

Commentary on candidate evidence

The candidate evidence has achieved the following marks for each question in this question paper.

Candidate 1

Question 1(a)

The candidate was awarded **0 out of 1 mark**.

Although mucus could be an appropriate physical barrier, the mechanism is not clear.

The action of saliva is also described incorrectly.

Question 1(b)

The candidate was awarded **1 out of 1 mark** as they have stated 'no effect'.

Question 1(c)(i)

The candidate was awarded **0 out of 1 mark** as although they have described the trend based on the data, they have not provided a conclusion.

Question 1(c)(ii)

The candidate was awarded **1 out of 1 mark**.

The statement about antibodies diversifying could be expressed more clearly, but it does include the idea of exposure to new antigens and so the mark was awarded.

Question 1(d)(i)

The candidate was awarded **1 out of 1 mark** for a correct answer of '32.6'.

Question 1(d)(ii)

The candidate was awarded **0 out of 2 marks** as they did not make an appropriate comparison between mild and severe infection and no values were given.

Question 1(d)(iii)

The candidate was awarded **0 out of 1 mark** as the response is incorrect.

Question 2(a)

The candidate was awarded **1 out of 1 mark** for a correct response.

Question 2(b)

The candidate was awarded **1 out of 1 mark** for a correct response.

Question 2(c)(i)

The candidate was awarded **0 out of 1 mark** as they have justified 'A' based on the number of cells rather than proportions.

Question 2(c)(ii)

The candidate was awarded **0 out of 1 mark** as the response is incorrect.

Question 2(c)(iii)

The candidate was awarded **0 out of 1 mark**.

It is not clear how the discussion of R-groups/structures unfolding is linked to membrane proteins.

Question 3(a)

The candidate was awarded **0 out of 1 mark** as the response is incorrect.

Question 3(b)

The candidate was awarded **1 out of 1 mark**.

The term 'group' would be better than 'unit' but is acceptable.

Question 3(c)

The candidate was awarded **1 out of 1 mark**.

The response could have been stated more clearly, but it is acceptable as it includes the idea of binding being linked to affinity.

Question 3(d)(i)

The candidate was awarded **0 out of 1 mark** as the response does not mention affinity and they have discussed rate (time).

Question 3(d)(ii)

The candidate was awarded **0 out of 1 mark** as the response is incorrect.

Question 4(a)

The candidate was awarded **1 out of 1 mark**.

The incomplete description following 'hydrolysis of ATP' can be ignored.

Question 4(b)

The candidate was awarded **1 out of 1 mark** for a correct response.

Question 4(c)(i)

The candidate was awarded **0 out of 1 mark** as the response is incorrect.

Question 4(c)(ii)

The candidate was awarded **0 out of 1 mark** as the response is incorrect.

Question 5

The candidate was awarded **5 out of 5 marks**.

Marks were awarded for points 1, 2, 4, 6 and 7.

Marks were not awarded for:

- ◆ Point 3 – as there is no mention of receptors being specific.
- ◆ Point 5 – as it does not include the idea of a target sequence of DNA.

Question 6(a)

The candidate was awarded **3 out of 3 marks**.

Marks were awarded for points 1, 2 and 4.

Marks were not awarded for:

- ◆ Point 3 – the idea of sufficient ion movement lacking.

The additional information about downstream events can be ignored.

Question 6(b)(i)

The candidate was awarded **1 out of 1 mark** for a correct response.

Question 6(b)(ii)

The candidate was awarded **0 out of 1 mark**.

The first part of the response is acceptable as per the additional guidance column of the marking instructions, but no consequence has been described.

Question 7(a)(i)

The candidate was awarded **1 out of 1 mark** for a correct response.

Question 7(a)(ii)

The candidate was awarded **1 out of 1 mark** for a correct response.

Question 7(b)(i)

The candidate was awarded **1 out of 1 mark** for a correct response.

Question 7(b)(ii)

The candidate was awarded **0 out of 2 marks**.

There is some sense of the correct biology – but the statement regarding Rb inactivation is inaccurate.

Question 7(c)(i)

The candidate was awarded **1 out of 1 mark** for a correct response.

Question 7(c)(ii)

The candidate was awarded **0 out of 1 mark** as there is no reference to unvaccinated.

Question 8(a)

The candidate was awarded **1 out of 1 mark** for a correct response.

