

Advanced Subsidiary GCE

F333

CHEMISTRY B (SALTERS)

Unit F333: Chemistry in Practice:
Skill IV (Observation)

Specimen Task

For use from September 2008 to June 2009.

All items required by teachers and candidates for this task are included in this pack.

INFORMATION FOR CANDIDATES

- Unit F333: Chemistry in Practice: Skill IV (Observation)

INFORMATION FOR TEACHERS

- Mark scheme.
- Instructions for Teachers and Technicians.

SPECIMEN

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CHEMISTRY B (SALTERS)

F333

Unit F333: Chemistry in Practice:
Skill IV (Observation)

Specimen Task

For use from September 2008 to June 2009.

Candidates answer on this task sheet.

INSTRUCTIONS TO CANDIDATES

- Answer **all** parts of the task.

INFORMATION FOR CANDIDATES

- The number of marks is given in brackets [] at the end of each part of the task.
- The total number of marks for this task is **12**.

ADVICE TO CANDIDATES

- Read each part carefully and make sure you know what you have to do before starting your answer.

FOR TEACHER'S USE

Qu.	Max.	Mark (/24)	Assessment Mark (/12)
TOTAL	24		

This task consists of **5** printed pages and **1** blank page.

F333 – Assessment of Skill IV (Observation)

Introduction

In this activity you are going to investigate some reactions of aqueous solutions of the elements chlorine, bromine and iodine and some reactions of aqueous solutions of potassium chloride, potassium bromide and potassium iodide.

You will add cyclohexane to the reaction mixture in some of the reactions. Halogen elements readily dissolve in cyclohexane and solutions of bromine and iodine in cyclohexane have distinctive colours. This will help you interpret what is happening in these reactions.

When you have completed any experiment involving cyclohexane, the mixture must be poured into the residue bottle provided for it and should NOT be poured down the sink.

The method below describes what you should do in general terms, but you are expected to carry out the practical activities in ways which are safe and are likely to ensure that your observations are as accurate as possible.

Use the amounts of reagents specified in each reaction. If the results are unclear, repeat the reaction using slightly larger amounts of the solutions concerned.

CAUTION!

Bromine solution	Harmful	Irritant		
Chlorine solution	Toxic	Irritant		
Iodine solution	Harmful			
Cyclohexane	Highly flammable			
Silver nitrate	Irritant			
Lead(II) nitrate	Toxic			

Carry out your experiments in test-tubes and record your detailed observations in the table below.

Experiment		Observations
1	<p>Add a few drops of chlorine solution to an equal volume of cyclohexane. Shake the tube and record the appearance of its contents.</p> <p>[3 marks]</p>	
2	<p>Add a few drops of bromine solution to an equal volume of cyclohexane. Shake the tube and record the appearance of its contents.</p> <p>[2 marks]</p>	
3	<p>Add a few drops of iodine solution to an equal volume of cyclohexane. Shake the tube and record the appearance of its contents.</p> <p>[2 marks]</p>	
4	<p>Add a few drops of chlorine solution to an equal volume of potassium bromide solution. Shake the tube and record the appearance of its contents.</p> <p>[1 mark]</p> <p>Add a few drops of cyclohexane to this tube. Shake the tube again and record the appearance of its contents</p> <p>[2 marks]</p>	
5	<p>Add a few drops of chlorine solution to an equal volume of potassium iodide solution. Shake the tube and record the appearance of its contents.</p> <p>[1 mark]</p> <p>Add a few drops of cyclohexane to this tube. Shake the tube again and record the appearance of its contents</p> <p>[2 marks]</p>	

[Turn over

6	<p>Add a few drops of bromine solution to an equal volume of potassium chloride solution.</p> <p>Shake the tube and record the appearance of its contents.</p> <p>[1 mark]</p> <p>Add a few drops of cyclohexane to this tube.</p> <p>Shake the tube again and record the appearance of its contents</p> <p>[2 marks]</p>	
7	<p>Add a few drops of bromine solution to an equal volume of potassium iodide solution.</p> <p>Shake the tube and record the appearance of its contents.</p> <p>[1 mark]</p> <p>Add a few drops of cyclohexane to this tube.</p> <p>Shake the tube again and record the appearance of its contents</p> <p>[2 marks]</p>	
8	<p>Add an equal volume of silver nitrate solution to a few drops of potassium chloride solution.</p> <p>Shake the tube again and record the appearance of its contents.</p> <p>[1 mark]</p>	
9	<p>Add an equal volume of silver nitrate solution to a few drops of potassium bromide solution.</p> <p>Shake the tube again and record the appearance of its contents.</p> <p>[1 mark]</p>	
10	<p>Add an equal volume of silver nitrate solution to a few drops of potassium iodide solution.</p> <p>Shake the tube again and record the appearance of its contents.</p> <p>[2 marks]</p>	
11	<p>Add a few drops of potassium iodide to an equal volume of lead(II) nitrate solution.</p> <p>Shake the tube and record the appearance of its contents</p> <p>[2 marks]</p>	

[Total: 12]

END OF TASK

SPECIMEN

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Specimen Mark Scheme + Instructions for Teachers and Technicians

The maximum mark for this task is **12**.

For use from September 2008 to June 2009.

It is expected that this Task can be completed in about 1 hour.

Students should have acquired the necessary practical skills and theoretical background before attempting this task.

