**B1**

| Question | | | Marking details | Marks Available |
|---|---|---|---|---|
| **1** | *(a)* | | Backbone/vertebrae/bones/spine (NOT spinal cord); | 1 |
| | *(b)* | (i) | <u>Genus</u>; | 1 |
| | | (ii) | <u>Species</u>; | 1 |
| | *(c)* | | Eats plants/vegetation; <br> (NOT - does not eat meat/they are vegetarians) <br> neutral – eats {grass/ vegetables/ veg} | 1 |
| | *(d)* | (i) I | {percentage/ %} <u>dark</u> sheep; | 1 |
| | | II | correct plotting +/- $\frac{1}{2}$ small square;; | 2 |
| | | III | <u>straight</u> line joining the plots; | 1 |
| | | (ii) I | as temperature rises the {%/ proportion} <u>dark</u> sheep falls; <br> (NOT {number/ amount} of sheep/reverse argument) | 1 |
| | | II | Any two from: <br> (differential) predation/camouflage; <br> disease; <br> food; <br> water; <br> correct genetic reason; NOT different genes <br> (NOT hunting) | max 2 |
| | | | **Question 1 Total** | **[11]** |

| Question | | Marking details | Marks Available |
|---|---|---|---|
| **2** | *(a)* | {Badgers/ they} {spread/pass on/transmit} {TB/it} (to cattle)/ORA | 1 |
| | *(b)* | Public disquiet/animal rights issues/protests/people might try to stop it; | 1 |
| | *(c)* | Badgers from {outside the area/nearby} move in; | 1 |
| | *(d)* | (if) not all badgers killed/some (infected) badgers would {escape spread TB to other farms}; | 1 |
| | *(e)* | Any two from<br>vaccination (reject injection/jab) of cattle;<br>vaccination (reject injection/jab) of badgers;<br>Accept vaccination (cattle/badgers not specified)= 1 mark<br>fencing/ prevention of badgers entering {cattle housing/ troughs} keep badgers away from farm/keep cattle in sheds (idea of separation);<br>control of cattle movement;<br>testing of {cattle/badgers};<br>kill {infected/diseased} cattle; | max 2 |
| | | **Question 2 Total** | **[6]** |

| Question | Marking details | Marks Available |
|---|---|---|
| **3** *(a)* | Heart disease/circulatory disease/stroke/clogged arteries/mobility issues/diabetes; NOT heart attack/failure | 1 |
| *(b)* | {Burns/ uses up} {fat/<u>stored</u> energy}; NOT burns {calories/energy}/ lose weight | 1 |
| | **Question 3 Total** | **[2]** |

| Question | | | Marking details | Marks Available |
|---|---|---|---|---|
| **4** | *(a)* | (i) | <u>bronchioles</u>; | 1 |
| | | (ii) | <u>production of thick mucus;</u> | 1 |
| | | (iii) | <u>an inhaler;</u> | 1 |
| | *(b)* | (i) | C/from his father and his mother; | 1 |
| | | (ii) | A/heterozygous for cystic fibrosis; | 1 |
| | | (iii) | C/homozygous recessive for cystic fibrosis; | 1 |
| | | (iv) | A/25%; | 1 |
| | | (v) | C/males and females; | 1 |
| | | | **Question 4 Total** | **[8]** |

| Question | | | Marking details | Marks Available |
|---|---|---|---|---|
| **5** | *(a)* | | Bacteria/ fungi; | 1 |
| | *(b)* | | {The <u>leaves/they</u>} have {<u>decayed/rotted</u>/<u>decomposed</u>}; <br> {<u>More</u>/fas<u>ter</u>} at {<u>15 °C / the high temperature/highest temperature</u>}; ORA | 2 |
| | *(c)* | (i) | Any two from: <br> same type of leaves/from same tree; <br> NOT same leaves <br> same size of leaf; <br> equal volumes of soil; <br> NOT amount/ type/moisture content <br> same {length amount} of time/both one month; | max 2 |
| | | (ii) | To make a (*qualified)* conclusion (e.g. meaningful/valid)/to make a comparison/to avoid invalid results/to determine that the temperature causes the difference; <br> NOT to make more {reliable/accurate}/ avoid bias | 1 |
| | *(d)* | | Carbon dioxide/$CO_2$; <br> NOT $CO^2$/Co | 1 |
| | *(e)* | | (Nitrates) released/produced by/come from the <u>leaves</u>; <br> during <u>decay</u>; | 2 |
| | | | **Question 5 Total** | **[9]** |

