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ASSESSMENT and QUALIFICATIONS ALLIANCE

General Certificate of Education

Applied Science 8771/8773/8776/8779

SC16 Ecology, Conservation and Recycling

Report on the Examination

2009 examination - June series

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General Comments

The number of candidates entered for the portfolio units has again increased this year and many centres have continued to guide their candidates to achieve well. These units have generated much high quality work from centres. Credit should be given to both teachers and candidates in making considerable effort to meet the expected standards.

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The random sampling of accredited centres confirmed the value of the accreditation process - with centre marking being confirmed as being in line with AQA standards in most cases, but with a small number showing some "slippage" leading to loss of accreditation.

(The accreditation scheme is used were centres have demonstrated that they are able to mark to the required AQA standards. Under the scheme AQA will accept centre marks without the need to complete the moderation process.)

Portfolio issues

Portfolio construction remains a concern with some candidates, and it is evident that further centre guidance is needed. However, it is very important that centres continue to provide the opportunity for candidates to demonstrate flair and individuality. It is easier for moderation if portfolio structure matches the structure of the unit. Centres are also advised to monitor portfolios during their production as some candidates continue to produce unreasonably large portfolios.

For some units, it appears that the level of expectation of the quality of portfolio content and/or the outcomes that candidates are able to produce are set too low. A number of centres are still judged to have marked candidates work too generously and where this was the case, centres marks were deemed out of tolerance by the moderator and had to be reduced.

Some of the causes of overgenerous marking included:

- Misinterpretation of the requirements of unit
- Too much work on non-essential areas and/or too little on required aspects
- failure to fully complete aspects of the unit as required in the "Banner", in such cases work should assesses in line with the guidance given in section 9.2 of the teachers' guide
- Over-lenient interpretation of the assessment grids
- Lack of rigour in marking/assessment of work – incorrect science accepted, incorrect calculations marked as correct, incorrect statements accepted, praise for work which is of poor quality, marks allocated for work for which there is no evidence – or no supporting teacher comment (# in the assessment grids)
- Poor candidate skills in practical activities leading to a lack of precision and unreliability in results
- A lack of description by the centre assessor of candidate's level of practical skills, their awareness of safety procedures and degree of autonomy (marked # in the assessment grids) and resulting inconsistencies between the marks awarded by the assessor and the portfolio evidence
- The inclusion of materials down-loaded from the internet either passed as the candidates own work or not referenced in the portfolio

As stressed at AQA standardising meetings held in autumn 2008, 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.

Centres are reminded that many issues and points of guidance made in the 2008 Principal Moderators exam report are still valid and this remains a valuable source of information for centres seeking to improve there portfolios.

Unit 16 – Ecology, Conservation and Recycling

This continues to be a popular A2 optional unit. Candidates need to make considerable efforts to gain high marks since they are required to learn and apply knowledge in a wide area and use a variety of techniques and approaches.

Many centres made use of field work led by a study centre while others preferred to use work led by the class teacher. Some outstanding work was seen in the ecological survey where highly achieving candidates had visited an appropriate environment, maybe a sea-shore or stream, and had used random quadrats or a line transect in or across a suitable area together with other suitable survey techniques to sample the population of organisms. Organisms were counted or percentage cover of plants estimated. The physical features of the environment were measured, light/wind/speed/temperatures/water depth/speed of flow etc. All this data was tabulated and displayed so that comparisons of distributions could be made and possible links established.

Some candidates demonstrated problems in their portfolios, the most significant being:

- Where the ecology section is lead by a field study centre, there is a need for some discussion with the field study centre leaders in order that the work is clearly targeted towards specification requirements
- The production of ecological surveys from too many different habitats and subsequently had too much data which was not analysed effectively – one habitat, done well, is sufficient
- The use of capture/recapture techniques was rarely featured and whilst the technique can be learned using coloured beads or this does not constitute applying the technique to estimate the population of an organism in a particular habitat
- A very large number of food chains – making up a large part of the portfolio, some including inappropriate organisms. The idea is to construct food chains using the organisms found in the specific environment as a basis. (In this section some very good work was seen where candidates counted and weighed organisms and then used this data to construct not only food chains and webs but pyramids of biomass too.)
- That some candidates, having collected a significant amount of data on an environment, did very little with the results. The key ideas behind the ecological survey is to find out what the habitat is like using physical measurements, find out what lives there and where it lives in the habitat, then try to relate the distribution of organisms to the physical measurements
- That some candidates produced large numbers of charts or diagrams displaying results, some of which had different scales, some were unnecessary and because it was difficult to compare this displayed data visually it was of little use. In the display of ecological data it is usual to make use of “kite-diagrams” or bar charts showing distributions of several organisms simultaneously – often linked to physical features of the environment. A useful technique is to use transparent overlays which allows visual match of data – on charts or graphs using the same scales

- The study of the ecology section in late November, January or February. Pictures of candidate undertaking freshwater ecology, surrounded by snow, shows some lack of appreciation of life-styles of organisms and some lack of consideration for candidates – ecology is best undertaken in the late Spring, Summer or early Autumn terms when weather is likely to be more motivating for students to work, be more enjoyable and more importantly, organisms are around to see
- That some candidates chose “global warming” – a result of humans “burning fossil fuels” or destruction of rain forests – a result of a human “agricultural production system” or “mining”. Whilst these topics clearly fit the specification some approaches were very general. The aim of this section of the unit is to encourage candidates to learn the principle issues behind human impact on the environment through different activities and then go on to look at what this activity is doing to named organisms in a named habitat – this is where many candidates have areas of evidence missing

Candidates overall made good efforts with the study of the recycling of a particular material, giving general details for all refuse for their local authority. This was often linked to government targets, followed by research into the recycling of a chosen material (usually glass, paper or aluminium). Very few chose oil. Many candidates gave some ideas of the scale of the recycling undertaken and some background to the processing.

Not many gave much detail about the science behind the recycling process. As with the ecology section the idea is to, “think global – act local”, to know the overriding principles and then look in detail at some specific area – to know what actually happens to cans, bottles, compost or oil.

Some excellent work on the recycling of aluminium was seen where candidates provided pictorial evidence of the entire route followed by an aluminium can supported by the scientific basis of processing recycled aluminium and the environmental and economic impacts of the process.

Several candidates – as in previous years – mentioned that study in this unit had encouraged them to find things out about their local area that they did not previously know about – and that they had enjoyed it.

Mark Ranges and Award of Grades

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