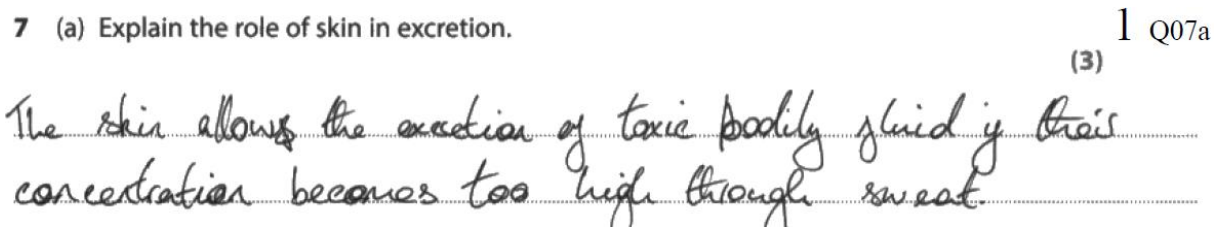
0 marks

The learner has confused hyperthermia with hypothermia for the first point, and the second point is incorrect for both.

Q07

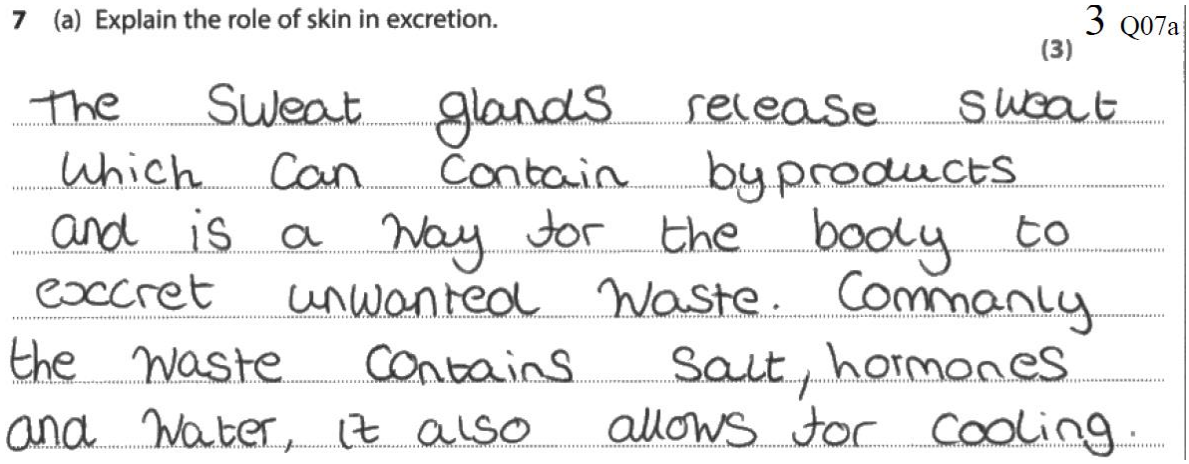
This set of questions required the learners to apply knowledge homeostasis.

Q07a



1 mark

The learner has identified the loss of fluid.



3 marks

The learner has identified sweating as a means of releasing unwanted salts and excess water.

Q07(b)

(b) Explain how endothermic mammals maintain their normal body temperature. **(3)** 0 Q07b

Endothermic mammals are warm blooded and have a circulatory system which constantly pumps the blood around the body to keep the limbs warm. They also have either fur, plumage or thick skin to help insulate them.

1 mark

The learner has identified insulating skin covering, but has not explained how this can assist in maintaining temperature.

(b) Explain how endothermic mammals maintain their normal body temperature. **(3)** 3 Q07b

