



**General Certificate of Education (A-level)
June 2012**

Environmental Studies

ENVS1

(Specification 2440)

Unit 1: The Living Environment

Report on the Examination

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General

This paper proved to be very accessible for students and had a higher mean mark (32.65) than all but the January 2012 paper for this unit. The standard deviation of the results was high which indicates a reasonable spread of results and that the paper differentiated quite effectively between students. Even the weakest students could gain credit and, although nearly 6% did not attempt the last two question parts, there did not seem to be a problem of students being unable to finish in time.

Many students seemed to struggle to express themselves clearly, and the precise use of scientific terminology was typically lacking. A basic general knowledge is expected in this paper and it was disappointing to note how limited many students are in this respect.

Question 1

This question was very straightforward, with more than 30% getting full marks. The least well known definition was *edaphic* (most guessed *anthropogenic* or *abiotic/biotic*). Most knew *range of tolerance* and *niche*. Some students, surprisingly, left some answers blank, perhaps mistakenly thinking that they would be penalised. This suggests that they should be told that it is always worth attempting an answer.

Question 2

- (a) Although more than half of the students got both marks, many were clearly confused about the meaning of 'offshore' and saw 'offshore development' as being synonymous with wind power. So rather than answering the question in terms of offshore developments, as required, they answered in terms of renewable energy/wind power as contrasted with fossil fuels. Vague references to 'it being more environmentally friendly' or 'less polluting' were insufficient to gain credit.
- (b) This should have been a familiar question, but less than a third scored a mark. It should be emphasised that in a cost benefit analysis, ALL the factors are ascribed a monetary value.
- (c) About 10% gained all three marks, but the distinction between a Leopold Matrix and an Environmental Impact Assessment (EIA) is obviously poorly understood. The Leopold Matrix was variously stated as being similar to, an alternative to or even the same as an EIA, rather than as being part of the EIA process. Some conflated the Leopold Matrix with a cost benefit analysis and a few confused it with a Lincoln Index or even a Diversity Index.
- (d) (i) Over 90% scored at least one mark for this question, with most recognising that the construction would provide a habitat. Many stated that it would also act as a shelter, but only if they stated 'from what', would they get credit. Weaker students quoted the label from the diagram ('rocks to reduce wave damage') without explaining how this would benefit organisms. Some answered in terms of reduced coastal erosion, the lack of pollution, or that the high blades would not hit anything.
- (d) (ii) 75% got this, typically giving Marine Nature Reserve. Please note that 'Marine National Reserve', or variants thereof, will not get a mark.

Question 3

- (a) (i) This was well answered by the majority of students, nearly 60% giving two good reasons. Vague statements about a 'harsh' or 'extreme' environment did not get credit without further detail. Common misconceptions included: thinking that freezing causes the denaturation of enzymes, rather than simply slowing down their activity; or that precipitation is synonymous with rain and stating it is too cold for precipitation; or that there is insufficient light for photosynthesis, rather than realising that there is almost constant light in the summer/growing season.
- (a) (ii) Students who appreciated that low plant diversity would mean that there would be simple food chains and few niches, and therefore a less stable ecosystem, were in the minority. Only about 8% managed to gain both marks. Some were concerned about the lack of genetic diversity or that herbivores might not have a balanced diet! Weaker students typically stated that herbivores would not have enough to eat, and evidently did not consider that the two plant species might be very abundant. So, many cited increased competition as being a problem. Sadly many thought that plant eaters would have to switch to a carnivorous diet. Far too many think that there are Polar Bears, Arctic (!) Foxes and lemmings found in Antarctica.
- (b) Over 16% gained the three marks available, but again there was considerable ignorance displayed, with vague and wildly inaccurate guesses. For example, building igloos for Eskimos, hunting Snow Leopards and Polar Bears, building ports for cruise ships, and airports for tourists. Mineral exploitation is not a current threat and so was not credited. Unspecified 'pollution' was also not accepted. Very many could not correctly refer to the causes and consequences of global climate change and/or ozone depletion.
- (c) More than 40% got all three marks, with some very good answers seen. The Antarctic Treaty seems to be quite well known, although its date is not. Comments about tourists being 'controlled' or 'monitored' were considered to be too vague and there should have been some reference to restrictions of numbers, facilities or places where tourists can go. This question has been seen before, and again, various conservation designations (eg SSSIs, NNRs), or organisations (Defra or CITES) were commonly given. Some seem to think that more general methods of conservation were acceptable, for example captive breeding and habitat creation.

Question 4

- (a) Most (more than 71%) got one of the two marks, usually by citing a designation. About 20% gained a second mark. Some wrote about National Parks and others had not read/understood 'organisation' and gave the Wildlife and Countryside Act as an answer.
- (b) Although a quarter of students achieved all four marks, very few seemed to know how the Environmental Stewardship Scheme (ESS) works. The points system was rarely mentioned, but the payment mechanism was often given. Most got marks, however, for knowing habitat features or management techniques that are rewarded. 'Farmers being rewarded' is not enough by itself though. Organic farming is not 'natural', nor are the fertilisers and pesticides that organic farmers use. The ESS is not specifically about

endangered species or even about the reintroduction of captively bred species.

