Candidate B

Question 1

The candidate was awarded **7 out of 10 marks** because they showed a fairly good understanding of biofuels.

The definition of *biofuel* in Q1(a)(i) was poor but this was common across most candidates. Knowledge of definitions of terms stated as mandatory content is something that should be addressed by centres.

A full description of changes in uses of corn between 2000 and 2013 was provided in Q1a(ii) and both marks awarded.

For Q1(c), a more detailed discussion of reasons for and against biofuels being carbon-neutral is required. In this case, 0 marks were awarded.

For Q1(d), the Common Fisheries Policy should have been stated in this case, but although brief, the description of allowing fish stocks to recover through implementation of 'fishing seasons' was accepted as a reasonable legislative role.

Question 2

The candidate was awarded **4 out of 9 marks** because they showed a fairly poor understanding of the impact of global warming on water use in an area that is important for food production.

For Q2(a), the candidate failed to discuss what impact global warming would have on mountains that would then increase demand for freshwater, but did successfully comment on how aquifers near the coast would be affected and was awarded 1 mark.

For Q2(b), the candidate stated the changes in water usage for each sector, but did not then explain why these changes are likely to have occurred. 0 marks were awarded.

An appropriate reason for irrigating vegetables rather than fruit trees was provided in Q2(c)(i) and was awarded 1 mark.

The candidate commented about water in aquifers eventually running out (1 mark) but more detail was required to be awarded both marks for Q2(c)(ii).

Question 3

The candidate was awarded **4 out of 8 marks** because they demonstrated a basic knowledge of population dynamics.

For Q3(a), the explanation was not thought to be specific enough for the mark to be awarded. 'Lynx population mirrored the hare population' or increase in one was matched by increase in the other (or similar for decrease) provide more detail for the available mark.

For Q3(b), the candidate missed the graph evidence that sometimes the lynx population was greater than the hare population, and therefore the lynx must have an alternative food source.

For Q3(c), this candidate again failed to provide sufficient depth in their response and therefore was awarded only 1 mark.

For Q3(d), a more detailed response was provided and this time both marks were awarded. This is typical of the depth of response we are looking for at Higher level.

Question 4

The candidate was awarded **6 out of 7 marks** because they showed a good understanding of product obsolescence.

For Q4(a), the candidate correctly identified technological obsolescence as being an appropriate type for mobile phones, but the justification relates to psychological obsolescence rather than technological. However, the correct obsolescence type and justification were provided for the printer cartridge and 1 mark was awarded.

Note: it was felt that a significant number of candidates may have missed the 'justify your answers' component and also that too little space had been made available for justification. A 1 mark allowance for this was agreed at the Grade Boundaries meeting.

A good set of responses were provided for economic, social and environmental outcomes of product obsolescence for Q4(b), and 3 marks were awarded.

For Q4(c), 'landfill tax' was accepted in place of the full name of the legislation (Landfill Tax Regulations 1996).

Question 5

The candidate was awarded **7 out of 8 marks** because they showed a very good understanding of the human impacts on biodiversity.

For Q5(b), the candidate took a while to focus on one way in which agriculture contributes to the endangered species of some flowering plants. 1 mark was awarded.

Good depth of detail was provided for Q5(c)(i), especially the final comment about how amphibian populations would be affected as most candidates described eutrophication only and failed to mention the amphibians. 2 marks were awarded.

This candidate was one of the few candidates able to demonstrate knowledge of the roles of SEPA and SSSIs in Q5(c)(ii).

Question 6

The candidate was awarded **5 out of 8 marks** because they demonstrated a passable knowledge of the structure and composition of the atmosphere.

For Q6(a)(ii), the response was insufficient for the full 2 marks, in this instance we would have been looking for the mention of reduced friction, eg reduced air resistance above 10 000 m results in less friction, so less fuel is consumed and therefore the global warming potential is reduced.

For Q6(b)(ii), the candidate makes some low level comments not thought to be enough to be awarded marks at Higher level. 1 mark was awarded for a source of methane.

