



General Certificate of Secondary Education

Applied Science 4861

**APSC4 Using Scientific Skills for the
Benefit of Society**

Report on the Examination

2008 examination – June series

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Dr Michael Cresswell Director General.

General comments

Activities

Most centres completed a good range of tasks set in interesting vocational contexts, but it would be nice to see more of the vocational context developed in unit 3 applied to this module.

Risk assessments are required for all pieces of work where a practical has been carried out. The good practice developed in APSC3 should be carried through into APSC4. This includes completion of risk assessments for each investigation. Lack of a risk assessment for an investigation may result in a candidate not receiving credit for working safely in future series.

Assessment

Generosity in marking was mainly due to misinterpretation of the specification requirements or lack of annotation. It is imperative that teacher annotation clearly supports the marks awarded, shows how much guidance was given and how independently the candidate had completed a task.

There were some instances where multipart bullet points were being awarded even when some parts were not completed. For example 2A.3 for monitoring a living organism requires the candidate to record data, identify and explain patterns and carry out calculations. Calculations alone would not be creditworthy.

There was evidence of credit being given for downloaded material, particularly relating to scientific reason in skill A and the uses of products in skill B. Downloaded material (even if sourced) is not creditworthy unless it has clearly been used and rewritten by the candidate.

Whilst tick sheets are useful at the front of a piece of work, annotation within the work is also needed to show the moderator where the evidence can be found.

Presentation of work to the moderator

Most of the work submitted was generally presented in good order, with the necessary paperwork included. Most centres had adhered to the request not to use bulky folders. Can Centres please punch and tag work rather than using plastic wallets, staples or paper clips. Centres should not submit classwork or theory work that is marked as part of the candidate's assessed work.

A number of the Candidate Record Forms seen were incomplete or incorrect, as were the centre mark forms. Centres should check that the mark on the Centre Mark Form matches that on the Candidate Record Form. It is also helpful to the moderator if work is put in the order set out on the Candidate Record Form and the best marks have been identified.

Unfortunately, quite a few centres took a long time to send in the samples requested. It is important that deadlines are adhered to and paperwork is completed and checked carefully so that moderation can run as smoothly as possible.

Further support

Teachers are encouraged to make full use of the guidance available from AQA:

- The Teachers' Guide for the specification gives details on marking portfolios
- The Student Guide to Assessment
- Coursework Information for Centres 2007/2008 (sent out by the Subject Department at the beginning of each academic year) gives general information on entries, specific notes on marking of each unit (including appropriate tasks), administration procedures and the role of the Portfolio Adviser
- Portfolio Advisers
- Teacher Support Network
- Ask AQA for Teachers

Strand A: Monitoring A Living Organism

There seems to have been a wider range of investigations this year, which is very encouraging to see. Unfortunately the main problem encountered, which took many centres out of tolerance, was that candidates were submitting plans that were written in the past tense. A plan is an intent to carry out, therefore must be written in the future tense. It should also be noted that to award stage 2 and 3 marks, the plan should be written as a series of well ordered steps, including sufficient detail, for example volumes, times, etc.

There was some misinterpretation around the vocational application for 1A.6, 2A.6 and 3A.5. Candidates often failed to describe an application of their investigation such as, brewery's needing to know the correct conditions for yeast to respire and produce alcohol, but instead spent many paragraphs actually describing yeast and products it is found in.

It should be noted that the period of time over which the investigation is carried out should be appropriate to the organism. There are still a number of centres carrying out fitness style investigations using the effect of exercise on pulse rate and only spending one lesson to carry it out. A number of weeks would be more appropriate for this type of investigation. .

Strand B: Making a Useful Product

One of the main reasons that centres are going out of tolerance is the misinterpretation of 2B.6 and 3B.5. At stage 1, a general comment about the factors that affect chemical reactions is allowed, however, at stage 2 and 3, the factors discussed must be related to the candidate's own reaction. They should be encouraged to discuss specific reactants for example, "increasing the concentration of sulphuric acid increases the rate of reaction". For 3B.5, kinetic models are required and once again, candidates should name specific particles for example "increasing concentration increases the number of sulphuric acid particles".

A number of centres awarded marks for 3B.2 for just a symbol equation and sometimes a very simple statement of the type of reaction. The balanced symbol equation must be accompanied by an explanation of the type of reaction, which must be specific to the product made.

Strand C: Assembling an Electronic/Electrical Device

Some lovely examples of electronic devices were seen this year. Annotation regarding the level of guidance needed to make and test the device is essential. It is a requirement however for 1C.2, 2C.2 and 3C.2 that the candidate has recorded some results. Teacher annotation alone is not creditworthy. To award 3C.2, in addition to testing the device independently, the candidate must suggest alternative tests; often this was not done.

There are still some centres that are awarding 2C.4 for an evaluation of the experiment rather than the effectiveness of the device.

Strand D: Using Machines

Most centres had completed stage 1 well and described examples of machines in a workplace. The majority of problems occurred at stage 2, where candidates did not describe how machines could be used as force multipliers and the importance of friction. Calculations of force multiplication are not sufficient for stage 2, since there is no description; this is assessed at stage 3. If, however, candidates carry out an experiment where they measure force multiplication they can use their results to help them. Candidates often failed to relate the friction to actual machines in terms of efficiency and energy loss. 3D.2 was often awarded for results of calculation in a table with no evidence from the candidate. They must show how the results are obtained by giving at least one worked example for each calculation.

Mark Ranges and Award of Grades

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