

# Examiners' Report

## Summer 2010

GCE

### GCE08 Chemistry 6CH03

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## 6CH03/1A

### General

The component ran successfully with the great majority of candidates being assessed rigorously and correctly. Comments from teachers on the 2008-2009 scheme led to some amendments being made to the mark schemes for the b tasks and to the yields needed to gain full marks for the d tasks. The moderators were pleased to note that some centres had implemented the changes suggested by their moderator in the 2009 E9 feedback report.

The b tasks for 2009-2010 were new. Revised versions of the c and d tasks were posted on the secure website by September 2009. Only these new and revised tasks should have been used by candidates for submission in 2010.

Some centres do need to improve their administration of this unit. The sample of candidates' work sent to moderators was often incomplete and led to moderators having to get back to centres to ask for more information or for missing samples. All centre assessors are advised to read this report carefully and to use much of it as a checklist when submitting samples for 2011.

### Comments on the administration of the unit

These comments do not apply to all centres, but may serve as a useful check list for centre assessors.

The sample of work sent to the moderator must include the candidates asterisked on the OPTEMS or its equivalent, plus the candidates scoring the lowest and highest mark if these are not already included. Record sheets from other candidates should not be sent to the moderator.

The work of each candidate in the sample must have a signed and dated record sheet attached by a paper clip or treasury tag. The front cover of the record sheet and each assessment task should be completed with the candidate's name, number and the centre number.

The only way to award accuracy marks in the activity c tasks is to compare the candidate's value of titre or temperature with an expected value based on the teacher's results for the task. It is essential that the expected values of temperature or titre are annotated on each candidate's work. It is also useful if teacher values are listed on the Teacher's Values Form. Copies of spread sheets or marking grids used by the teachers should be included. Without this information the moderators are unable to follow the award of marks for accuracy in the activity c tasks.

If just one teacher has been responsible for the marking of the tasks in a centre a note to explain this is much appreciated by the moderator. If two or more teachers mark the assessment tasks in a centre, the moderator should have evidence that internal standardisation has taken place.

Teachers should be aware that an E9 feedback report will have been completed for their centre by the Edexcel moderator. This is available to centres to download on Edexcel Online from the time of the issue of results in August.

The 2009-2010 activity b tasks will be replaced by new ones for 2010-2011. Only the new tasks will be valid for submission in 2011. The new b tasks, together with the unchanged c and d tasks will be on the secure Edexcel website by September, 2010.

## Assessments

### Activity a(GPC)

Although no marks are awarded for these tasks, their completion is an essential part of the course for a candidate. By carrying out the core practicals (CPs) listed in the specification, a candidate should develop a greater knowledge and understanding of the topics in the specification to which the CP relates. Listed below are the main points that the moderators wish to make to centres. Many of these are in response to questions from teachers to the Principal Moderator on Ask the Expert.

Edexcel does not provide details of core practicals apart from those in the Specification. The titles or codes (CP1 etc) of five core practical tasks carried out by a candidate must be listed on his or her record sheet, along with dates on which they were carried out. The five tasks must include at least one each of an inorganic, physical and organic exercise.

The moderator does not need any samples of the work or any more details than are on the record sheet for this activity. It is acceptable to list as activity a tasks, assessment exercises for which the marks are not included in the candidate's total mark. However, an exercise must not be counted for both activity a and b, c or d.

### Activity b Qualitative observation

The four tasks available in summer 2010 are no longer valid and must not be used for assessment of this activity for submission in 2011. Four new replacement tasks are to be found on the Chemistry page of the Edexcel website as secure documents.

The mark schemes for these tasks were more detailed than the equivalent ones for the summer 2009 exercises. In particular there was more guidance on marking an inference that followed an incorrect observation.

In tests in which hydrogen chloride is evolved this should be described as "steamy fumes" when observed close to the mouth of the test tube. When the fumes come into contact with ammonia then "white smoke" is observed.

Candidates are expected to use correct and accepted chemical terms in their recorded observations. These include precipitate, miscible, layers and effervescence.

When asked to identify a functional group in an organic task candidates are expected to give as much detail as possible based on the results of the tests. If a compound already identified as an alcohol then reacts with acidified potassium dichromate(VI) it may be further inferred to be a "primary or secondary alcohol".

