



GCSE EXAMINERS' REPORTS

SCIENCE -BIOLOGY

JANUARY 2018

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Annual Statistical Report

The annual Statistical Report (issued in the second half of the Autumn Term) gives overall outcomes of all examinations administered by WJEC.

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SCIENCE - BIOLOGY

General Certificate of Secondary Education

January 2018

BIOLOGY 1 - FOUNDATION

General information

The number of candidates entered for this paper was very low as anticipated as it was the final opportunity for the legacy specification to be examined. Many candidates seemed to be ill prepared for the examination with little evidence of revision. Questions requiring recall were often not attempted or incorrectly answered.

- Q1. Part (a) answered well generally although many did not know that a moss was a non-flowering plant. Part (b) was often not answered or answered incorrectly with spinal cord being given as an answer which was not accepted.
- Q2. Part (a) required no recall and was often answered correctly. Most candidates could name a health condition associated with excess energy in the diet.
- Q3. Few candidates gained full marks.
- Q4. Most candidates could complete (a) correctly but found the remainder of the question challenging.
- Q5. Few gained 2 marks in (a) usually failing to describe the first part of the graph. In (c)(i) many candidates could interpret the food web but failed to compare the numbers of predators. In (c)(ii) candidates often stated that wolves were predators but then failed to describe their potential effect on the population of roe deer. Part (d) proved to be very challenging and was often not attempted.
- Q6. Part (a) was often answered correctly but part (b) was more challenging. Part (c) required recall and was often left blank.
- Q7. Most candidates struggled with this and did not understand the context of the question for parts (a) to (d). They generally understood the idea of a fair test and why organisms are given scientific names.
- Q8. When describing the graph they often referred to the rise and fall but failed to refer to the 8km mark. Few gained 3 marks in (b)(i) with many not able to recognise sludgeworms as the most tolerant species.
- Q9. Although candidates recognised that 'green worms' were not easily seen, few used the word camouflage. Very few understood the concept of natural selection and often left the answer blank.
- Q10. Foundation candidates found the demands of this question too difficult and made no attempt. Even though key terms were provided they were not able to link these sequentially.

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BIOLOGY 1 - HIGHER

General information

Again few candidates were well prepared for this paper.

- Q1. If the candidates understood the context of the question they gained good marks in all sections. They often understood the reason for conserving organisms for medicinal purposes and why scientific names are given to organisms.
- Q2. As in the foundation paper recognised the decrease and subsequent increase in oxygen concentration but failed to refer to the 8km mark in part (a). In (b) even if the sludgeworm was recognised as the most tolerant organism they failed to give a valid reason.
- Q3. As in the foundation paper candidates failed to use the term camouflage and found it difficult to apply this to natural selection.
- Q4. Candidates often described each term but then failed to link them sequentially.
- Q5. Part (a) was often not completed correctly because the candidates guessed rather than counted the spaces on the diagram. In (b) the Punnett squares were often completed correctly but candidates do not express probability appropriately in (c) and (d).
- Q6. Even if the calculation was correct, providing the correct unit was often too demanding. Few gained full marks in (b) and (c) with many not spelling glucagon and glycogen correctly.
- Q7. In part (a) even if temperature and light were given as answers they were often not described. In (b) most recognised that fertiliser would reach rivers but then did not describe its effect. In (c) candidates often did refer to saving money which did not gain credit if not qualified.
- Q8. The calculation I (a) proved challenging for many and (b) was rarely answered correctly. Many referred to genetic 'fingerprinting' in which is not accepted.
- Q9. Consequential presentation of the processes was very rarely seen with few references to negative feedback. some candidates also described the response in cold conditions which was irrelevant.

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BIOLOGY 2 - FOUNDATION

General Information

Entry for this examination paper was, as expected, very low with about 20 candidates sitting the paper of which a quarter sat the Foundation Tier.

Performance on both the Foundation Tier and the Higher Tier papers was generally disappointing. Lack of thorough preparation, via revision, was evident. The small numbers of candidates re-sitting this paper could well have meant that the provision of formal revision sessions within center's would have been very difficult to timetable.

In structured questions where prompts are available then candidates usually gain marks. This includes questions where graphs have to be interpreted and **simple** calculations performed. However, responses were often of a low standard in those questions that required the recall of information.

Foundation

- Q1. Surprisingly, many candidates failed to measure the length of line X-Y correctly with some giving answers such as 0.01 mm or 0.1 mm. This often affected the calculation of magnification although ECF was allowed.
- Q2. Candidates struggled with this question especially with the equation for respiration; the form in which energy was released and in explaining the use of the disinfectant.
- Q3. Generally well answered.
- Q4. Some marks were picked up in parts (a) and (b)(iii) but the reasons given for their selection of tube numbers in parts (b) (i) and (ii) were of very low quality.
- Q5. Generally poor and incorrect responses were given in the table in part (a) (1) and to the function of bile. Most gained 2 or 3 marks for the plotting of the graph but the reason why it was not possible to be exactly sure of the optimum temperature for lipase was not understood.
- Q6. Candidates struggled with the equation for respiration in Q2 – well, they also struggled here with the equation for photosynthesis. Few candidates could calculate the difference in part (b)(i) and the responses to part (b)(ii) were also poor. The correct answer required reference to increasing light intensity and therefore an increasing rate of photosynthesis. A few candidates gained the mark for part (c) by drawing a line showing the reciprocal of the concentration of oxygen line.
- Q7. Most candidates gained marks here although they struggle with the meaning of the term ratio.

