



External Assessment Report 2014

Subject(s)	Biology
Level(s)	Intermediate 2

The statistics used in this report are prior to the outcome of any Post Results Services requests

This report provides information on the performance of candidates which it is hoped will be useful to teachers/lecturers in their preparation of candidates for future examinations. It is intended to be constructive and informative and to promote better understanding. It would be helpful to read this report in conjunction with the published question papers and marking instructions for the examination.

Comments on candidate performance

General comments

Generally centres had prepared candidates well. This meant that the majority of candidates were able to complete all sections of the question paper. Some candidates performed to an exceptionally high standard and should be congratulated.

Overall, however, the course assessment proved to be more demanding than intended due to a cumulative effect. The grade boundaries for A–C were therefore adjusted accordingly.

This year many markers also reported a poorer cohort, with evidence of difficulties in problem solving skills, especially calculations. Section C Extended Response answers showed evidence of a number of candidates struggling with the literacy required at this level.

Areas in which candidates performed well

Section A

The following questions were answered correctly by most candidates: Q1, 3, 4, 5, 6, 7, 8, 9, 10, 11, 13, 14, 16, 17, 18, 22, 24 and 25.

Section B

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| Question 1 | Most candidates were able to state the position of the cytoplasm and name a cellular activity using energy. |
| Question 2 | Most candidates knew the properties of enzymes and why denaturation prevents an enzyme from working. |
| Question 3 | Most candidates were able to identify limiting factors and features of carbon fixation. |
| Question 4 | Most candidates were able to name the process of osmosis. |
| Question 5 | Most candidates performed exceptionally well in discussing the various features of the food web and ecosystems. |
| Question 6 | Most candidates were able to work of the required genotype, phenotype and ratio. They were also able to identify the inheritance shown as co-dominant. |
| Question 8 | Most candidates were able to describe the various aspects of genetic engineering. |
| Question 9 | Many candidates were able to identify the substrate of amylase, the function of saliva, the process of peristalsis and the components of |

food. Most candidates were able to calculate the increase in amino acid concentration.

Question 11(b) Most candidates performed well, taking the axes labels from the table and using appropriate scales to enable them to plot the points and construct the graph.

Question 11(c) Almost every candidate was able to describe the pathway of air through the lungs.

Question 12(a)(ii) Most candidates were able to use the graph to predict the concentration on day 70.

Section C

Question 1A Most candidates choosing this option were able to describe the various adaptations in cactus, and some were able to follow this with the reason for this adaptation.

Question 2A Most candidates choosing this option gave good descriptions of yoghurt and gasohol production.

Although many candidates performed well in these areas, candidates did not perform as well as previous cohorts did for similar questions in previous years.

Areas which candidates found demanding

Section A

The following questions were answered correctly by a few candidates: Q2, 12, 15, 19, 20, 21, 23.

Section B

Question 1(a)(ii) Most candidates had difficulty in giving a full description of glycolysis. Many omitted the production of ATP in their answer, but were able to describe the production of pyruvic acid from glucose.

Question 2(b) Few candidates were able to describe a synthesis reaction as building up large or complex molecules from small or simple molecules.

Question 3(a) Few candidates recognised the label on the X axis which showed how the growth was measured. Many candidates forgot to describe the second part of the graph as growth stays constant for the second mark.

Question 4(b) Few candidates were able to state that water moved in due to osmosis down a water concentration gradient. Many talked about concentrations but not **water** concentration or direction of the movement.

- Question 4(c) Few candidates were able to calculate this average by subtracting the initial value from the final and dividing by 60 to find the rate per minute.
- Question 4(d) Few candidates were able to suggest changes which would slow the rate of movement such as reducing the salt concentration.
- Question 6(c) Few candidates gave the answer that fertilisation is a random process and many talked about dominant and recessive genes.
- Question 7 Few candidates were able to describe that the sequence of bases in DNA was responsible for the sequence of amino acids. Few were able to describe the effect of DNA on protein structure and function. Many candidates were unable to name a protein produced in the liver such as lipase or insulin; instead many gave the answer as bile.
- Question 9(a)(iv) Few candidates were able to identify the small intestine at B as the area where bile was added.
- Question 10 Few candidates showed a good understanding of filtration and reabsorption with the site of deamination in the liver. For 10(a)(i) the important value from the table was 0g protein in filtrate, but most talked about 8g in plasma or 0g in urine. Size was rarely given as the reason for protein not being filtered, and few described or named reabsorption as the reason for no glucose in the urine.
- Question 11(c)(d) Few candidates took the value of 53 from the graph or table at month 6 and multiplied it by the 60kg weight of the athlete to get the correct answer. Most candidates simply stated 'repeat it' without saying 'using more athletes'.
- Question 12(a)(i) Few candidates were able to describe a difference and simply stated it was fast rather than **faster** than the first response.
- Question 12(b) – (d) Few candidates were able to name lymphocytes and explain antibody specificity. Many stated that antibodies were specific to antigens without describing what was meant by specific. Phagocytosis was rarely described as blood cells engulfing bacteria or foreign organisms.

