GCSE

COMBINED SCIENCE: TRILOGY

8464/B/2H – Paper 2 Biology Higher
Report on the Examination

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General Introduction to the Autumn Series

This has been another unusual exam series in many ways. Entry patterns have been very different from those normally seen in the summer, and students had a very different experience in preparation for these exams. It is therefore more difficult to make meaningful comparisons between the range of student responses seen in this series and those seen in a normal summer series. The smaller entry also means that there is less evidence available for examiners to comment on.

In this report, senior examiners will summarise the performance of students in this series in a way that is as helpful as possible to teachers preparing future cohorts while taking into account the unusual circumstances and limited evidence available.

Overview of Entry

A small and atypical cohort of students chose to take the autumn series of examinations. The number of entries for the Foundation Tier was only 155 compared to the usual summer entry of over 110 000.

Comments on Individual Questions

Questions 1 and 2 were common with Combined Science: Trilogy Biology Paper 2 Foundation Tier.

Question 1 (standard demand)

This question was about hormones and contraception. Early parts of the question involving recall of correct terms such as ‘endocrine’ were not well answered. Common incorrect answers were digestive system, respiratory system or attempts to name the organs. The vast majority of students knew that hormones travel in the blood. Some students knew the hormones were likely to be in the plasma, which was creditworthy. Inaccuracies in responses such as ‘in red blood cells’ did not gain the mark. Confusion was seen regarding the term ‘glands’ in **01.5** in this context, with a wide range of other parts of the reproductive system being named.

There was a generally a good attempt at evaluating a new contraceptive method with existing methods in **01.7**. In this extended response question students needed to consider both advantages and disadvantages compared with named existing methods of contraception to access 5 or 6 marks. Clear guidance relating to command words used in AQA GCSE Science examinations is available. Students were not given information regarding the efficacy of the new contraceptive, but some students attempted to compare the efficacy with existing contraceptive methods.

Question 2 (standard demand)

Generally, students could interpret the graph and describe the trends between 2008 and 2011 in terms of years, such as 'it increases to 2008'. However, fewer could correctly extract relevant data, such as the money spent in millions of pounds in 2008 or 2011. References to trends beyond 2011 were ignored. Some students tried to give economic or levels of concern reasons for the trends which did not answer the question. When 'describe' is used as a command word the answer does not require an explanation.

In **02.2** students were given the equation and asked to calculate the percentage change. Some students could not read the appropriate figures from the graph. The most common error was not giving the answer to two significant figures. This is prompted in the question and on the answer line. There were indications that some students are confused between decimal places and significant figures.

Knowledge of uses of peat was very weak, with most students not being able to give one use of peat taken from peat bogs. The most common correct answer related to peat in compost. Misconceptions of the term biodiversity were frequently seen in **02.4**, with answers referring to diversity in the human population or vague answers relating to recycling or climate change that would not directly increase biodiversity. Suggestions that would maintain, or decrease the rate of biodiversity decline, such as 'stop hunting' may maintain, but not increase biodiversity, and therefore were considered to be insufficient at this level.

Question 3 (standard and standard/high demand)

Overall, there was a poor understanding of classification. Many students could not give the genus name when provided with the binomial. The calculation of the range required manipulation of figures in standard form, and was generally answered clearly. The most common incorrect answer was 2.1×10^7. Students gained credit whether or not their correct answer was given in standard form.

In **03.4**, many students did not move beyond the idea that had been given in the question, that humans were not alive when the fungus was alive and therefore there are no records of the fungus; this was insufficient. Some students could give the domain eukaryota, and phonetic spelling was allowed, as explained at the beginning of the mark scheme. **03.5** asked for recall of three types of evidence that are used now to classify living things. Despite being prompted not to refer to appearance, many responses did this, such as referring to size or external features.

Question 4 (standard, standard/high and high demand)

Students coped well with the challenging scale of the graph in Figure 4. Generally, the students could read figures from the graph, with most selecting sensible data to use for the rate calculation. The graph was a straight line, so students could use data from any points on the graph to calculate the rate. Higher-attaining students used the data suggested (from 1984 and 2000) which were easier points to read from the graph.

Explanations of the process of evolution that could cause the trend in the graph were often not clear. Inferences that the bird feeder caused beaks of individual birds to grow longer were common. A small proportion of students showed understanding that evolution involves alleles/genes and fewer showed understanding that evolution occurs over many generations.

Students could often make one part of an explanation regarding studying evolution in birds rather than humans. Most frequently, this was an understanding that a shorter life cycle or shorter time before reproducing was relevant. Weaker responses did not go far enough to gain a mark, such as 'birds don't live as long as humans'. Very few students could describe evidence that would show that two individual birds are the same species, with answers often being vague, such as 'both have wings'.

Question 5 (standard, standard/high and high demand)

Some students read and understood the reaction time method provided. Some however, made assumptions that this was a 'ruler drop' method and then struggled to answer questions relating to control variables and possible sources of random error in the method.

In **05.4** students had to link their knowledge of the effect of adrenaline on the body to reaction time. A common misconception seen was that reaction time decreasing must mean slower reactions. Few students referred to oxygen or glucose supply to muscles or the brain, and fewer referred to the rate of respiration or energy released for muscle contraction. The common errors referring to energy being 'produced' were seen.

Students could generally recall the term 'synapse'. Few could apply their knowledge to the scenario given in **05.7**. Many students simply repeated the information provided, which is never awarded credit.

Question 6 (standard/high and high demand)

Few students could define the term heterozygous. Some insufficient responses gave examples such as Hh, but did not answer the question. Confusion was seen between the terms allele, gene and chromosome.

In **06.2** there were clear instructions in the question regarding the level of detail required. Many students only attempted a Punnett Square, not identifying the genotypes of the parents and the phenotype of each offspring. **06.3** was beyond the understanding of most students. Common incorrect answers referred to polydactyly skipping a generation or the parents being carriers, despite the detail given in the question.

Concluding remarks

It was clear that in the unusual teaching circumstances leading up to this exam had made it not possible for some topics and practical work to be covered in the normal way. It was a small and atypical cohort of students who have chosen to take the autumn series of examinations. Gaps in both knowledge and skills were evident.

Mark Ranges and Award of Grades

Grade boundaries and cumulative percentage grades are available on the Results Statistics page of the AQA Website.