

Science

Advanced GCE A2 7885

Advanced Subsidiary GCE AS 3885

Report on the Units

January 2009

3885/7885/MS/R/09J

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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.

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2844 Science and Environmental Management

General comments

There were fewer candidates for this Unit than in previous years, but there was a wide spread of marks. As in previous years, candidates favoured the biological questions and struggled particularly with those demanding understanding of chemical concepts. However, there were rarely any parts of questions that were left completely unanswered and there was no evidence that any candidate lacked enough time to complete the paper.

Question 1

This question required the candidate to recall and understand biochemical processes and proved to be a good discriminator. In (a), many candidates incorrectly attached the base to the phosphate and in (b), nucleotides were rarely mentioned. The structural differences between DNA and RNA were well known, but the labelling of the diagram in (d) was poor with some of the boxes even occasionally left blank. Part (e) showed there to be a lot of confusion between codons, bases and amino acids. The techniques of genetic engineering were better known.

Question 2

Many candidates struggled with the theory behind colorimetry and gas chromatography despite both these techniques having been examined many times before. Yellow was frequently incorrectly suggested as a suitable filter for the colorimeter and they were unclear what happens to the light when it enters the solution under test. When considering how different samples were separated in the chromatography column, mention was rarely made of the stationary or mobile phases, or of the attraction of the different components to them. However, the chromatograms were usually interpreted correctly in (d) and a sensible suggestion offered in (d)(ii).

Question 3

Some candidates clearly had little recall of the definitions asked for in (a), producing some very vague responses. However, most could score full marks in (b), although there were some that didn't realise that two females together are unlikely to produce any offspring.

Question 4

Bearing in mind that the candidates were given some strong hints by the presence of the diagram, most were able to score at least a couple of marks. The greatest source of confusion was between chromatids and homologous chromosomes, although the term 'gametes' cropped up in some unexpected places. The majority understood the concept of variation well.

Question 5

This was the question that the candidates found the most challenging, yet it was very straightforward. Only the better ones saw dynamic equilibrium as anything more than a reversible reaction, and understanding of Le Chatelier's Principle was, at best, confused. Good candidates scored full marks.

Question 6

Knowledge of the commonest ions to be found in seawater was patchy. Many incorrectly cited nitrates and phosphates. The energy changes involved in bonding were also confused, but most students realised that hydration of ions is an exothermic process. Some excellent answers were seen in part (c), although candidates were probably safest when they chose reverse osmosis. The reduced pressure aspects of distillation proved tricky, but they made creditable attempts at a diagram.

Question 7

All the candidates wrote at length about the prospects of the wolves in Scotland. Some, however, were rather lacking in any science and spoke in very vague terms about competition for food. One, with presumably little knowledge of Scotland, thought that water might be a problem. The heavy hint that abiotic and biotic factors should be considered was sometimes completely ignored. There was also some doubt as to the meaning of the terms.

Question 8

In part (a), all candidates realised that an increase in light intensity increases the rate of photosynthesis, but some failed to score the second mark for realising it reached a maximum. Part (b) was well answered, but photorespiration and the response of C4 plants proved more of a problem. However, strong candidates scored well here.

Grade Thresholds

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Unit Threshold Marks

Unit		Maximum Mark	A	B	C	D	E	U
2841	Raw	60	46	41	36	32	28	0
	UMS	90	72	63	54	45	36	0
2842	Raw	60	46	41	36	31	26	0
	UMS	90	72	63	54	45	36	0
2844	Raw	90	68	59	50	42	34	0
	UMS	90	72	63	54	45	36	0

Specification Aggregation Results

Overall threshold marks in UMS (ie after conversion of raw marks to uniform marks)

	Maximum Mark	A	B	C	D	E	U
3885	300	240	210	180	150	120	0
7885	600	480	420	360	300	240	0

The cumulative percentage of candidates awarded each grade was as follows:

	A	B	C	D	E	U	Total Number of Candidates
3885	0.0	0.0	36.4	81.8	100	100	11
7885	0.0	0.0	0.0	100	100	100	1

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.

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