



**General Certificate of Secondary Education  
June 2012**

**Environmental Science 44401F**

**(Specification 4440)**

**Unit 1: Topics in Environmental Science  
(Foundation)**

***Report on the Examination***

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## General

Students seemed much better prepared for the demands of this paper compared with June 2011. There were no noticeable gaps in subject coverage and the range of answers demonstrated an excellent depth of knowledge across the specification.

If schools and colleges could work with students to clarify the differences between *explain*, *describe* and *suggest* in question stems, it would be highly beneficial to students.

### Question 1

- (a) (i) Many students lost a mark in because they did not spot that tidal is both predictable and intermittent.
- (b) (i) Several students referred to the countries being “hotter” rather than having more sunshine.
- (b) (ii) A number of students gave incorrect answers around the idea that the USA had a bigger population or greater energy demands.
- (c) (i) Very few students were able to extrapolate from the graph.
- (c) (ii) Most answers centred around the ideas that fossil fuels were running out or environmental concerns. Most incorrect answers suggested we were using more solar power because it is getting warmer.

### Question 2

- (a) A lot of imprecise answers such as ‘they would make their machines more eco-friendly’ rather than more energy efficient so more people would buy them.
- (b) Very well answered.
- (c) Some students gave answers which referred to energy saving appliances rather than lifestyle changes or gave answers which saved water rather than energy.

### Question 3

- (a) The majority of students gained at least one of the available marks, with most referring to energy density or reduced CO<sub>2</sub> emissions.
- (b) (i) Most students focused on the radiation hazards or the danger of falling into terrorist hands.
- (b) (ii) The poorest answered section of this question with very few students giving two valid answers.
- (c) Well understood by students, most giving cooling and steam generation with a few giving the use of water as a moderator in some nuclear power stations.

- (d)** Few students were aware that the subterranean heat used in geothermal energy is produced by naturally occurring nuclear fission.

#### **Question 4**

- (a)** Very well answered with a significant number of students getting all three marking points.
- (b)** Most confusion was between the roles of the Environment Agency and Natural England.
- (c)/(d) & (e)** All well answered.

#### **Question 5**

- (a)** Most students were able to attempt this question though some lost marks by giving general answers that did not relate to increased grain production such as 'machines make things easier'.
- (b)** Only the weaker students failed to realise that annual grain production fluctuates largely due to the weather.
- (c) (i)** Some students wasted time by trying to explain rather than describe the trends. Some use of figures or a description of relative changes was needed for full marks.
- (c) (i)/(ii)** Generally well answered although a lot of students thought that farmland birds had declined because the farmers shot them.

#### **Question 6**

A very well answered question. Students were able to demonstrate a good understanding of the issues around population growth.

#### **Question 7**

- (a)** A large number of students lost marks by giving sources rather than processes.
- (b)** Generally well answered although students should be discouraged from giving one word answers such as 'cars' for human activity, 'driving cars' would be a much better answer.
- (c)** Most students understood the causes of coastal flooding but the causes of increased rainfall proved much more challenging.

**Question 8 (common with Question 1 Higher Tier)**

- (a) A few students lost marks by saying the level of fishing impacted on sustainability without saying in what direction. Many *described* without *explaining*.
- (b) This part was not well answered on this tier with only 18% of students gaining 1 or 2 marks. Using wild fish to feed farmed stocks was the most popular correct answer. There was some confusion between fish farming and factory fishing.
- (c) Several students thought that quotas were for total fish caught rather than being species specific. Net size was well answered. Only better students identified that restricted areas gave fish there a chance to breed to help repopulate the areas around. Line fishing – many students correctly suggested the elimination of by-catch as the most important advantage.
- (d) Well answered.

**Question 9 (common with Question 2 Higher Tier)**

- (a) (i) Many students only gained half the available marks because they *described* but did not attempt to *explain*, or described more than two changes.
- (a) (ii) Several students failed to read the question carefully and explained the changes in demand rather than saying how the energy resources we have available in the UK can be used to meet these fluctuations. A significant number of students suggested solar and wind energy could be stored until needed.
- (b) (i) Well answered.
- (b) (ii) Some students gave the same but converse answer so did not get the two marks available eg countries with a high GDP have more money to spend on energy, countries with low GDP have less money to spend on energy. Other students described the data on the graph rather trying to suggest reasons for the relationship.

**Question 10 (common with Question 3 Higher Tier)**

- (a) Not very well answered on this tier with most students gaining only two or three marks. Least well covered overall were the advantages / disadvantages of rivers as sources of drinking water.
- (b)/(c) Well answered.
- (d) Some confusion about the term permeable ie ‘reservoirs should be built on permeable rock’, otherwise well answered.
- (e) (i) Some students failed to identify particular users or identified the users without suggesting the source of conflict between them.
- (e) (ii) Many students identified space and time zoning for both marks.

- (f) Some confusion between 'grey' water and collected rain water or untreated water.
- (g) Most students obtained at least one mark.

**Mark Ranges and Award of Grades**

Grade boundaries and cumulative percentage grades are available on the [Results statistics](#) page of the AQA Website.

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