Question 7

The candidate was awarded **6 out of 11 marks** because they showed a basic understanding of factors affecting urban vs rural populations.

The statement in Q7(b) that there is less housing in urban areas is plainly incorrect. The comment about it being healthier to live in rural areas because of urban fumes, gases and industry might be true in countries with poor legislation but not in the Scottish context. However, 1 mark was awarded because the candidate demonstrated some level of understanding about differences between urban and rural areas.

For Q7(c)(ii), the majority of candidates were unable to suggest an environmental advantage of urban living in terms of domestic energy. At the Grade Boundary meeting it was felt that there was no requirement for candidates to know about this and that candidates from rural areas especially might have little knowledge about urban living. Consequently, a 1-mark allowance was agreed.

For Q7(d), 1 mark was awarded for the comment about habitat destruction and its negative impact on biodiversity. The candidate made a number of incorrect statements about the impact of new road transport links on biodiversity.

For Q7(e), this candidate provided a good description of the purpose of environmental assessment, one of the few to do so. However, they were unable to describe the difference between an EIA and SEA. Again, this is mandatory content and candidates should be able to both define and discuss these.

Question 8

The candidate was awarded **3 out of 9 marks** because they showed a poor understanding of land-based food production.

For Q8(b), the graph looks to have been drawn in a rush. The candidate did not make the plotted points sufficiently obvious, though the line suggests that these do lie at appropriate locations on the grid, nor did they use a ruler to draw a straight line between the plotted points. While the *y*-axis scale is appropriate, it is debatable whether the *x*-axis scale meets Higher standards. 1 mark was awarded but a little more care would have attracted more marks.

Q8(c) was poorly done by the majority of candidates, with very few achieving the full 2 marks for the definition. This candidate was awarded 0 marks for his/her explanation of gross productivity. Again, this is mandatory content and candidates should be able to define and discuss it.

Changes in consumer demand for food, including those brought about by development, are also mandatory content. This candidate did not demonstrate sufficient understanding of this and 0 marks were awarded.

Question 9

The candidate was awarded **2 out of 10 marks** because they demonstrated little understanding of factors affecting oceanic and atmospheric circulation.

Q9(a)(i) was a problem solving question, seeking a description of trends shown in the graph. It became evident during marking that different disciplines have differing definitions of ˆtrendˆ, and allowance was made for this providing the interpretation was correct and related to a relationship of some kind. In this instance, the candidate infers a cyclical pattern and was awarded 1 mark.

Q9(a)(ii) required candidates to extract information from the graph, identifying two dates on which the spring tide occurred, for 1 mark. Although this candidate did correctly identify the two dates, they also included two further dates that were incorrect. While there have been instances where correct information has been credited when within a lengthier response containing incorrect statements, in this instance it was felt that the inclusion of the two additional dates resulted in an overall incorrect response and 0 marks were awarded.

For Q9(b), the response was confused over when a neap tide occurs, but was awarded 1 mark for correctly identifying one phase of the moon when a spring tide occurs.

Like many other candidates, this candidate incorrectly provided a discussion of the tri-cellular model of atmospheric circulation (with diagram) for Q9(c), but unfortunately did not discuss the Coriolis effect and so was awarded 0 marks. Candidates should be able to discuss the impact of the Coriolis effect on both atmospheric and oceanic circulation.

Question 10

The candidate was awarded **4 out of 10 marks** because they demonstrated a fairly limited knowledge and understanding of the hydrogen economy.

Points discussed included: electrolysis of water to produce hydrogen gas; is a renewable resource and therefore does not contribute to global warming; multi-purpose resource; high capital costs to produce.

Question 11

The candidate was awarded **6 out of 10 marks** because they demonstrated a passable knowledge and understanding of qualitative and quantitative sampling.

Points discussed included: definitions of qualitative and quantitative; description of sampling techniques (quadrat, camera trap); environmentally-friendly sampling; and an oblique reference to reliability (repeat and average)**.**

The mark could have been improved by expanding the range of sampling techniques.