

A-Level Chemistry - Year 2

OCR Chemistry A - Paper 1 June - 2019

Question - 18

18 This question is about reactions of ions and compounds of transition elements.

(a) A student carries out two experiments on a solution containing $[\text{Cr}(\text{H}_2\text{O})_6]^{3+}(\text{aq})$.

Experiment 1

The student adds an excess of aqueous ammonia to a solution containing $[\text{Cr}(\text{H}_2\text{O})_6]^{3+}(\text{aq})$ until a purple solution is formed.

Experiment 2

The student carries out the following reaction sequence.

Step 1 $\text{NaOH}(\text{aq})$ is added slowly to a solution containing $[\text{Cr}(\text{H}_2\text{O})_6]^{3+}(\text{aq})$ in a boiling tube.
A grey-green precipitate forms.

Step 2 An excess of $\text{NaOH}(\text{aq})$ is added to the boiling tube.
The precipitate dissolves and a green solution forms containing a 6 coordinate complex ion.

Step 3 H_2O_2 is added to the mixture and the boiling tube is heated.
A yellow solution forms.

Step 4 The solution in the boiling tube is acidified.
The solution now contains $\text{Cr}_2\text{O}_7^{2-}(\text{aq})$.

(b) What is the formula of the complex ion in the purple solution that forms in Experiment 1?

OCR

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Tuesday 4 June 2019 – Afternoon

A Level Chemistry A

H432091 Periodic table, elements and physical chemistry

Time allowed: 2 hours 15 minutes

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INSTRUCTIONS

- Use black ink. You may use a white pencil for graphs and diagrams.
- Answer all the questions.
- Where appropriate, your answers should be supported with writing. Marks may be given for a correct method even if the answer is incorrect.
- Write your answer in each question in the space provided. If additional space is required, use the back paper at the end of this booklet. The question numbers must be clearly shown.

INFORMATION

- The total mark for this paper is 100.
- The marks for each question are shown in brackets ().
- Quality of extended responses will be assessed in questions marked with an asterisk (*).
- This document consists of 32 pages.

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PT Brinkman



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