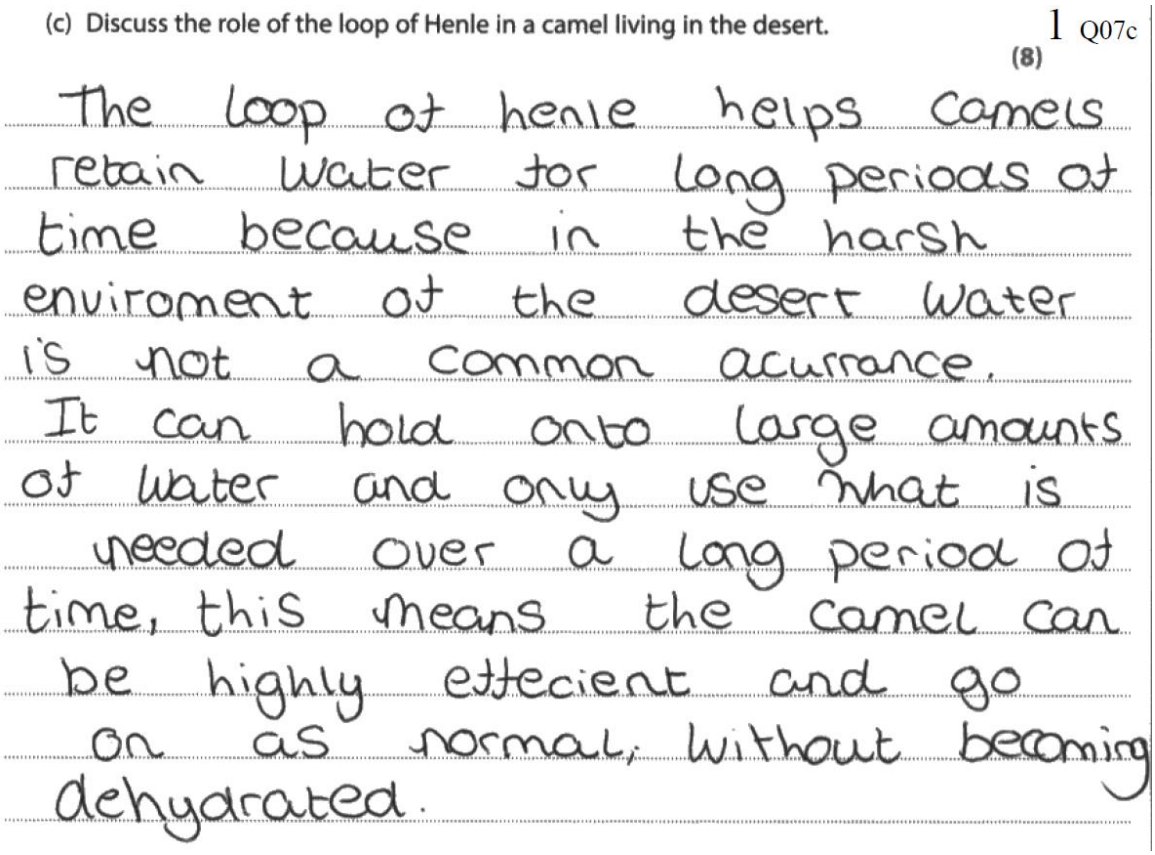
Through the negative feedback system. When the body temperature rises, this system will work against that, by coursing the body to sweat for example. If the body becomes too cold, it will begin to shiver. Maintaining body temperature requires a lot of energy.

3 marks

The learner has identified that negative feedback can increase temperature by shivering or reduce it by sweating thus maintaining an equilibrium.

07(c)

Overall, this question did not receive responses with high marks. Many learners misread the question and responded very generically about camels rather than concentrating on the function of the loop of Henle, in the kidney, which was the focus of the question.



(c) Discuss the role of the loop of Henle in a camel living in the desert. **(8)** 1 Q07c

The loop of henle helps camels retain water for long periods of time because in the harsh enviroment of the desert water is not a common acurrance. It can hold onto large amounts of water and only use what is needed over a long period of time, this means the camel can be highly ettecient and go on as normal, without becoming dehydrated.

1 mark

The learner has stated that the loop of Henle helps in the retention of water, an isolated element of knowledge. There is no other rewardable response, therefore a level one response.

(c) Discuss the role of the loop of Henle in a camel living in the desert.

(8) 5 Q07c

The loop of Henle in a camel is specially adapted for living in the desert. The loop of Henle is much longer this allows for maximum water absorption. The longer length means that a greater water potential gradient and be created along the loop of Henle. The loop of Henle will be able to further concentrate the glomerular filtrate and water will diffuse out of the loop of Henle by osmosis from a high water potential to a low water potential. The bottom part of the loop will be able to further increase water reabsorption as the collecting duct and the loop of Henle will create another water potential gradient.

5 marks

The learner has demonstrated accurate knowledge and understanding. There are occasional linkages to the scenario, these could have been sustained more throughout the response to get into level three mark band.

Unit Summary

Based on their performance on this paper, learners should:

- Use appropriate technical language throughout your responses, ie. Use the correct terminology when answering questions on topics such as:
    - Classification, using terms like, genus, species, reptilia etc.
    - Anatomy and physiology, using terms like pancreas, oxyhaemoglobin, purkinje fibres etc accurately.
- Tailor your response based on the command word in the question, eg. explain will require an expansion of a point and discuss requires looking at several possible points/arguments.
- Use the number of marks as a guide to the depth of response required.
- Be clear about terminology used in the specification as these words will be repeated in the exam paper, e.g. anatomical structures, physiological processes and classification terms.
- Know the different body systems and named disorders and be able to apply their knowledge to different scenarios.