The b tasks set for summer 2010 are no longer secure and may be used as practice exercises.

### Activity c Quantitative measurement

The four tasks set to assess this activity again proved to be equally popular. Each task gave the expected values to the required degree of accuracy at least for some candidates in most centres.

All four tasks require at least one value to be given to an appropriate number of significant figures to be awarded a mark. The moderators found many examples of centres in which numerical answers were marked correct even though they were given to the wrong number of significant figures.

For the graph in ASC2 to be given the first mark in (a) the graph must cover at least half of the grid on both the x and y axes.

Even though they are quite detailed it was pleasing to the moderators to find that most teachers correctly applied the mark scheme when awarding the results tables, accuracy and range marks in ASC1 and ASC3.

In ASC4 candidates should not be given pre-weighed samples of the two solids. Candidates are expected to take the specified masses for themselves from the reagent bottle or other container.

It is essential that a candidate's expected values are annotated on the activity c tasks. Teacher's values should be included with the sample of work sent to the moderator. These may be given on the Edexcel Teacher's Values Form or on a spreadsheet or graph that may have been used to help in the award of accuracy marks.

### Activity d Preparation

For many candidates the task for this activity gave the highest proportion of the maximum mark. The moderators assume that in ASD1 and ASD2 the crystals are dry before they are weighed and their mass recorded. Teachers are expected to check that this is the case.

If a candidate makes an error in calculating the maximum mass in ASD1 or ASD2 then the percentage yield calculation should be corrected by the teacher before the marks for yield are awarded.

Not all centres appear to be aware that candidates are permitted to work in pairs for this activity. When they do so it is essential that the questions and calculations are answered individually.

### Summary

The moderators would like to thank centre assessors, candidates and technicians for their part in the implementation of the internal assessment unit in its second year. Centre assessors must make absolutely sure that they are using the correct assessment tasks for submission in 2011. These are posted on the Edexcel Chemistry website as secure documents.

Centre assessors are encouraged to ask the Principal Moderator for guidance on the scheme through Ask the Expert.

They may also find the document "Guidance for centres: Internally assessed units" which is on the Chemistry page of the Edexcel website, useful.

#### Hints for revision

- When you are recording observations in activity b tasks, use the correct chemical terms. These include precipitate, miscible, effervescence and dissolves.
- Make sure that you understand the difference between significant figures and decimal places. An enthalpy change of  $92.15 \text{ kJ mol}^{-1}$  is to two decimal places. The same enthalpy change given to two significant figures is  $92 \text{ kJ mol}^{-1}$ .
- When you carry out calculations from titration results give your answers to three significant figures.

In the activity d preparations your crystals must be completely dry before you weigh them.

## 6CH03/1B

### General

The assessment tasks for this component were marked in parallel with the internally assessed 6CH03/1A option. The team of examiners marking the tasks used the same mark schemes and standardising materials. Teachers in a few centres had already marked their candidates' work. This marking was disregarded by the examiners.

Centres entering for this option do not receive the E9 feedback form. Teachers, therefore, are strongly advised to read both this report and that for 6CH03/1A, since much of the information in that report is relevant to this component.

### Comments on the administration of the unit

- The three pieces work from each candidate in the entry must have a signed and dated record sheet attached by a paper clip or treasury tag. The front cover of the record sheet and each assessment task should be completed with the candidate's name, number and the centre number.
- The only way for the examiner to award accuracy marks in the activity c tasks is to compare the candidate's value of titre or temperature with an expected value based on the teacher's results for the task. It is essential that the centre includes a completed Teacher's Values Form with the work sent to the examiner.
- A few centres failed to use the revised versions of the c and d tasks. As stated in the specification, there will be new tasks b exercises for submission in 2011 the b tasks are new. The c and d tasks are unchanged. Centres are strongly advised to use only the versions of the assessment tasks currently on the Edexcel secure website from September, 2010.
- Some centres sent more than the three tasks per candidate required by the examiner. Examiners can only mark one b, one c and one d task. It is the responsibility of the centre to select the tasks for marking and to send only these to the examiner.
- Examiner marked work will not be returned to centres unless this is requested, through the Access to Scripts (ATS) post results service.

