
LEVEL 3

APPLIED GENERAL SCIENCE

ASC3: Science in the Modern World
Report on the Examination

1775
January 2020

Version: 1.0

Further copies of this Report are available from aqa.org.uk

Copyright © 2020 AQA and its licensors. All rights reserved.
AQA retains the copyright on all its publications. However, registered schools/colleges for AQA are permitted to copy material from this booklet for their own internal use, with the following important exception: AQA cannot give permission to schools/colleges to photocopy any material that is acknowledged to a third party even for internal use within the centre.

General comments

Students were able to attempt all questions on the paper and very few un-attempted questions were seen. Most students were able to answer the questions fully without the need for additional pages. Where additional pages were used for the extended response question (Q8), the response was often unnecessarily rambling. Most of the really good level 3 responses (7, 8 and 9 marks) were from students who had not needed to use additional pages. Centres should continue to encourage students to be succinct in their responses.

Students appeared to be better prepared for the type of mathematical calculations required in the ASC3 examination than in previous series. The mathematical questions (Q7.5 and Q11.1) were well-answered by most students. It was pleasing to see that centres had followed the advice given on this and had practiced mathematical calculations in preparation for the examination.

It was disappointing to find that many students were unable to apply their knowledge of the roles of scientists to the context of coral bleaching, with very poor responses seen to the questions about scientists (Q4.3 and Q6.3).

Q1 (1 mark)

Almost 80% of students achieved the mark in this simple multiple-choice question.

Q2.1 (3 marks)

Almost half of students were able to achieve 3 marks and almost all students achieved at least one mark. Most students identified that the coral turned white. Those who did not achieve all 3 marks generally missed out the fact that it is the algae that is coloured.

Q2.2 (2 marks)

Over 80% of students achieved at least one mark. Incorrect answers here referred to high sea temperatures and the fact that the coral could not photosynthesise rather than the coral had lost its source of food.

Q3 (3 marks)

Most students (85%) were able to achieve both of the first two mark points. Almost 50% of students were able to explain why this was a contradiction in terms of the increase in global warming or coral bleaching. Those who simply restated from the source that CO₂ would be released did not achieve this third mark point.

Q4.1 (1 mark)

Most students (90%) achieved this mark. Those students who stated that 'sunscreen caused coral bleaching' rather than referring to the chemicals did not receive credit.

Q4.2 (2 marks)

70% of students achieved at least one mark, with 15% achieving two marks. Although three of the mark points here involved tourists, there was no mark given to the many students who simply said 'lots of tourists'. It was necessary for students to give a consequence of tourists such as high levels

of sunscreen in the ocean, the economy or the idea that people in Hawaii want to protect the reefs to maintain the tourists.

Q4.3 (1 mark)

Less than 30% of students were able to identify the research scientist as the type of scientist who will 'study the reactions of chemicals'. Although all responses in the multiple-choice question were seen, the most common incorrect answer seen was the pharmacologist. Students should know that pharmacologists 'study the interaction of chemicals with the human body'.

Q5.1 (1 mark)

Despite demonstrating a generally good understanding of the process of peer review on previous papers, students here were distracted by the term editor and less than 30% of students successfully identified the author as the person who makes amendments to their own scientific articles during this process.

Q5.2 (1 mark)

50% of students were able to state that a lack of peer-reviewed evidence could mean that evidence is biased or not reliable.

Q5.3 (2 marks)

A good range of correct answers was seen here with 86% of students achieving at least one of the marks. The most frequently seen correct answer was about preventing skin cancer. Those who did not score any marks here tended to repeat Q5.2 regarding not enough evidence.

Q6.1 (3 marks)

This question was generally well answered. 27% of students achieved 3 marks, with 92% achieving at least 1 mark. Where only 1 mark was achieved, it tended to be for the third mark point about turning the impeller (although alternative words such as 'fan', 'rota' and 'propeller' were given benefit of doubt, it was a shame that more learners did not use the term impeller that was clearly labelled on the diagram in the source).

Q6.2 (2 marks)

Many students were unable to suggest an appropriate property of material used to make the pontoon. Despite a long list of acceptable answers here, only 7% of students scored two marks and only 46% scored one mark. Unacceptable answers included buoyancy and stability, both of which are deemed to be design features not properties of materials, along with unacceptable phrases such as 'to see if it would float' and 'if it rusts'.