- (c) (i) More than a quarter gained both marks and almost 70% gained one. The majority knew that WWF raise money and public awareness. 'Conserve wildlife' was often seen but it was not enough. The role of the WWF is to fund, coordinate, manage or oversee conservation projects, rather than actively carry out captive breeding, habitat management or related activities.
- (c) (ii) This was done better than the previous part, but mostly because students stated that the RSPB mainly focuses on birds. There were many inaccuracies seen such as the RSPB is for birds whereas the WWF is for animals; the RSPB is only in England; the RSPB is a Governmental Organisation or is funded by the government.

Question 5

- (a) (i) The role of organisms in soil formation is understood, over 85% got this mark.
- (a) (ii) Soil conservation is less well known, this question tended to elicit similar answers to the previous part and fewer than 30% were correct. Many seemed to think that by increasing soil fertility the soil will be conserved.
- (b) On the whole this question was well answered, with some excellent accounts that easily gained the maximum marks. It must be emphasised that students must aim for clarity and precision in their writing.

Common problems that occurred were:

- Processes not linked to specific conditions: CO₂ and O₂ are needed for photosynthesis and respiration.
- Animals need oxygen to breathe.
- Far too many students *still* stated that plants photosynthesise and animals respire, or that plants take in oxygen for photosynthesis!
- There is general confusion about the roles of ultraviolet and infra red radiation and their roles in temperature regulation, the Greenhouse Effect and ozone depletion.
- Some are confused about the role of the magnetosphere and think that it helps to deflect UV radiation.
- Enzymes are **not** killed and nor do they all have an optimum temperature of 40° (C?).
- The Earth is not 2/3 water.
- 'Life' is not synonymous with humanity. Some answered in terms of the factors that particularly aid human survival. For example, 'liquid water is important to keep us hydrated'.
- The moon does not create gravity.

Although the majority of responses were long enough to be considered for the QWC marks, it must be mentioned that the various strategies employed to make answers seem long enough do not work. Many leave lines as spaces between paragraphs and extra-wide margins for example.

Question 6

- (a) This was a very straightforward question, but only 17% gained both marks. Most students correctly gave competition for a named resource, but could not get the first marking point. Typically, the responses illustrated sloppy thinking and poor use of English. Vague references to 'competition' do not get marks. Likewise, evergreen plants do not compete for food or space. The relevance of being evergreen, which allows year round photosynthesis, was not well understood. Comments such as 'survive all year round' were deemed too vague.
- (b) (i) Although a few students confused seed dispersal, pollination or germination or gave answers that were too vague, nearly 70% got this right.
- (b) (ii) This question seemed to be quite discriminatory, with many excellent answers that illustrated a clear understanding that detritivores and decomposers would be affected by the toxins, and consequently the rate of decomposition of leaf litter would be reduced. Fewer than 44% gained either mark. Many assumed that the toxins would kill the rhododendrons causing greater leaf fall. Others resorted to illogical guesswork and stated that the toxins would increase the rate of decomposition and, inexplicably, that this would result in an accumulation of leaf litter. Presumably the students did not understand the word 'accumulation'. The relationship between leaf litter, humus and decomposition was confused.

For some, toxic is synonymous with acidic, and so there were some fanciful descriptions of enzyme activity being inhibited by not being at an optimal pH. There were also a number who explained that the leaf litter was immune to the toxin and so could not be killed by it.

- (c) (i) There were some excellent and clear answers with all the marking points included. Over 13% scored all the four marks. Weak students gave the high and low points on the graph but did not identify the trends, or they tried to give explanations of the relationship, rather than identifying the trends. But better responses often stated that this is not necessarily a causal relationship. Some identified the trends but quoted incorrect data from the graph and lost valuable marks. Others misinterpreted the graph as illustrating carrying capacity, a predator-prey relationship, or as a maximum sustainable yield. A number answered in terms of invertebrate density rather than diversity. Terms such as 'optimum' and 'fluctuation' were quite often used incorrectly. Soil organic matter cannot 'like' a neutral pH. Many students do seem to find graphs intimidating and the majority did not appear to understand what a trend is. A question that requires a description of a graph or trend usually has two marking points: one for the overall shape of the curve and another for correct reference to precise datum points.
- (c) (ii) Although nearly 25% gained full marks, the overall impression was that the use of Tüllgren funnels is not well taught by some schools and colleges. They were confused with pitfall traps, pooters, soil sieves, beating trays and chemical extraction. This should have been an easy question to answer, but

excessively vague statements and confusion were commonplace. Responses such as 'invertebrates are analysed' or 'results recorded' will not be credited. Sadly, there is still widespread uncertainty about diversity indices and the Lincoln Index. Tüllgren funnels were frequently put *under* the rhododendrons. Light was described as attracting the soil invertebrates and some described the collection of invertebrates to put into the funnels, rather than soil or litter samples. It must be re-emphasised that you CANNOT stop anomalies or improve accuracy by repeat sampling.

- (d) Over 30% got both marks for this straightforward question. The burning of moorland to halt succession is well known amongst the more able and there were some very good answers. Many did not know this however, and variously wrote about fencing off areas to prevent grazing, designating the areas, restricting visitors or creating footpaths. Burning moorland is done to encourage the regeneration or regrowth of heather and to inhibit less desirable species, rather than to remove heather, increase/maintain grassland or increase fertility.

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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