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General Certificate of Education

Applied Science 8771/8773/8776/8779

SC04 Food Science and Technology

Report on the Examination

2007 examination - June series

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General Comments – June 2007 Series

The entry for the specification has continued to grow and centres have continued to successfully guide students to achieve well at AS level. Due credit should be given to both teachers and students in making every effort to meet the requirements of the specification, producing portfolios – in many areas - of a commendable standard of content, approach and presentation. Centre administration overall has been good. However a number of centres were very late in sending initial documentation to moderators and in sending requested samples. A number of centres failed to fully complete candidate record forms, missing candidate names and numbers makes recognition of work very difficult and leads to frustration and the potential for mis-allocation of marks.

The AS Units – SC01, SC03, SC04 and SC06

There are still a number of centres that seem to have failed to appreciate that Units 1, 3, 4 and 6 are targeted at AS level and have used assignments that are insufficiently challenging for students, sometimes below their capabilities. Activities set at a limited level of challenge can restrict access to marks from the higher mark bands because students find difficulty matching the work to the areas required in the assessment criteria. Some centres are using assignments, (some of which may be from published schemes), that may be too challenging for candidates at this level and less able candidates may find difficulty accessing the work.

AS builds on the work students are likely to have completed at GCSE level. Students will be at different levels of competence and understanding and centres should aim to build on student knowledge, capabilities, and interests. The most appropriate school and local facilities should be used to extend GCSE work to AS level. As an AS award, students need to be challenged but if the step is too great then students' learning will be made more difficult. The level of demand of an activity affects the level of response from students. It is important to match tasks with student capabilities so that they can access work and gain marks in an appropriate mark band. There is a balance to be struck between work that is sufficiently challenging to be interesting and that which is too challenging which can create barriers to progress. Many centres get this right, knowing their students well, understanding what the specification requires and providing assignments which match both.

It is very important that centres guide students on portfolio construction, leaving opportunity for student flair and individuality. Portfolios should be monitored during production to see how they are developing. Some centres continue to produce unreasonably large portfolios running to over 300 pages. These are really too large and represent an unreasonable amount of candidate effort. It also shows some lack of skill on the part of the student in selecting the most appropriate material to include; and inappropriate guidance by the centre in allowing the student to produce so much work. At the other end of the scale, some candidates submitted work that was very poorly organised making moderation difficult, and some portfolios were very short containing little of the unit requirements, thus not allowing candidates the opportunity to gain high marks.

Centres need to consider the assessment and moderation of candidates work during portfolio construction. AQA does not set out any requirements for portfolio construction: this is a matter for the centre and student to decide. However the portfolio is being produced to meet the requirements of the unit specification and those of the assessment grids. In order to award marks, it is much easier if the portfolio is structured in a way that matches the unit structure, allowing assessors and moderators to work through a portfolio and the matching assessment grid simultaneously. It is hoped that the specification will inspire individuality of content and style of approach but, eventually, all portfolios are assessed against the same assessment

criteria. Students and assessors should ensure that there are references in the portfolio to all banner requirements and all areas in the assessment grids. The more closely the work matches the assessment grid, the higher the mark. The level of response and the level of understanding, degree of autonomy and practical capability and the quality of descriptive accounts shown will allow candidates to be awarded marks from the higher mark bands. In order to substantiate marks, especially from the higher mark bands, it is very helpful if assessors add explanatory comments to the CRF, or on any other suitable document, to describe the candidates' levels of practical skills, awareness of safety procedures and degree of autonomy – especially in the areas marked # in the assessment grids.

Whilst guidance through units is important for students, too much guidance, exemplified by all students doing the same activity, obtaining the same results and doing the same calculations, suggests over prescription of activities. Allowing students to show autonomy in their working does not mean leaving them to do it alone: there is a middle way, helping students where they need help, and allowing them freedom whilst monitoring their work and providing appropriate guidance and feed-back to allow them to gain the higher marks. It is important that centre tutors ensure that unit delivery programmes cover unit specification requirements and that candidates are fully aware of what they should include in portfolios to gain marks. There are still a significant number of centres that produce portfolios with content that does not match what is required; often including too much material, or material that is outside the brief for the unit, or targeted at too low a level for AS or A2 awards.

As stressed at AQA training and standardising meetings, in communications sent to centres and in last year's Principal Moderators report, it is imperative that centres make it very clear to candidates that the incorporation of text downloaded from the internet into portfolios is plagiarism and must not be tolerated. Portfolios are intended to be candidates' original work. The assembly of a portfolio by simply downloading material and cutting and pasting it together is not acceptable. It is expected that students will use the internet but they should use it as a resource from which they construct their own portfolios by reading, understanding and re-working what they have found to suit their purpose. Students may find it helpful to download and use in their portfolios sets of data, photographs, diagrams and other similar items to support their work and this is not a problem. It is the unedited use of downloaded text in portfolios, credited as student work, which is unacceptable. If centres fail to identify this during monitoring and final assessment their entry could possibly be referred to AQA malpractice, with the result that marks are likely to be significantly reduced or even discredited altogether. Moderators are experienced teachers and read many portfolios, they know candidate capabilities, they know websites, they can recognise text content where changes in styles of writing are at variance with candidates own text, and will react by taking appropriate action. Centre assessors must work with the same vigilance. This year a number of centres were referred to the AQA malpractice unit by moderators and candidate marks were significantly reduced as a result.

