Version 1.0: 0807

ASSESSMENT and QUALIFICATIONS ALLIANCE

General Certificate of Education

Applied Science 8771/8773/8776/8779

SC12 The Actions and Development of Medicines

Report on the Examination

2007 examination - June series

Further copies of this Report are available to download from the AQA Website: www.aqa.org.uk

Set and published by the Assessment and Qualifications Alliance.

The Assessment and Qualifications Alliance (AQA) is a company limited by guarantee registered in England and Wales (company number 3644723) and a registered charity (registered charity number 1073334).
Registered address: AQA, Devas Street, Manchester M15 6EX
Dr Michael Cresswell Director General

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 12 – The Actions and Development of Medicines

Centres have made good efforts to complete the requirements of this unit which has proved somewhat challenging.

The requirement is to study the development and application of two medicines, carry out a quantitative analysis of two medicines and then a bioassay of two medicines using methods found by research. The research aspect of the unit requirements was frequently omitted from portfolios.

Many candidates chose to use aspirin as one of their chosen medicines. As a long established medicine some aspects of its development became an historical account of its use, since some aspects of clinical testing procedures for aspirin, with reference to current regulations, vary. Most candidates followed the account by including references to current procedures for clinical trialling and approval legislation for new drugs in general. The role of manufacturers in the process was often given little attention. There is no requirement in this unit to actually make either of the two chosen medicines, yet many candidates included full details of the laboratory preparation and testing of aspirin.

The second medicine chosen was frequently penicillin but iron tablets were also studied. Some candidates chose vitamin C and then used fruit and a range of vegetables to assay vitamin C concentration. To do this compromises marks to some extent, as aspects where marks can be awarded for comparisons with a formulation (which is not available for natural products) are not possible, although it could be argued that typical values for natural products could be used, or comparative calculations carried out with reference to RDAs. However, it is advised that substances with a formulation are used, in this case vitamin C, where the analytical results obtained can be compared with the stated composition of tablets. Many candidates use DCPIP as a test reagent for vitamin C and some obtained inconsistent results from this test, possibly due to using old stock or solutions which were not freshly prepared. In such situations, precision and accuracy marks are often limited to the lower mark bands. There are more reliable and accurate methods for determining vitamin C quantitatively.

Due to the difficulty of carrying out of both an analysis and bioassay on one medicine, for example penicillin, specification requirements have been relaxed to allow different medicines to be used so that two development and application reports, 2 analyses and 2 bioassays can be more easily carried out on up to 6 different medicines, 2 for each section of the unit, if required. However it is hoped the number of medicines used will be kept as small as possible. Work on

bioassays largely centered around antibiotics and antiseptics and their effect on bacterial lawns. Some used mouthwash, fungal creams and some used disinfectants, but disinfectants are really moving outside the medicines area and are not the best substances to choose in relation to the specification.

In the specification, a bioassay of a medicine should be understood to mean that a medicine is chosen and the effect this has on a living organism is tested. Testing on humans is not permitted neither is testing on small mammals. Some centres tested aspirin and caffeine on daphnia and some used maggots (both with limited success). Some even tried to study the effect of medicines on seed growth. By far the best route is to use fungi and bacteria in these bioassays, allowing assays of antibiotics, antiseptics or fungicides. Good portfolios tended to show comprehensive evidence of bioassays where, for instance, serial dilutions followed by the determination of minimum effective concentrations were employed, often followed by a comparison with documented values."

Mark Ranges and Award of Grades

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