### Activity a (GPC)

Although no marks are awarded for these tasks, their completion is an essential part of the course for the candidate. By carrying out the core practicals (CPs) listed in the specification a candidate should develop a greater knowledge and understanding of the topics in the specification to which the CP relates. Listed below are the main points that the examiners wish to make to centres. Many of these are in response to questions from teachers to the Principal Examiner on Ask the Expert.

- Edexcel does not provide details of core practicals apart from those in the Specification.



- The titles or codes (CP1 etc) of five core practical tasks carried out by a candidate must be listed on his or her record sheet along with dates on which they were carried out. The five tasks must include at least one each of an inorganic, physical and organic exercise.
- The examiner does not need any more details than are on the record sheet for this activity.

It is acceptable to list as activity a tasks, assessment exercises which are not being submitted for marking. However, an exercise must not be listed for both activity a and b, c or d.

#### **Activity b Qualitative observation**

The four tasks available in summer 2010 are no longer valid and must not be used as assessment of this activity for submission in 2011. Four new replacement tasks are to be found on the Chemistry page of the Edexcel web site as secure documents.

The mark schemes for these tasks were more detailed than the equivalent ones in summer 2009. In particular there was more guidance on marking an inference that followed an incorrect observation.

- In tests in which hydrogen chloride is evolved this should be described as "steamy fumes" when observed close to the mouth of the test tube. When the fumes come into contact with ammonia then "white smoke" is observed.
- Candidates are expected to use correct and accepted chemical terms in their recorded observations. These include precipitate, miscible, layers and effervescence.
- When asked to identify a functional group in an organic task candidates are expected to give as much detail as possible based on the results of the tests. If a compound already identified as an alcohol then reacts with acidified potassium dichromate(VI) it may be further inferred to be a "primary or secondary alcohol".

The b tasks set for summer 2009 are no longer secure and may be used as practice exercises.

#### **Activity c Quantitative measurement**

The four tasks set to assess this activity again proved to be equally popular. Each task gave the expected values to the required degree of accuracy at least for some candidates in most centres.

- All four tasks require at least one value to be given to an appropriate number of significant figures to be awarded a mark. The examiners found many examples of numerical answers given to the wrong number of significant figures. In particular the answers to the calculations in ASC1 and ASC3 are most appropriately given to three significant figures.
- The examiners only gave the first mark in (a) for the graph in ASC2 if it covered at least half of the grid on both the x and y axes.
- In ASC4 candidates should not be given pre-weighed samples of the two solids. Candidates are expected to take the specified masses for themselves from the reagent bottle or other container.
- Teacher's values should be included with the sample of work sent to the moderator. These may be given on the Edexcel Teacher's Values Form. For the titrations in ASC1 and ASC3 both a mass and titre must be listed.

### Activity d Preparation

For many candidates the tasks for this activity gave the highest proportion of the maximum mark.

- The examiners assume that in ASD1 and ASD2 the crystals are dry before they are weighed and their mass recorded. Teachers are expected to check that this is the case. A few candidates recorded yields of over 100% for which no marks were awarded.
- If a candidate made an error in calculating the maximum mass in ASD1 or ASD2 then the percentage yield calculation was corrected by the examiner before the marks for yield were awarded.

Not all centres appear to be aware that candidates are permitted to work in pairs for this activity. When they do so it is essential that the questions and calculations are answered individually.

### Summary

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Teachers are encouraged to ask the Principal Examiner for guidance on the scheme through Ask the Expert. They may also find the document "Guidance for centres: Internally assessed units" which is on the Chemistry subject page of the Edexcel website, useful.

### Hints for revision

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- When you carry out calculations from titration results give your answers to three significant figures.

In the activity d preparations your crystals must be completely dry before you weigh them.

## Appendix A: Grade boundaries

### 6CH03/1A

Grade	Max mark	A	B	C	D	E
Raw boundary mark	40	36	32	28	24	21
Uniform boundary Mark	60	48	42	36	30	24

### 6CH03/1B

Grade	Max mark	A	B	C	D	E
Raw boundary mark	40	36	32	28	24	21
Uniform boundary Mark	60	48	42	36	30	24

**Maximum Mark (Raw):** The mark corresponding to the sum total of the marks shown on the mark scheme.

**Boundary Mark:** The minimum mark required by a candidate to qualify for a given grade.

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