OCR
RECOGNISING ACHIEVEMENT

GCE

Science

Advanced Subsidiary GCE **AS H178**

Report on the Units

January 2009

H178/MS/R/09J

OCR (Oxford Cambridge and RSA) is a leading UK awarding body, providing a wide range of qualifications to meet the needs of pupils of all ages and abilities. OCR qualifications include AS/A Levels, GCSEs, OCR Nationals, Key Skills, Entry Level qualifications, NVQs and vocational qualifications in areas such as IT, business, languages, teaching/training, administration and secretarial skills.

It is also responsible for developing new syllabuses to meet national requirements and the needs of students and teachers. OCR is a not-for-profit organisation; any surplus made is invested back into the establishment to help towards the development of qualifications and support which keep pace with the changing needs of today's society.

This report on the Examination provides information on the performance of candidates which it is hoped will be useful to teachers in their preparation of candidates for future examinations. It is intended to be constructive and informative and to promote better understanding of the syllabus content, of the operation of the scheme of assessment and of the application of assessment criteria.

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

OCR will not enter into any discussion or correspondence in connection with this Report.

© OCR 2009

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

CONTENTS

Advanced Subsidiary GCE Science (H178)

REPORTS ON THE UNITS

Unit/Content	**Page**
G641 Remote Sensing & the Natural Environment	1
Grade Thresholds	3

G641 Remote Sensing & the Natural Environment

The entry for this Unit, the first for the new syllabus, was of a similar size to that of previous years for the old syllabus. However, there were a sizeable number of new Centres, some of which were entering more able Year 11 students who take this AS course after completion of their GCSE Science. Despite the number of Centres that were less familiar with the material, the paper proved to be very accessible to the candidates and it was rare to see any part of a question left blank. The questions discriminated well between candidates of differing abilities and there was a very wide spread of marks. No candidate appeared to be short of time.

Question 1
This question started in a familiar way, and candidates performed well in the opening sections, although many had difficulty labelling the amplitude of a wave correctly. Almost all could rearrange the equation, but coping with the powers proved more difficult. The units of frequency were poorly known.

In (c), a common mistake was to assume that the gamma radiation was causing a mutation to arise which would allow an animal to survive, rather than that the characteristic was already present. The principle of natural selection was well understood.

Question 2
Knowledge of the nitrogen cycle proved to be patchy. Most candidates could label decomposition, but the other labels and where micro-organisms are involved were very grey areas.

Most candidates could come up with a farming activity that upsets the cycle, but were sometimes confused as to its effect. A significant number believe that a farmer's sole object in adding fertiliser to land is to increase the growth of algae in bodies of water. Some saw harvesting as increasing the amount of N in the soil as that meant there were no plants there to it.

There was some misunderstanding about the effects of nitrates once they enter water. Some seemed to believe that they in themselves somehow suck oxygen out of the water, but the commonest error was to believe that the growing algae itself uses up the oxygen in photosynthesis.

Suggestions as to another nutrient element that is cycled in an ecosystem were often very wild, oxygen and carbon appearing frequently.

Question 3
Weaker candidates scored badly in part (a). They were clearly guessing in (i), despite the label in the diagram of the aeration lagoon. Many had little idea of a gas that anaerobic bacteria might produce oxygen, carbon monoxide and even hydrogen appearing quite regularly. In (iii), some ignored the advantage to the bacteria and concentrated on humans.

In (b), the part played by the protein channel was well understood, but many saw active transport as being involved. Q(b)(ii) proved to be a good discriminator. Good candidates showed a sound understanding of respiration, but others were vague, talking of glucose being broken down INTO ATP. Others were confused with photosynthesis.

Question 4

This question covered the area probably least favoured by the candidates. In (a)(i), many failed to realise that the image was taken at night time., and in (ii) there was considerable confusion. Infrared was widely thought to have originated in the sun. In part (b), the use of a negative image was probably understood, but it was expressed too vaguely. Simply to say 'it's clearer' was not enough. However, a surprising number believed it showed clouds to be hot. Part (c) was universally well answered, but part (d) was not and showed a poor understanding of the factors that can limit the quality of a remotely sensed image.

Question 5

Parts (a) of this question addressed the How Science Works aspect of the syllabus, and were generally poorly answered. Candidates frequently failed to consider the facts of the experiment that they were given and comment on them, preferring to guess. Suggestions like 'she might have used different soil in each pot, so they would have received different amounts of nutrients' or 'they might not have got the same amount of water' were common. Answers to part (b) were very confused. Many believed that plants absorb green light. Candidates had no problem s with the rest of the question and the term 'autotroph' was well known.

Grade Thresholds

Advanced GCE Science H178
January 2009 Examination Series

Unit Threshold Marks

Unit		Maximum Mark	A	B	C	D	E	U
G641	Raw	60	46	40	35	30	25	0
	UMS	90	72	63	54	45	36	0

For a description of how UMS marks are calculated see:
http://www.ocr.org.uk/learners/ums_results.html

Statistics are correct at the time of publication.

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

OCR Customer Contact Centre

14 – 19 Qualifications (General)
Telephone: 01223 553998
Facsimile: 01223 552627
Email: general.qualifications@ocr.org.uk

www.ocr.org.uk

For staff training purposes and as part of our quality assurance programme your call may be recorded or monitored

Oxford Cambridge and RSA Examinations
is a Company Limited by Guarantee
Registered in England
Registered Office; 1 Hills Road, Cambridge, CB1 2EU
Registered Company Number: 3484466
OCR is an exempt Charity

OCR (Oxford Cambridge and RSA Examinations)
Head office
Telephone: 01223 552552
Facsimile: 01223 552553

© OCR 2009