Candidates may attempt more than one Observation task with the best mark from this type of task being used to make up the overall mark for Unit F333.

Preparing candidates

At the start of the task the candidates should be given the task sheet.

Candidates must work on the task individually under controlled conditions with the completed task being submitted to the teacher at the end of the lesson. Completed tasks should be kept under secure conditions until results are issued by OCR.

Candidates should not be given the opportunity to redraft their work. If a teacher feels that a candidate has under-performed, the candidate may be given an **alternative** task. Candidates are permitted to take each task **once** only.

Assessing the candidate's work

The mark scheme supplied with this pack should be used to determine a candidate's mark out of a total of 12 marks. The cover sheet for the task contains a grid for ease of recording marks. To aid moderators teachers should mark work using red ink, including any appropriate annotations to support the award of marks.

Notes to assist teachers with this task

Teachers must trial the task before candidates are given it, to ensure that the apparatus, materials, chemicals etc provided by the centre are appropriate.

Health and Safety

Attention is drawn to Appendix J of the Chemistry B (Salters) specification.

Marking points for appropriate observations are indicated by numbers in brackets in the table below.

Experiment		Observations
1	Add a few drops of chlorine solution to an equal volume of cyclohexane. Shake the tube and record the appearance of its contents.	two layers formed [1] cyclohexane layer on top [1] both layers colourless [1]
2	Add a few drops of bromine solution to an equal volume of cyclohexane. Shake the tube and record the appearance of its contents.	upper layer orange [1] lower layer yellow [1]
3	Add a few drops of iodine solution to an equal volume of cyclohexane. Shake the tube and record the appearance of its contents.	upper layer purple [1] lower layer red [1]
4	Add a few drops of chlorine solution to an equal volume of potassium bromide solution. Shake the tube and record the appearance of its contents. Add a few drops of cyclohexane to this tube. Shake the tube again and record the appearance of its contents	addition of chlorine solution results in a yellow solution [1] addition of cyclohexane produces two layers. upper layer is brown/orange [1] lower layer is light yellow [1]
5	Add a few drops of chlorine solution to an equal volume of potassium iodide solution. Shake the tube and record the appearance of its contents. Add a few drops of cyclohexane to this tube. Shake the tube again and record the appearance of its contents	addition of chlorine produces a red solution [1] addition of cyclohexane produces two layers. upper layer is purple [1] lower layer is red/brown [1]
6	Add a few drops of bromine solution to an equal volume of potassium chloride solution. Shake the tube and record the appearance of its contents. Add a few drops of cyclohexane to this tube. Shake the tube again and record the appearance of its contents	yellow colour of bromine solution lightens a little on addition to potassium chloride solution [1] addition of cyclohexane produces two layers. upper layer if light brown/orange [1] lower layer is light yellow [1]
7	Add a few drops of bromine solution to an equal volume of potassium iodide solution. Shake the tube and record the appearance of its contents. Add a few drops of cyclohexane to this tube. Shake the tube again and record the appearance of its contents	addition of bromine produces a dark red/brown solution. [1] addition of cyclohexane produces two layers. upper layer is purple [1] lower layer is light brown [1]

8	Add an equal volume of silver nitrate solution to a few drops of potassium chloride solution. Shake the tube again and record the appearance of its contents.	White precipitate forms [1]
9	Add an equal volume of silver nitrate solution to a few drops of potassium bromide solution. Shake the tube again and record the appearance of its contents.	Cream or off white precipitate forms [1]
10	Add an equal volume of silver nitrate solution to a few drops of potassium iodide solution. Shake the tube again and record the appearance of its contents.	Pale (or alternative) yellow [1] precipitate forms
11	Add a few drops of potassium iodide to an equal volume of lead(II) nitrate solution. Shake the tube and record the appearance of its contents	Bright [1] (or alternative) yellow [1] precipitate [1] forms

Conversion of marking points achieved to assessment marks

The total is out of 24. Divide the marking points by two (halves counting up) to achieve the assessment mark.

Technicians' list

Candidates should be provided with candidate worksheet F333 skill IV (Observation)

Candidates should have access to the following equipment and materials:

Test-tubes

Test-tube rack

An aqueous solution of chlorine

An aqueous solution of bromine

A solution of iodine in aqueous potassium iodide

A 0.10 mol dm⁻³ solution of potassium chloride

A 0.10 mol dm⁻³ solution of potassium bromide

A 0.10 mol dm⁻³ solution of potassium iodide

Cyclohexane

A 0.10 mol dm⁻³ solution of silver nitrate

A 0.10 mol dm⁻³ solution of lead(II) nitrate

A residue bottle in which to save mixtures containing cyclohexane

CARE!

Bromine solution	Harmful, Irritant	
Chlorine solution	Toxic, Irritant	 
Iodine solution	Harmful	
Cyclohexane	Highly flammable	
Silver Nitrate	Irritant	
Lead(II) nitrate	Toxic	

This activity should be assessed by the teacher using the mark scheme for assessment activity F333 skill IV (Observation)

While this list is intended to meet all candidates' requirements, teachers may vary the materials, chemicals and apparatus provided in order to:

- ensure that the experiments guarantee appropriate outcomes for candidates
- make use of resources available at the centre, without the need to make special purchases.

Such changes may be made without consulting OCR. A note of any significant changes must be sent to the moderator when a sample is requested for moderation.