General Certificate of Education

Environmental Studies   1441

ENVS1   The Living Environment

Report on the Examination

2011 examination - January series

General

The paper was accessible in that even the weakest candidates gained credit in most of the questions. The highest mark was 52 out of 60 which indicates that the most able candidates were challenged. A wide range of responses were seen which suggests that the paper effectively discriminated between candidates, this is supported by a reasonable standard deviation. The mean of this paper was 29.28 which is very similar to previous ENVS1 papers.

A feature of all the examiner's reports for ENVS1 is the observation that the most obvious weakness of candidates' responses is their standard of English. Careless reading of questions results in vague and irrelevant responses. It must be stressed that the key question words, such as describe and explain, have precise meanings. Central to this subject is the accurate use of terminology. Also it is not necessary for candidates to rewrite the question stem.

The quality of responses to the questions asking about the practical techniques was characteristically poor. Very many candidates do not appear to understand the scientific principles of field work and the investigative techniques that they are expected to know. There will be questions in every ENVS1 examination that test candidates' understanding of the processes of scientific investigations.

More than 4% of candidates did not attempt the last two question parts, this probably reflects poor examination technique, because neither was particularly difficult and both offered some very accessible marks. Candidates ought to be encouraged to manage their time carefully as it is often easier to gain one or two marks from a question than to develop an answer to gain the last one or two marks.

Question 1

There seems to be a better knowledge of the definitions of the key terms as about 45% got full marks. The most common confusion was between 'population' and 'community' and a significant number did not know 'biome'.

Question 2

Despite being straightforward, this question produced a variety of very vague responses which were not creditworthy.

(a)   (i)   Only a quarter of candidates got both marks on this question. Although many clearly understood why pollarding may be carried out, there were many answers that gave increasing diversity, or other benefits to wildlife, as a reason. This showed that the candidates had simply not read the question. Vague responses such as 'it is more sustainable', and 'it makes the trees grow stronger' did not score.

(a)   (ii)   This question revealed very poor understanding of basic biology and only 7.3% scored both marks on what should have been an easy question. Sadly, it was common to see references to fungal photosynthesis and that dormice and birds are invertebrates. Fungi were often described as detritivores and there were statements describing micro-organisms decomposing dead branches to provide nutrients for fungi. It must also be noted that not all invertebrates are detritivores and that fungi are **not** bacteria.

(a)   (iii)   This part was done much better, with over 40% getting both marks. It was well understood that fungi can provide both food and habitat and that they are involved in nutrient recycling. Few candidates referred to specific examples of species interdependence such as lichens, and it was rare to see responses about the stability of ecosystems.

(b)   Over 40% gained all three marks with some very good answers seen. Those that did not score well often gave vague statements such as 'light intensity is influenced' and confused abiotic with biotic. Poor expression restricted marks, for example candidates wrote 'less rainfall' rather than 'less rainfall reaches the woodland floor' or 'more rain is intercepted' and also that the 'amount of light from the sun will increase', rather than 'more light from the sun will reach the woodland floor'. Quite a few wrote about changes in the concentration of CO_2 and O_2 as a consequence of changes in the amount of photosynthetic material. This was not credited as it is not likely to be significant. References to seasonal changes in the abiotic environment were not credited as they are not specifically linked to the pollarding cycle.

(c)   Over 50% got this wrong, many did not appear to know what a designation is and gave the name of a designating body or act of parliament. National Park, NNR, SSSI and AONB were frequent incorrect answers.

Question 3

(a)   (i)   This question was quite well answered, although some did refer to predation despite what the question asked. Those who wrote only about competition without giving a named resource were not credited, and those who gave several resources only got one mark. The introduction of disease and competition for food were the most commonly seen correct answers. Competition between Red and Grey squirrels was by far the most frequent example cited, often in detail.

(a)   (ii)   About a quarter got both marks for this, typically explaining that detritivores aid the breakdown of dead organisms and release nutrients. Reference to increasing surface area for decomposers was not often seen, nor was the role of earthworms in soil aeration or drainage. A few also realised that earthworms are an important food source.

(b)   Fewer than 20% gained two or more marks for this straightforward five mark question. Many only got one mark for 'random sampling'. Most candidates described the mark, release, recapture technique without realising that it is not appropriate in this case. Inappropriate methods for collecting the sample of earthworms abounded, including kick sampling, pooters and especially pitfall traps. More fanciful suggestions included monitoring earthworm predator populations (particularly moles) and digging up equal sized areas in New Zealand and the UK.

Question 4

(a) The most able candidates gained full marks quite easily by discussing a wide range of land use conflict issues. Weaker ones tended to focus on one aspect only, such as what the site could be used for, or site choice. There were lots of vague references to 'pollution' or to 'fumes' but seldom were gases that would be likely to cause offence named. The gases that were named, usually CO_2, but also methane, tended to be inappropriate as they are not specifically problems of incineration and would be just as much of a problem, or a greater problem, of landfill.

(b) There were some excellent answers where the best candidates could have gained maximum marks twice over. Weaker candidates often described solutions to problems they had raised in 4(a) but failed to mention the mechanisms in place to resolve land use conflicts. Time and space zoning were frequent correct responses, often with very good examples. There was a lot of incorrect terminology, for example 'cost-benefit assessment', 'Leopold/ Leopard Index/ Table' and rarely was public inquiry spelt correctly. A number seem to think that votes are taken in order to settle conflicts.

