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GCE

Science

Advanced Subsidiary GCE **AS H178**

OCR Report to Centres

January 2012

HX78/R/12J

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Reports should be read in conjunction with the published question papers and mark schemes for the examination.

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Any enquiries about publications should be addressed to:

OCR Publications
PO Box 5050
Annesley
NOTTINGHAM
NG15 0DL

Telephone: 0870 770 6622
Facsimile: 01223 552610
E-mail: publications@ocr.org.uk

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Advanced Subsidiary GCE Science (H178)

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Overview

January is the usual entry time for candidates entering G641 and these candidates are only one term into the course. For many the step up from GCSE to AS is a big one and, despite attempts to make the paper accessible, some candidates struggle with the extra demands. Often there is a little more context in the questions than candidates have been used to. Often this can mask what they should be able to do. There were some very good candidates but there were also some who struggled. It is important that candidates have clear definitions for terms such as biodiversity, biodegradable etc. Some candidates found the longer questions more demanding than they were used to.

There were only three candidates for G642 and these were resit candidates from June 2011.

G641 Remote Sensing and the Natural Environment

General comments

There is some evidence that weaker candidates found this paper more difficult than other recent ones. However, there was still a very wide range of marks, with some candidates performing extremely well.

Comments on individual questions

On the whole, candidates found this the most difficult question on the paper to gain marks on due to the unfamiliar context. However, it contained parts that were quite straightforward. It was obvious that many candidates had only superficially read the information they were given in the question.

Question 1(a)(i)

Candidates failed to realise the importance of microorganisms in the term 'biodegradable' and would make vague statements like 'something that can be broken down'.

Question 1(a)(ii)

The difference between aerobic and anaerobic respiration was well understood.

Question 1(a)(iii)

Weaker candidates were unable to identify methane as the likely gas that would be produced in the biodigester.

Question 1(a)(iv)

Many candidates were let down in this part by not having studied the diagrams of the eco-rainforest. Many assumed that gases produced in the biodigesters were freely available to the trees etc.

Question 1(a)(v)

A significant number did not register that the biodigesters dealt with *household* waste, nor did they remember that a by-product of anaerobic respiration is heat. A common error was to believe that nutrients would somehow leak into the soil from the biodigester.

Question 1(b)(i)

Most candidates could say that *steady state* means that input = output, but fewer gave an example of what it might refer to.

Question 1(b)(ii)

The concept of *negative feedback* was very poorly understood. Many candidates merely described the nitrogen or carbon cycles. Few realised that a *change* of some sort is needed initially and that the ecosystem then responds in some way.

Question 1(c)

Candidates who took the hint that wavelengths of light were important in this question produced some excellent answers.

Question 1(d)

Some candidates were let down by being vague eg 'there would be less biodiversity' without actually saying how this would affect the food chains. There were some very interesting and imaginative responses.

Question 2

This question proved to be a good discriminator, giving a very good range of marks.

Question 2(a)

Most candidates could make a stab at defining frequency, scoring at least one mark.

Question 2(b)(i)

Most candidates could bend the refracted ray correctly, but fewer realised that the wavefronts would move closer together.

Question 2(b)(ii)

It was heartening that many candidates managed to convert the wavelength correctly and score full marks.

Question 2(b)(iii)

The reflected ray was usually correctly drawn. Again, the wavefronts proved more of a problem.

Question 2(c)

Some candidates assumed that *weather monitoring* meant *forecasting*. However, they still scored well.

Question 3(a)(i) and (ii)

This question has been asked many times, and there were plenty of marks available, yet some weaker candidates answered it very badly. Some did not make the link to the increased growth of algae, whilst others were confused about its effect, believing it takes in oxygen.

Question 3(b)

Few candidates were aware of the potential harmful effects of nitrates in drinking water.

Question 3(c)

This was another question that required the candidates to interpret the information they were given. A good number deduced that nitrogen would be the gas given off and the sterilising properties of chlorine gas were almost universally known.

Question 3(d)

The conditions that would encourage denitrification were not well known at all and the suggested problems that it may cause were very vague eg 'crops won't grow'.

Question 4(a)

Stronger candidates had a firm grasp of the concept of *geographical isolation,* but weaker ones were quite confused. They failed to realise that populations of the same species become separated from each other, and were therefore unable to go on and describe why this would increase biodiversity. Instead they either believed that all members of one species became stranded together, or that they were undiscovered by man.

Question 4(b)(i)

This was a very accessible question. However, a surprising number of candidates managed to lose marks, principally by missing out one of the participants, or by getting the arrows the wrong way round. There were some very fetching drawings.

Question 4(b)(ii)

Most candidates answered this correctly.

Question 4(b)(iii)

There were many possible answers for this question, yet a number of candidates only scored one mark. A common worrying error was the response 'respiration'.

Question 4(c)(i)

Most candidates realised that the chameleon changed its colour to black to absorb as much of the sun's radiation as possible. However, many got confused and did not realise that heat and light are different. Only few were able to make the leap from the absorption of light energy to its conversion to heat energy.

Question 4(c)(ii)

Most candidates realised the benefit of turning back to green.

Question 5(a)

Most candidates could identify respiration as a source of carbon dioxide. A second source proved more difficult and suggestions were often vague eg 'using cars'.

Question 5(b)(i)

Some weaker candidates misinterpreted 'how' to mean 'why'. They were merely asked to describe how the graph changes. Most realised that the amount of carbon dioxide in the atmosphere is gradually increasing, but found it difficult to go into more detail. The identification of the different seasons of the year proved a problem for some.

Question 5(b)(ii)

Many candidates failed to realise the importance of photosynthesis in the concentration of carbon dioxide in the atmosphere and tried to answer it all in terms of people eg the population is rising, so there is more respiration, or in terms of tourism.

OCR (Oxford Cambridge and RSA Examinations)
1 Hills Road
Cambridge
CB1 2EU

OCR Customer Contact Centre

Education and Learning
Telephone: 01223 553998
Facsimile: 01223 552627
Email: general.qualifications@ocr.org.uk

www.ocr.org.uk

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