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Examiners' Report

Principal Examiner Feedback

Summer 2017

Pearson Edexcel GCSE
In Biology (5BI1F) Paper 01

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Paper Introduction

This paper is the penultimate examination in this current Science 2011 specification and has been designed to test a wide range of topics such as classification and evolution to diabetes and from the nervous system in humans to food relationships in nature. A range of different questions types have been asked to test the whole skill set from our candidates. Multiple choice questions, short answer questions, mathematical calculations and extended writing all feature in this paper.

We feel it is important to test the whole specification as widely as possible through each series and therefore some questions have seen a mixture of specification points through the whole questions; for example, questions 1 sees the beginning of the questions identifying aspects of classification and then this flows into the topic of evolution. This way we can link various themes of biology successfully.

Our questions that aim our candidates to write in an extended style have lent themselves to being able to draw from candidate learning and the world around them so they can stretch their knowledge and gain successful marks here.

Once again our mathematical questions have performed successfully with the majority of candidates scoring well here. It is clear candidates and centres have learnt from previous series to bring these advice points into this examination.

5BI1F_01_Q01ai

This question asked candidates to link the binomial name of a particular organism to the classification category. Candidates were asked to draw one line from each area on the left to the area on the right.

Many candidates scored highly on this item yet some candidates were still drawing more than one line from each of the binomial names and thus automatically scoring zero marks.

This response shows two lines drawn from the binomial name to the classification. Unfortunately these lines are not to the correct classification and therefore score zero.

Always draw lines with a ruler so they are easily visible.

5BI1F_01_Q01bii

This question expected candidates to recognise that the organism had a head that was made of soft tissue that was decomposed more swiftly than the rest of the body and therefore did not fossilise. The mark scheme did not accept words such as disintegrate.

Many responses made reference to scientists only discovering fossils late or recently. This was not answering the question and scored zero marks.

5BI1F_01_Q01c

This question expected candidates to comment that these organisms may not have adapted appropriately for the change in the environment and therefore the consequences are that they are outcompeted and find it harder to find food or shelter. They are therefore less likely to reproduce successfully.

5BI1F_01_Q02aii

This question expected candidates to understand the concept of mutualistic relationships between organisms. The mark scheme awarded comments about the oxpecker eating insects or fleas from the antelope and that the antelope therefore did not become infected. Being cleaned was not a sufficient answer.

5BI1F_01_Q02bi

This question asked candidates to state the name of the feeding relationship which involved a host. The name of the relationship where one organism benefits is called parasitism.

5BI1F_01_Q02c

This question expected candidates to recall that tapeworms live inside their host and they attach to the intestines with the use of hookers or suckers. For the last two marks they were expected to comment that the tapeworm absorbs the digested food from the organism and then lay eggs in the faeces to infect other organisms.

5BI1F_01_Q03a

This question asked candidates to express how to ensure that the practical was conducted in a safe manner. Many of the answers stated that investigator should ensure the wire was not sharp and this was an acceptable answer. Other candidates stated that the investigator should not push too hard or that the wire should be disinfected or cleaned for the administration of the experiment.

5BI1F_01_Q03bi

This question asked candidates to rank the most sensitive parts of the body to the least sensitive parts after considering the data in the graphical diagram. The least sensitive is the shoulder followed by arm, back of the hand then palm of hand. The most sensitive part being the fingertip.

5BI1F_01_Q03bii

This question asked candidates to consider why the palm of the hand was the most sensitive as it is the area of the hand that is used more so than the back of the hand. Many candidates felt the back of the hand was more sensitive and scored zero marks from the outset. A variety of answers were

given from "the palm of the hand is used to touch things" or "the palm of the hand is in contact with more objects" - which were all carefully considered for mark awarding.

5BI1F_01_Q03d

This question asked candidates to explain the reason as to why we have the reflex arc. This is a popular question and candidates are recognising that reflexes are fast or that the brain is not an organ used in the arc. They are less familiar with providing the reason for the immediacy of the reflex arc is preventing further damage.

5BI1F_01_Q03e

This question expected candidates to state the gap between two neurones was called the synapse and that the electrical impulse was transported across through the use neurotransmitters. Many candidates secured the naming marking point but less were successful with the "neurotransmitter" mark.

5BI1F_01_Q04ai

This mathematical question asked candidates to use addition to calculate the total number of deaths in London from a particular disease. Candidates are always awarded full marks for the correct answer but it is always advised to show the calculation as well.

5BI1F_01_Q04aii

This question asked candidates to recognise and consider the data in the table once again to suggest why more deaths were in Southwark than Lambeth.