Section C

- Question 1B Few candidates gave a good description of what would happen in 2014. Few had given comparisons such as the pale moth would be less visible or fewer eaten than in 1954. Many related the situation in polluted times therefore were not answering the question.
- Question 2B Few candidates described gas exchange at the body cells and often only described one gas moving at the lungs.

Advice to centres for preparation of future candidates

As in previous years, candidates need to read questions more carefully so they can give the answers to achieve maximum marks. Candidates should be encouraged to underline the important words in the question, helping them to focus on what is needed in their answer.

Candidates should use the published SQA marking instructions to help them to find the correct language for their answers <http://www.sqa.org.uk/sqa/39304.html>

In many topics practical work helps to reinforce knowledge and understanding. If time for practical work is limited, suitable videos could be used. An example of this might be the osmometer in Question 4.

Candidates still show difficulty in understanding the difference between 'describe' (state what happened), and 'explain' (give a reason for what happened). Examples of the type of answers required for each are exemplified in the marking instructions for SQA past question papers.

Candidates should be encouraged to use the exact headings from the results table for the labels on graphs. Some candidates draw several lines between two points and so lose the plot mark.

This year, as in previous years, most centres have prepared candidates well for the Course assessment. However, centres are reminded to refer to the Intermediate 2 Biology pages on SQA's website; these provide the most up-to-date information needed to prepare future candidates.

Another valuable tool to aid understanding of the required standard for Intermediate 2 Biology is available on SQA's Understanding Standards website.

http://www.understandingstandards.org.uk/Subjects/Biology/Biology_homepage

The marking instructions for SQA past question papers are also published on SQA's website. These allow centres to see detailed general and specific advice for marking Biology assessments and so to gauge the level of detail required for specific topics.

This should help to inform the marking of internal assessments and so aid estimate setting.

Statistical information: update on Courses

Number of resulted entries in 2013	8035
Number of resulted entries in 2014	7013

Statistical information: Performance of candidates

Distribution of Course awards including grade boundaries

Distribution of Course awards	%	Cum. %	Number of candidates	Lowest mark
Maximum Mark 100				
A	17.9%	17.9%	1254	69
B	20.1%	38.0%	1411	58
C	26.6%	64.6%	1866	47
D	14.5%	79.1%	1017	41
No award	20.9%	-	1465	-

General commentary on grade boundaries

- ◆ While SQA aims to set examinations and create marking instructions which will allow a competent candidate to score a minimum of 50% of the available marks (the notional C boundary) and a well prepared, very competent candidate to score at least 70% of the available marks (the notional A boundary), it is very challenging to get the standard on target every year, in every subject at every level.
- ◆ Each year, SQA therefore holds a grade boundary meeting for each subject at each level where it brings together all the information available (statistical and judgemental). The Principal Assessor and SQA Qualifications Manager meet with the relevant SQA Business Manager and Statistician to discuss the evidence and make decisions. The meetings are chaired by members of the management team at SQA.
- ◆ The grade boundaries can be adjusted downwards if there is evidence that the exam is more challenging than usual, allowing the pass rate to be unaffected by this circumstance.
- ◆ The grade boundaries can be adjusted upwards if there is evidence that the exam is less challenging than usual, allowing the pass rate to be unaffected by this circumstance.
- ◆ Where standards are comparable to previous years, similar grade boundaries are maintained.
- ◆ An exam paper at a particular level in a subject in one year tends to have a marginally different set of grade boundaries from exam papers in that subject at that level in other years. This is because the particular questions, and the mix of questions, are different. This is also the case for exams set in centres. If SQA has already altered a boundary in a particular year in, say, Higher Chemistry, this does not mean that centres should necessarily alter boundaries in their prelim exam in Higher Chemistry. The two are not that closely related, as they do not contain identical questions.
- ◆ SQA's main aim is to be fair to candidates across all subjects and all levels and maintain comparable standards across the years, even as arrangements evolve and change.