Whilst studying the entire suite of units and considering the externally marked assignments at the awarding meeting in July, it became apparent that there appears to be a common area where candidates are showing a need for development of skills. This is the area of experimental design. Candidates appear to show signs of weakness in designing experiments to meet a particular need – for example, to find the refractive index of glass or to test the effect of different treatments on seed growth. Some candidates appear to find difficulty putting together a method that is appropriate for investigating the chosen aspect and then carrying this out in a way that will produce a sufficient number of readings at an appropriate level of accuracy to provide a meaningful set of results. Many students produce results at a low level of basic observational detail – for example simple mass losses or observation of mould or bacteriological growth in Unit 4. Some students do not collect sufficient numerical data to process and undertake critical analysis of their results. Some, when analysing or processing data, do not do this clearly, do not draw the most appropriate form of graph or may not draw appropriate conclusions from the evidence they have before them. Centres are alerted to the mark

distribution in the portfolio requirements of units on page 30 of the current specification. AO3 (Experimentation and Investigation) makes up 43.3% of the marks for the entire award. In all portfolio units, apart from Unit 1, from which AO3 is absent, AO3 can contribute up to 2/3 of the marks of the unit. Whilst the theoretical component of the portfolio is an essential part – since it provides the background knowledge and reasoning – it should be noted that the design, carrying out, concluding and evaluation of the investigatory practical work is a high scoring part of the award and should receive an appropriate amount of attention and level of treatment – commensurate with the work of AS or A2 level study.

Administratively, most centres managed to send mark sheets (or sets of portfolios if 10 candidates or fewer) in good time. However some centres were very late, making life more difficult for everybody concerned, including themselves. A number of centres forgot to include Centre Declaration Sheets and a significant minority forgot to send Candidate Record Forms signed by the candidate; some of these also had the candidate name or number missing which again makes finding work more difficult as both are needed for checking. Some centres still use plastic wallets or polypockets and these should be avoided as they are time consuming and frustrating for moderators. The best way to submit final portfolio work is to use double or single treasury tags to secure portfolio pages with the Candidate Record Form and any centre assessment documents at the front. Centres may choose to keep work-in-progress in any way they find most appropriate.

Unit 4 – Food Science and Technology

This unit has 2 parts, the production of a design brief for a product and the production and testing of the product. Many candidates complete this unit well but there are several areas where some centres still have not fully understood the unit requirements. AO1 is essentially about the identification of a group of individuals with a dietary need, it may be specialised for individuals who are, for example, diabetic or vegetarian or it may just be a well balanced diet targeted to a different age group or sporting group. The aim is to show an awareness of general and specific dietary needs and then design a product appropriate to the need of this client group, bearing in mind the fact that the product is likely to deteriorate once made.

In many portfolios, the design brief or product specification was hidden amongst an extensive piece of work about diet. It would be a good idea if candidates had a separate section, maybe a single page, that clearly sets out what the candidate is going to make, who it is for, what particular features it should have and how they plan to package it and keep it in good condition. The design brief may not necessarily come at the start of the portfolio since candidates may wish to explore dietary needs, ideas and theories before making decisions on the product to make. Once the product is decided, then research into ingredients, methods of manufacture, and its preparation should follow. Most candidates made their product and used photographic evidence of the stages of production and the final outcome, which is good evidence. Moderators do not need to see the final product. Fewer candidates selected inappropriate products this year. Some candidates worked in groups on product design, this is acceptable, but individual contributions should be made very clear so that credit goes to the appropriate person.

Most centres carried out tests on food materials but unfortunately several centres appear to have carried out “class practicals” on food items, some of which had no link with the products made by students. In this case, access to marks for carrying out tests on the product is impossible. Centres are advised to consider their guidance to students about how to test their product as a whole or as its components. This is an area where precise and reliable data can be obtained and calculations carried out. Serial dilutions, colony counts, turbidity or other tests which generate data would be appropriate, covering both decay and preservation. Many

observations made were low level such as “the product had dried out”, or “there was green mould on the banana, but not on the peanut.” Some candidates carried out activities of little relevance such as tracking the drying out of soup over time. It should be noted that sensory testing, whilst clearly sensible for a food product, is not part of the specification. Since this is the case, candidates work in this area should not form a significant component of the study.

Some candidates made very good efforts with packaging ideas and gave good detail of the legal requirements for labelling. This often included current examples of product labels with many candidates going on to design their own label for their product, some even making a mock-up package and label.

Most candidates tackled costing of their product but many were at a simplistic level. The idea is for candidates to be aware of the cost of ingredients, manufacture, packaging and other on-costs involved in the production of food items and to make a sensible attempt at a cost for their product. Most centres included work on Government agencies such as DEFRA and the Food Standards Agency, but the tests they carry out and how this could impact on their product were much less well covered, although this area shows some improvement on last year.

Mark Ranges and Award of Grades

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