- Q8. Labelling of the respiratory system was most often incorrect. Some marks were picked up in part (b)(i) and (ii) but part (b)(iii) was poorly answered.
- Q9. (QWC) Some candidates gained lower band marks for the comparison of the two types of cell division but the explanation of the function of each type of cell division was very vague and not creditworthy.

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BIOLOGY 2 - HIGHER

General information

Performance on the common questions (Foundation Tier 6, 7, 8 & 9, Higher Tier 1, 2, 3 & 4) was, as is expected, better on the Higher Tier but, often not greatly so. Therefore many of the comments given above to the Foundation Tier apply equally to the common question responses on the Higher Tier.

- Q5. All parts of this question were poorly answered. When it comes to interpreting a graph the meaning of the terms describe and explain are not understood.
- Q6. The calculations in part (a) presented difficulty for many of the candidates. In part (b)(i) the meaning of '... the exchange of gases in solution' was not understood. In part (ii) few could state that the wall of the alveolus is one cell thick. The answers to part (c) were often confused with candidates stating that the cilia trap the dust particles rather than the mucus.
- Q7. Probably the best answered question on the paper with many candidates gaining full marks.
- Q8. Candidates struggled with the calculation in part (b) and in part (c) with the modifications required to increase confidence in the results. Most gained some marks in parts (d) and (e).
- Q9. (QWC) A few candidates gained upper middle band and higher band marks but most gained marks in the lower band. Equations for anaerobiosis in yeast and in muscle cells were expected but when given these were often confused. The reasons why aerobiosis is more efficient than anaerobiosis were often vaguely expressed.

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BIOLOGY 3 - FOUNDATION

General information

There were too few candidates entered for this paper to allow conclusions to be made relating to trends or patterns in the responses.

BIOLOGY 3 - HIGHER

General information

The candidates entered for this paper produced reasonable answers to the questions which were common to both Foundation and Higher tiers. The main reasons for their loss of marks are as follows:

- Q5. (a) Failure to recognise that penicillin diffused through agar, and in (b)(i) failure to understand that the difference between tetracycline and nalidixic acid could not be determined from the data.
- Q6. (c) Descriptions of the path taken by the nerve impulse were often very vague.
- Q7. Although the error carried forward' rule was applied to the calculation, few showed an understanding of the investigation.
- Q8. Few recognised the heart as being represented by the pump in the dialysis machine. None understood the reason for the dialysis fluid being isotonic with blood.
- Q9. Hardly any demonstrated good quality of written communication skills. None recognised that the protein coat of the virus acted as the antigen and that white cells cloned into many cells that produced specific antibodies.

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SCIENCE A CONTROLLED ASSESSMENTS

OVERVIEW

The number of entries for this award was extremely low, making it very difficult to draw generalisations and conclusions about performance.

ADMINISTRATION AND MARKING

Samples were submitted on time and were well organised. The marking was generally of an acceptable standard, although, as in the past, there was a tendency towards generosity.

PUPIL PERFORMANCE

The small numbers involved preclude any overall comment on pupil performance.

RESEARCH EXERCISE – GENERAL ISSUES

The main issue in the research task were that the descriptions of investigations in part two were generally much too vague. The candidates did not have a clear understanding of the concept of strength of evidence.

PRACTICAL AND SAFETY EXERCISE – GENERAL ISSUES

There were no general issues with either of these exercises.

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ADDITIONAL SCIENCE & SEPARATE SCIENCES CONTROLLED ASSESSMENTS

OVERVIEW

The number of entries for this award was extremely low, especially in the separate sciences, making it very difficult to draw generalisations and conclusions about performance. In additional science, the majority of the candidates did the enzyme practical.

ADMINISTRATION AND MARKING

Samples were submitted on time and were well organised. The marking was generally of an acceptable standard, although, as in the past, there was a tendency towards generosity.

PUPIL PERFORMANCE

The small numbers involved preclude any overall comment on pupil performance.

BIOLOGY EXERCISE

Most candidates investigated starch concentration. Performance was generally of quite a high standard, and the only issue revolved around the risk assessment, with a number of candidates unsure of the distinction between hazards and risks. This applied not only to this exercise, but also to the chemistry and physics exercises.

CHEMISTRY EXERCISES

Performance was generally quite good, with no issues other than the one of risk assessments mentioned above.

PHYSICS EXERCISES

Performance was generally quite good, with no issues other than the one of risk assessments mentioned above.



WJEC
245 Western Avenue
Cardiff CF5 2YX
Tel No 029 2026 5000
Fax 029 2057 5994
E-mail: exams@wjec.co.uk
website: www.wjec.co.uk