Q6.3 (1 mark)

In this question, students were required to give one role of a marine biologist. In order to gain a mark, students were required to give a sentence which included a suitable verb or command word. A sentence without a verb, such as 'if the coral reef is improving', was not given any credit. Suitable verbs were 'monitor', 'measure', 'analyse', and 'evaluate'. Over half of students did not

achieve a mark for either an incomplete sentence or an unsuitable verb such as 'see', 'find out' and 'check'.

Q7.1 (2 marks)

There were many possible answers to this question, and it was answered well, with almost 40% scoring both marks. Many of those who did not achieve two marks, lost a mark because they stated 'pollution' rather than 'water pollution', 'agriculture' rather than 'nutrients from agriculture' or 'tourism' without giving a specific cause such as 'tourists walking on the coral'.

Q8 (9 Marks)

This question was well answered by many students, with 37% achieving level 3 marks. Good students were able to describe validity in terms of the website, author, dates and references of the articles. Good students were also able to describe the effectiveness in terms of the information, style of language, use of scientific terminology, use of diagrams and length of article. Some students did not fully read the question and referred to the general public rather than the sixth form students. Some students discussed only validity, and some discussed only effectiveness, and by doing so limited their marks to level 2. Some students limited their marks by not discussing all the sources. The weakest students tended to simply describe what was said in the articles without any reference to validity or effectiveness, and in some cases did not even mention the sources at all. It was, however, pleasing to see that almost all students (over 99%) had attempted this extended response question.

Q9.1 (2 marks)

There were several acceptable answers to this question, and it was well-answered, with 51% achieving two marks. Those who achieved only one mark (34%) tended to have mentioned only one point.

Q9.2 (1 mark)

66% of students achieved the mark here for giving an idea that a bar chart allows for a comparison. Answers such as 'to see the difference' and 'to show the changes' were credited. Those who simply stated that it was 'easy to read' or 'a good visual representation' did not achieve the mark since other types of graph could also have this same response.

Q9.3 (2 marks)

Most of the answers seen here were about the media raising awareness. Many students (73%) achieved only one of the two marks as the answers given were the same idea. Those who achieved two marks (10%) were those who gave examples of the media they were referring to rather than just the raising awareness idea. Good answers included 'Social media is a good platform for younger people to know about climate change' and 'TV documentaries show the effects of climate change'.

Q9.4 (2 marks)

Most students had a good attempt at this question, and many came up with the idea that, to increase the validity of a survey, information is required about the number of people asked and how they were selected. 80% of students achieved at least one of the two marks here.

Q10 (3 marks)

This was a difficult question and it was pleasing to see that most students attempted an answer. 42% of students were able to correctly interpret the graph and achieve two marks. The more able students (16%) were then also able to suggest why this would be a global problem for the future. Weaker students often misinterpreted the data in the graph, giving answers the wrong way around such as 'more concerned countries give off more emissions' or vague answers such as 'more countries are not concerned'. However, many of these students were able to achieve the final mark point for indicating why people not being concerned, in terms of not taking any action, is a problem for the future.

Q11.1 (2 marks)

46% of students were able to achieve 2 marks for a correct answer, with a further 22% achieving 1 mark for calculating the decrease in total greenhouse gas emissions but not the percentage decrease. It is pleasing to see that centres are preparing students for these simple mathematical calculations.

Q11.2 (2 marks)

Most students (80%) were able to suggest that a decrease in greenhouse gas emissions was due to the increased use of alternative or renewable energy sources. Some students achieved this one mark for giving a named example such as solar panels or wind turbines. 30% of students were able to explain that these alternative energies do not involve burning fossil fuels or do not produce greenhouse gases.

Q11.3 (2 marks)

72% of students achieved two marks for correctly identifying the two sectors with higher decreases than the energy sector. A small number of students lost one of the marks here for not reading the question properly and stating 'energy supply' as one of their answers.

Q11.4 (2 marks)

This was a difficult question and it was pleasing to see that the more able students (30%) were able to explain the negative numbers in the table as carbon dioxide being removed from the atmosphere. Fewer students (10%) achieved the second mark for naming this process as photosynthesis.

Q11.5 (2 marks)

Another higher-level question requiring students to think about why these numbers might becoming more negative over time. Many students were able to link this to trees and deforestation but often the wrong way around and not the idea of less deforestation and planting more trees. Only 8% of students achieved two marks in this question.

Mark Ranges and Award of Grades

Grade boundaries and cumulative percentage grades are available on the [Results Statistics](#) page of the AQA Website.