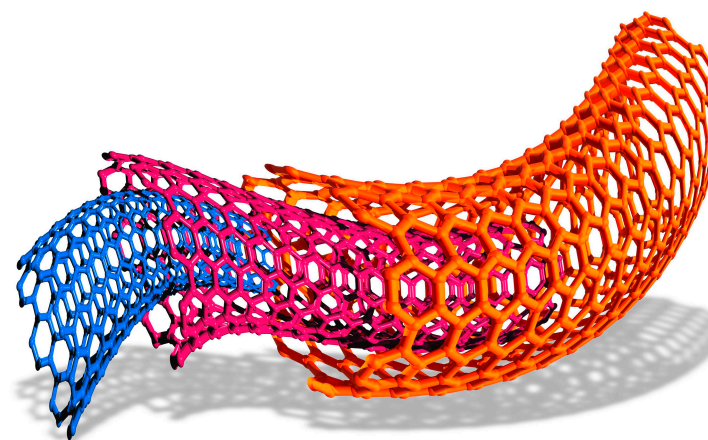


Interactive Example Candidate Responses

Paper 6 (May / June 2016), Question 3

Cambridge IGCSE™
Chemistry 0620



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- 3 Two substances, C and D, were analysed. Solid C was a salt and solution D was an aqueous solution of chromium(III) chloride. The tests on solid C, and some of the observations, are in the following table.

tests	observations
<p><u>tests on solid C</u></p> <p>Solid C was added to distilled water in a test-tube and shaken to dissolve.</p> <p>The solution was divided into two portions in test-tubes, and the following tests carried out.</p> <p>Appearance of the solution.</p> <p>The pH of the first portion of the solution was tested.</p>	<p>colourless liquid</p> <p>pH = 7</p>
Dilute nitric acid was added to the second portion of the solution followed by aqueous silver nitrate.	cream precipitate
A flame test was carried out on solid C.	yellow flame colour

- (a) Identify solid C.

Sodium Bromide [2]

- (b) Describe the appearance of solution D.

green colour solution [1]

- (c) Tests were carried out on solution D.

Complete the observations for tests 1, 2 and 3.

- (i) test 1

Drops of aqueous sodium hydroxide were added to solution D.

Excess aqueous sodium hydroxide was then added to the mixture.

observations green precipitate soluble in excess
so aqueous sodium hydroxide [3]

Your
Mark

3(a)

3(b)

3(c)(i)

3(c)(ii)

3(c)(iii)

3(d)

Q3 Mark scheme

(a)	sodium; bromide;
(b)	green;
(c)(i)	green; precipitate; with excess, green solution/clear/dissolves;
(c)(ii)	grey-green; precipitate;
(c)(iii)	white precipitate;
(d)	fume cupboard/protective clothing, e.g. gloves or goggles;

(ii) test 2

Excess aqueous ammonia was added to solution D.

observations grey-green precipitate insoluble in excess

(iii) test 3

Dilute nitric acid was added to solution D followed by aqueous silver nitrate.

observations White precipitate [1]

(d) Chromium(III) can be converted to chromium(VI). Chromium(VI) is hazardous.

Suggest **one** safety precaution when using chromium(VI).

Wear gloves [1]

[Total: 10]

C
Salt
soluble
no transition
bromide ion
Na

D
solution
chromium(III) chloride

NaOH
green ppt
soluble

NH₄OH
grey-green
insoluble

Your
Mark

3(a)

3(b)

3(c)(i)

3(c)(ii)

3(c)(iii)

3(d)

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- (a) Identify solid C.

bromide ion [2]

- (b) Describe the appearance of solution D.

~~blue~~ ~~liquid~~ ~~blue~~ ~~liquid~~ blue liquid [1]

- (c) Tests were carried out on solution D.

Complete the observations for tests 1, 2 and 3.

- (i) test 1

Drops of aqueous sodium hydroxide were added to solution D.

Excess aqueous sodium hydroxide was then added to the mixture.

observations green precipitate, which is soluble
in excess [3]

Select
page

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Mark

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3(b)

3(c)(i)

3(c)(ii)

3(c)(iii)

3(d)

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(d)	fume cupboard/protective clothing, e.g. gloves or goggles;

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Excess aqueous ammonia was added to solution D.

observations green precipitate which is insoluble [2]

(iii) test 3

Dilute nitric acid was added to solution D followed by aqueous silver nitrate.

observations white precipitate which is soluble [1]

(d) Chromium(III) can be converted to chromium(VI). Chromium(VI) is hazardous.

Suggest **one** safety precaution when using chromium(VI).

~~using it in a fume cupboard and wearing~~
gloves and goggles while using it. [1]

[Total: 10]

Your
Mark

3(a)

3(b)

3(c)(i)

3(c)(ii)

3(c)(iii)

3(d)

Q3 Mark scheme

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Dilute nitric acid was added to the second portion of the solution followed by aqueous silver nitrate.	cream precipitate
A flame test was carried out on solid C .	yellow flame colour

- (a) Identify solid **C**.

~~Salt~~ Bromine [2]

- (b) Describe the appearance of solution **D**.

Shiny [1]

- (c) Tests were carried out on solution **D**.

Complete the observations for tests 1, 2 and 3.

- (i) test 1

Drops of aqueous sodium hydroxide were added to solution **D**.

Excess aqueous sodium hydroxide was then added to the mixture.

observations becomes much clearer more
Shiny [3]

Select
page

Your
Mark

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3(b)

3(c)(i)

3(c)(ii)

3(c)(iii)

3(d)

Q3 Mark scheme

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(c)(iii)	white precipitate;
(d)	fume cupboard/protective clothing, e.g. gloves or goggles;

(ii) test 2

Excess aqueous ammonia was added to solution D.

observations Gets softer [2]

(iii) test 3

Dilute nitric acid was added to solution D followed by aqueous silver nitrate.

observations [1]

(d) Chromium(III) can be converted to chromium(VI). Chromium(VI) is hazardous.

Suggest **one** safety precaution when using chromium(VI).

Safety goggles [1]

[Total: 10]

Select
page

Your
Mark

3(a)

3(b)

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3(c)(iii)

3(d)

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