Question 8(b)(i)

The candidate was awarded **0 out of 1 mark** as the response is incorrect.

Question 8(b)(ii)

The candidate was awarded **1 out of 1 mark** for a correct response.

Question 8(c)

The candidate was awarded **0 out of 1 mark** as there is no mention of glucose.

Question 8(d)

The candidate was awarded **0 out of 1 mark**.

The statement is correct, but it does not address why centrifugation is used in this experiment.

Question 8(e)

The candidate was awarded **0 out of 1 mark**.

The candidate has mentioned both bananas and water but has made no reference to mass or volume.

Question 8(f)

The candidate was awarded **1 out of 1 mark** for a correct response.

Question 8(g)

The candidate was awarded **0 out of 1 mark** for an incorrect response.

Ripeness is the independent variable of this investigation.

Question 9(a)(i)

The candidate was awarded **0 out of 1 mark** for an incorrect response.

Question 9(a)(ii)

The candidate was awarded **0 out of 1 mark** for an incorrect response.

Question 9(b)(i)

The candidate was awarded **0 out of 1 mark**.

Structure is not an alternative to sequence for DNA.

Question 9(b)(ii)

The candidate was awarded **0 out of 1 mark** for an incorrect response.

Question 10(a)

The candidate was awarded **1 out of 1 mark** for a correct response.

Question 10(b)

The candidate was awarded **1 out of 1 mark** for a correct response.

Question 10(c)(i)

The candidate was awarded **0 out of 1 mark** for an incorrect response.

Question 10(c)(ii)

The candidate was awarded **0 out of 1 mark** as no link has been made between variation and adaptation.

Question 11(a)

The candidate was awarded **1 out of 1 mark** for a correct response.

Question 11(b)

The candidate was awarded **1 out of 1 mark** for a correct response.

Question 11(c)(i)

The candidate was awarded **1 out of 1 mark** for a correct response.

Question 11(c)(ii)

The candidate was awarded **0 out of 1 mark** as there is no mention of the effect of the treatment as opposed to the control.

Question 11(d)

The candidate was awarded **1 out of 2 marks**.

Pictures of cows with different stripes is an example of a choice, but the candidate does not indicate a comparison.

Question 12(a)

The candidate was awarded **0 out of 1 mark** as there is no mention that the predator might be a host.

Question 12(b)

The candidate was awarded **1 out of 1 mark**.

Preference as a response (behaviour) is an acceptable inference based on the data provided to the candidate.

Question 12(c)

The candidate was awarded **0 out of 1 mark** as 'new substance' does not equal new resource.

Question 12(d)

The candidate was awarded **3 out of 3 marks**.

Marks were awarded for points 1, 2, 3, 4 and 5 (any 3 can be awarded a mark).

Note: Mark 3 is awarded for 'C being the total number of the second capture ... predicts that ...the whole population after released from the first capture.' Refer to the additional guidance column of the marking instructions.

Question 13(a)(i)

The candidate was awarded **0 out of 1 mark** for an incorrect response.

Question 13(a)(ii)

The candidate was awarded **0 out of 1 mark** for an incorrect response.

Question 13(b)

The candidate was awarded **0 out of 1 mark**.

The response gives no sense of 'close' or 'intimate' relationships. It also has incorrect biology by stating that both the host and the parasite benefit from the relationship.

Question 13(c)

The candidate was awarded **1 out of 1 mark** for a correct response.

Refer to the additional guidance column of the marking instructions.

Question 14A(i)

The candidate was awarded **3 out of 3 marks**.

Marks were awarded for points 1, 2, 3, 4 and 5 (any 3 can be awarded a mark).

Question 14A(ii)

The candidate was awarded **6 out of 6 marks**.

Marks were awarded for:

- ◆ Point c
- ◆ Point e
- ◆ Point f – award for ‘fitness of males.’
- ◆ Point h – awarded to avoid a double penalty (Point g).
- ◆ Point i
- ◆ Point j

Marks were not awarded for:

- ◆ Point a – no indication of the outcome of the ritual.
- ◆ Point b – ‘or’ is incorrect as FAPs are a response to sign stimuli.
- ◆ Point d – sexual dimorphism is not linked to sexual selection.
- ◆ Point g – not awarded because honest signals are not alleles.

Total marks awarded: 45/80