Pearson Edexcel

Examiners' Report
Principal Examiner Feedback

November 2021

Pearson Edexcel Combined GCSE
In Biology (1SC0) Paper 2BF

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications are awarded by Pearson, the UK's largest awarding body. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk. Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus.

Pearson: helping people progress, everywhere

Pearson aspires to be the world's leading learning company. Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

November 2021
Publications Code xxxxxxxx*

Introduction

Paper 1SC0/2BF was taken by candidates sitting GCSE Combined Science as a part of a suite of six papers in a linear assessment model. The paper consists of 60 marks assessed by a mixture of different question styles, including multiple-choice, short answer and an extended open-response question. Candidates are expected to answer all questions in 1 hour and 10 minutes. In the extended open-response question, marks are also awarded for the ability to structure a response logically; this question is marked with an asterix (*). Practical knowledge and maths skills are also assessed in the examination papers. There are six mandatory core practicals in the specification that candidates must complete prior to the examination. Up to five core practicals may be assessed in Paper 1SC0/2BF. Aspects of working scientifically are also assessed in questions throughout the paper.

The paper contained questions assessing the content from topic 1 and topics 6 to 9. These included the composition of human blood, photosynthesis, the transport of mineral ions through plants, diabetes, respiration, gas exchange in alveoli and levels of organisation in ecosystems.

Questions based on practical work included drawing cells as seen under a microscope, devising a method to compare breathing rates and using a belt transect to investigate the effect of light intensity on the growth of stinging nettles.

The maths skills assessed included measuring the width of a cell on a 100 µm scale, calculating a waist to hip ratio and calculating the mean volume of air breathed per minute from given data.

Comments on individual questions are given below.

Question 1

This question was about human blood and electron microscopes. The majority of candidates could correctly complete at least one sentence about the components of blood, but fewer than half could describe ways that white blood cells protect the body from disease. The majority of candidates could use a scale to correctly measure the width of a white blood cell and most could give at least a partial explanation of why electron microscopes show the structures in cells more clearly.

Question 2

This question was about levels of organisation in ecosystems and feeding relationships between organisms. The majority of candidates could correctly interpret a food web to give a reason why caterpillar numbers will decrease. However, they were far less successful when asked to interpret a similar food web and give a reason why caterpillar numbers will increase.

It was pleasing to see that all candidates could analyse and interpret the graph in Figure 4, thus scoring at least one mark when asked to describe the trend. The majority of candidates also scored at least one mark when attempting to explain why mites living on slugs are classed as parasites.

Question 3

Only half of the candidates could identify the cause of type 1 and / or type 2 diabetes in the matching pairs question; it is important to remind candidates to adhere to the instruction to draw just one straight line from each box on the left in this type of question. It was pleasing to note that the vast majority of candidates could describe the trend in waist to hip ratios shown in Figure 6, although only a small proportion used data in their answers. Fewer than half of the candidates could calculate the waist to hip ratio using the data given and even smaller number could go on to estimate the probability of the individual developing type 2 diabetes. However, the majority of candidates could state at least one factor that would affect the probability of individuals developing type 2 diabetes.

Question 4

The requirement for candidates to learn simple equations cannot be stressed enough, since just under half were unable to complete the word equation for aerobic respiration correctly. It was also disappointing that only a very small proportion of candidates could correctly calculate the mean volume of air breathed per minute using data from Figure 8 and give their answer to one decimal place.

Over half of the candidates were able to score one mark for giving a detail of how they would compare the mean number of breaths per minute for men, with the mean number of breaths per minute for women (when running at 5 metres per second on a running machine). Approximately one third of candidates could give two relevant points, but the number scoring more than this was very small.

Approximately one third of the candidates were able to give lactic acid as the product of anaerobic respiration that causes cramp. Again, this highlights the importance of candidates being able to recall basic facts.

Question 5

In general, responses to this question demonstrated that many candidates do not have a good grasp of Topic 6 (plant structures and their functions) and aspects of Topic 9 (ecosystems and material cycles). Some good descriptions of photosynthesis were seen, but these were in the minority. Just under half of all candidates could give at least one relevant fact about how the leaves of plants make glucose.

It was disappointing that the majority of candidates could not name a group of organisms that break down dead leaves and release mineral ions into the soil. Just a quarter of the candidates scored one mark for describing how mineral ions are transported form the roots to the leaves of plants; this area of plant biology was not well understood.

The majority of candidates could give a partial explanation of the results shown in Figure 10, but only a tiny proportion went on to state one variable that should have been controlled so that light intensity measurements could be compared. It was disappointing that the vast majority of candidates were unable to give at least a partial description of how to use a belt transect. This particular item was linked to a core practical and highlights the importance of these activities being studied in whatever way is applicable to the circumstances of the candidates.

Question 6

This question was about the human respiratory system and measuring rates of respiration. It was pleasing to note that the vast majority of candidates could draw a representative diagram of cell A, with many also able to correctly label at least one part of the cell. However, only a very small proportion of candidates scored full marks on this item. Candidates should be reminded to read commands carefully and only label the number of parts specified in the question.

The extended open response question asked candidates to explain how alveoli in the human lungs are adapted for gas exchange. This was very challenging for the majority of candidates; generalised comments about breathing in oxygen and breathing out carbon dioxide were commonly seen, along with basic adaptions of alveoli, such as having a large surface area.