



General Certificate of Education

Applied Science **8771/8773/8776/8779**

SC13 Colour Chemistry

Report on the Examination

2007 examination - June series

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General Comments – June 2007 Series

The A2 Units – SC07, SC09, SC10, SC12, SC13, SC15 and SC16

The entry for the specification has continued to grow and centres have continued to successfully guide candidates to achieve, this first cohort for the A2 award has generated much high quality work from centres. Due credit should be given to both teachers and students in making every effort to meet the requirements of a new 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 off 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.

Unit 13 – Colour Chemistry

Many candidates made good attempts to produce well structured portfolios for this unit, providing evidence of research into methods of extraction of a plant dye, the preparation of a synthetic dye and making of a paint. Candidates then went on to use their researched methods to make their products. However, a significant number made little reference to any research they had carried out nor did they describe alternative methods, and in some centres it was clear that there was a considerable degree of prescription in practical work; this inevitably limits marks.

Many candidates used their dyes on three different fabrics and tested their effectiveness. There was good evidence in a number of portfolios of further testing to determine the dye fastness under varying conditions during washing or, in a few cases, light-fastness. Some, however, made somewhat exaggerated claims of the effectiveness of their dyes.

The chemistry underlying the preparation of the synthetic dye was frequently covered well but centres are advised to remind candidates that the use of downloaded materials is not allowed. It appeared that some candidates had a tendency to use more downloaded material than the accepted use for diagrams, charts and data or quotations of a few lines. The chemical nature of fabrics was also reasonably well described, high scoring candidates clearly explaining how and why different dyes are effective on different fabrics, including the use of mordants. However, in a number of centres, this area was poorly covered by candidates and it was clear that these students had only a weak level of understanding of the structures of various types of dyes and fabrics and little knowledge of the types of interactions and forces that exist between the dye and the fabric to which it is applied.

The centre which used latex rubber as a fabric found difficulty matching this material to several areas of the specification since it was an inappropriate choice; it is not a fabric and does not take dyes well. Choosing such a material disadvantages candidates since they cannot show their skills where an inappropriate substance is used. The principle behind this problem applies to several units, in slightly different ways, throughout the award, when candidates are set activities or are allowed to follow their own lines of research. The key point is that centres should ensure that examples chosen for candidates to work on or study should be those that are likely to allow them to cover the areas required by the specification. In this unit, fabrics which dye well should be selected, dyes which work and opportunities to obtain accurate results, using sensible methods and accurate equipment, all help. It helps candidates to succeed if they are guided in the choices they make so that the area they are working in will

give them the opportunity to gain data and information appropriate for the requirements of the award.

Most candidates prepared a paint, some, but by no means all, providing very good background to the components of an oil based paint and their function. Many made paints. Some centres simply mixed a pigment into oil and used this to test hiding power; this gave not surprisingly somewhat messy and unconvincing results. Some centres used commercially made "base paint" such as white undercoat or primer (or even PVA) into which they stirred pigments. These gave more effective results but the candidates had not really made the paint at all. The aim is for candidates to try to make a paint that more closely meets the composition of a commercial paint and try it out. If they want to compare this to a commercial paint as a means of establishing the comparative hiding power of their paint, then that is entirely acceptable, but this is extending the specification slightly.

AO2 refers to the scaling up of production of dyes. Calculations of varying levels of accuracy and complexity were seen here. Most candidates worked on the cost of the material they actually made – and just made more. Few mentioned the energy costs involved.

No candidates followed the route of finding out about dye manufacture on an industrial scale by researching dye companies to look at the scale of their operation relating this in turn it to their laboratory practical work. Such a line of approach, if well done, would help gain high marks in AO2. This would also provide additional research opportunities for preparative methods of dyes and paints, and so could aid candidates to gain higher marks

Mark Ranges and Award of Grades

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