Many did not write enough for QWC to be awarded, even though the maximum marks could have been given. It ought to be pointed out that the requirement is for **at least half a page** that should be written, this is normally 11 lines. There were far too many basic spelling errors.

Question 5

(a) (i) This question has been asked a few times before, but only 20% got the full three marks. Common incorrect answers gave descriptions of *how* beavers are reintroduced rather than *why*.

(a) (ii) Problems associated with the release of animals bred in captivity is clearly well understood, only 5% did not score on this question and nearly 40% got full marks. Candidates did lose marks through poor examination technique and poor expression, for example 'they are too tame and trusting of humans' without explaining the consequences of this once released. Similarly, candidates described problems that would happen irrespective of being captive-bred and released, such as being outcompeted for food and mates. There were quite a few vague descriptions of inbreeding and restricted gene pools, which is a problem of nearly all endangered species. Statements such as 'they will have problems coping in the wild' are not going to gain marks. It is also worth pointing out that animals do not lose their 'instincts' even though they may have been bred in captivity. Inbreeding does **not** cause mutations.

(b)   Only 45% gained two or more marks for this four mark question. Although the definition of carrying capacity is reasonably well known, few seemed to show that they understood the concept and, as a result, most answers were very vague. This was accompanied by poor general knowledge. For example, while we do not expect candidates to know about beavers, incorrect examples were used, such as the migration of 'cod' being blocked by beaver dams. It was common to see the term 'marine' being used synonymously with 'aquatic'.

There were very few really good answers which picked up on the reference to succession in the stem and answered clearly in terms of the consequences of habitat change. Less able candidates tended to respond only in terms of competition for resources and predation, often demonstrating their lack of understanding of key concepts such as symbiosis (not just mutualism) and niche.

Question 6

This question produced a wide spread of marks, and the majority seemed to find it very difficult.

(a)   45% got this right, with by far the most common incorrect answer being that carbon, rather than CO_2 (**not** CO^2 that many seem to think) is a greenhouse gas. Sadly there were far too many who state that carbon or CO_2 depletes ozone.

(b)   Candidates who used the information in the diagram got both of the easy marks (31%). This was protection from physical damage from waves and increased turbidity. Effects on food chains or population impacts needed careful explanation, since both an increase and a decrease of fish populations that graze on seagrass could be justified. For example, if adult fish that move between the coral reef and seagrass meadows lost a major feeding ground when the coral was destroyed, the seagrass would be overgrazed. However, if the amount of predation on fish feeding on the seagrass was increased through being exposed to ocean predators, then the grazing would reduce. Some did not gain marks because they failed to give impacts on the seagrass or mangroves, for example stating that fish would die because they had lost their coral reef habitat.

(c)   (i)   Only 45% gained any marks on this question which reflects a generally poor understanding of the ecological importance of a high species diversity, despite it being on the specification. There were many vague answers about gene pools and resistance to disease. Better candidates got the mark for increased ecological stability and realised the significance of this in resisting environmental change. Weaker candidates tended to talk about food chains and species interactions that would apply to any ecosystem, regardless of whether it had high or low species diversity. Some ignored the word 'ecological' in the stem and explained the aesthetic appeal and the potential for ecotourism of a high diversity.

(c) (ii) Less than 40% got the mark for this question, with many completely missing the point. Many repeated reasons for wildlife conservation because they didn't realise that the question was about why monitoring is done. The mark was typically given for reducing the threat of extinction.

(c) (iii) A wide spread of marks was seen, but nearly 7% of candidates failed to even address this question, which was a much higher percentage than on any other in the paper. This is disappointing, since with good examination technique it should have been quite easy to gain some marks, even if nothing was known about kick sampling. Typically, those that did get the right idea did not give sufficient detail in order to gain many marks. Quite a few realised that a diversity index would be relevant here, even if it was frequently confused with the Lincoln Index. Answers were full of vague statements and inaccuracies such as:
  - Not using the word 'count'- 'species were recorded/monitored/ examined/observed'- will not get a mark.
  - Not making it clear that both the number of species and the number of individuals need to be counted, eg 'the species are counted'.
  - Disturbing the sediment was variously described as kicking the water/ the net/rocks/river bank. Statements such as 'kick the invertebrates into the net' were also seen.
  - The reason for doing multiple repeats is not to 'take out' anomalous results, it is merely to minimise their effect. Similarly, you do not improve accuracy of results by repeating them.
  - Fish are **not** invertebrates.

(d) Again, this question produced a wide spread of marks. Those who were on the right track got three easy marks, usually for birth rate, death rate and population size. Common areas of difficulty included confusing carrying capacity with maximum sustainable yield (MSY) and writing about *why* the information was required rather than *what* information was required. Similarly, some discussed the consequences of exceeding the MSY rather than answering the question. Consideration of the amount of food dugongs need, their diet and the area they need to feed were also seen quite frequently.

Mark Ranges and Award of Grades
Grade boundaries and cumulative percentage grades are available on the **Results statistics** page of the AQA Website.