The mark scheme expected candidates to state that there were more houses in Southwark or that it was overcrowded there. Many candidates wrote that there were "more people" which is acceptable. The second marking point was for the fact that Lambeth may have had drinking water than was cleaner than Southwark's.

5BI1F_01_Q04aiii

This question asked candidates to highlight bacteria as the correct answer. Many candidates were successful here but spelling this in various different manners. Examiners were asked to look for Bacterium or bacteria to be fair.

5BI1F_01_Q04bi

This question asked candidates to make comment on how physical barriers ensured that the human body was free from pathogenic disease. Many candidates were able to highlight what these mechanisms were but did not qualify their answer by stating how the barrier was successful in preventing entry.

5BI1F_01_Q04bii

This questions asked candidates to highlight the chemical defences of the human body to prevent the body from becoming infected with pathogenic organisms. The mark scheme asked candidates to state either hydrochloric acid in the stomach or lysozymes in the tears. The second mark point was for stating that the pathogen would be killed or destroyed. Killing the infection was not credit worthy.

5BI1F_01_Q05ai

This question asked candidates to place the four organism in the correct order of the food chain and then add arrows to show that they were aware of the energy flow direction. Many candidates scored one mark for the placement of the organisms but then failed to show the flow of energy arrows.

5BI1F_01_Q05bi

This mathematical item asked candidates to calculate a "percentage of" here. Successful candidates ensured their full calculation was shown and calculated the number 704. Many candidates did not understand how to calculate a percentage which was concerning. Some candidates merely divided 8800 by 8 to get an incorrect answer of 1100.

5BI1F_01_Q05bii

This question asked candidates to suggest why only 8% of this biomass was passed onto the locust. The mark scheme asked for the fact that the locust does not eat all of the maize plant or that it cannot digest all of the parts of the maize. Few candidates recognised this. Many stated other reasons as to why not all of the locust biomass would be passed on through movement or respiration. These were not credited.

5BI1F_01_Q05c

This 6 mark question asked candidates to explain the processes of the carbon cycle. The four processes that the indicative content requested was information regarding photosynthesis, respiration, decomposition and combustion. To score Level 1, candidates just needed to explain in a limited fashion at least one of the processes of the cycle. Even naming one of the processes was sufficient. To score Level 2, a candidate must have made a simple explanation of at least two processes of the cycle and they must have referenced carbon as carbon dioxide. To score Level 3, candidates had to make reference to photosynthesis, respiration and combustion or decomposition.

5BI1F_01_Q06ai

This mathematical item asked candidates to consider some graphical evidence and calculate the difference in two bar chart items. The numbers to be extracted from the graph were 42 and 6.8 - 7.0.

5BI1F_01_Q06aii

This question asked candidate to suggest why someone with a BMI above 29 would be more likely to have type 2 diabetes. The mark scheme asked candidates to recognise that this BMI is likely to classify the individual as obese and therefore likely to have a sedentary lifestyle and a diet high in fat or sugar.

5BI1F_01_Q06aiii

This question asked candidates to describe why a type 2 diabetic would find it difficult to control their own blood glucose. The mark scheme warranted answers to reflect that individuals are resistant to insulin. Candidates who made reference to insulin, in order to secure the mark had to have this in the context of the body being unresponsive (if they had not conveyed the word resistant).

5BI1F_01_Q06b

This 6 mark question asked candidates to describe how individuals with type 1 and type 2 diabetes can control their condition. To score Level 1, candidates just needed to describe, in a limited fashion, any method of diabetes control without even mentioning the type. To score Level 2, a candidate must have made a simple explanation of both types of diabetes or a detailed explanation of either type 1 or type 2. The score Level 3, candidates had to make a detailed description of how both types are controlled with reference to injection of insulin into a fat layer and how diet should be restricted in terms of carbohydrate.

Paper Summary

It is clear from this paper that many candidates are scoring well on certain items that require mathematical elements or simple answers. However, it is pleasing to see that some more complex elements to these papers are being recognised by candidates who are starting to apply these concepts.

Advice points for future series:

- Always ensure that your revision incorporates past papers, their mark schemes and examiners reports so that you are clear what is expected of you in every question.
- Ensure that you are aware of the command words used in examinations so you are clear what the examiner is expecting in your answer.
- The use of scientific literacy is a must. Poor communication will rarely be considered as creditworthy.
- Any mathematical questions must be conveyed by showing calculations as well as your final answer.
- The legibility of handwriting should really be as clear as possible. It is impossible to mark what cannot be legibly read.