| Question | | | Marking details | Marks Available |
|---|---|---|---|---|
| **6/1** | *(a)* | | Rat-tailed maggots;<br>Sludgeworms;<br>NOT maggots/worms | 2 |
| | *(b)* | | Water lice ;<br>NOT lice | 1 |
| | *(c)* | (i) | Increases/gets higher/goes up; | 1 |
| | | (ii) | {Uses atmospheric oxygen/comes to the surface} to breathe/ description of adaptation-they {have a breathing tube/use their tail to breathe}/ takes oxygen out of the air/can breathe out of water ;<br>NOT lift their heads to breathe | 1 |
| | | | **Question 6/1 Total** | **[5]** |

| Question | | | Marking details | Marks Available |
|---|---|---|---|---|
| **7/2** | *(a)* | (i) | Midday meal; | 2 |
| | | | small<u>est</u>/ low<u>est</u> {dose/ amount} of insulin (injected); | |
| | | | NOT lowest level of glucose/ sugar/ carbohydrate in the meal | |
| | | (ii) | She <u>under</u>estimated the amount of glucose/sugar/carbohydrate in the meal/more glucose than she {thought/estimated/ calculated} there would be; | 2 |
| | | | {Injected/dose/gave}<u>too</u> little insulin; | |
| | *(b)* | | {Converts/ changes} glucose to  glycogen (correct spelling); | 2 |
| | | | Stored/in the liver; | |
| | | | NOT insulin stores glucose as glycogen | |
| | | | 2<sup>nd</sup> mark only credited if reference to glycogen | |
| | | | **Question 7/2 Total** | **[6]** |

| Question | Marking details | Marks Available |
|---|---|---|
| **8/3** *(a)* (i) | **A;** | 1 |
| (ii) | Hairs {lying flat/lying down/hairs not stood up/lower}/ {erector muscle/ X} is relaxed;<br>Sweat on the surface of the skin/A {shows/ is} sweating/more sweat;<br>NOT sweat produced/sweat in the sweat duct/sweat is produced | 2 |
| *(b)* | Reduced blood flow (in the skin)/less blood in the capillaries;<br>NOT less blood flowing through <u>the body</u><br>{Reduces/less} heat loss (reject no heat loss);<br>ORA (Must state letter A) | 2 |
| *(c)* | It <u>contracts;</u><br> NOT tenses/gets shorter | 1 |
| | **Question 8/3 Total** | **[6]** |

| Question | Marking details | Marks Available |
|---|---|---|
| **9/4** *(a)* | As a fertilizer for <u>growth</u>/to make crops <u>grow</u>/to increase <u>growth</u> (rate)/to increase the {crop/ yield}; | 1 |

*(b)* **Indicative content** 6

Nitrate pellets dissolve. Nitrate runs off into pond. Increased growth of aquatic plants/algal bloom. Sunlight blocked. Plants die. Decay. Decay microbes/ bacteria use oxygen in water for respiration. Aquatic animals/insects/fish die.

**5 – 6 marks**
The candidate constructs an articulate, integrated account correctly linking relevant points, such as those in the indicative content, which shows sequential reasoning. The answer fully addresses the question with no irrelevant inclusions or significant omissions. The candidate uses appropriate scientific terminology and accurate spelling, punctuation and grammar.

**3 – 4 marks**
 The candidate constructs an account correctly linking some relevant points, such as those in the indicative content, showing some reasoning. The answer addresses the question with some omissions. The candidate uses mainly appropriate scientific terminology and some accurate spelling, punctuation and grammar.

**1 – 2 marks**
The candidate makes some relevant points, such as those in the indicative content, showing limited reasoning. The answer addresses the question with significant omissions. The candidate uses limited scientific terminology and inaccuracies in spelling, punctuation and grammar.

**0 marks**
The candidate does not make any attempt or give a relevant answer worthy of credit.

**Question 9/4 Total** **[7]**