



Oxford Cambridge and RSA

A Level Chemistry A

H432/03 Unified chemistry

Question Set 9

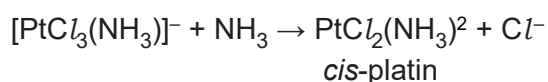
1 This question is about two compounds used in medicine.

(a) *Cis*-platin, $\text{PtCl}_2(\text{NH}_3)_2$, is a complex of platinum which is used in cancer treatment.

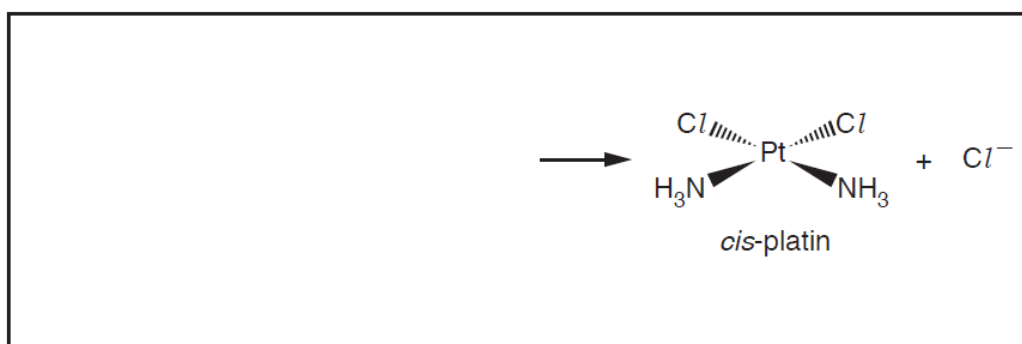
(i) What is the oxidation number of platinum in *cis*-platin? [1]

(ii) *Cis*-platin is prepared in a ligand substitution reaction which takes place in multiple steps.

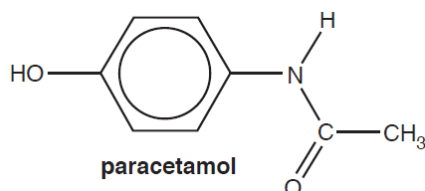
The equation for the final step forming *cis*-platin is shown below.



In the box, outline the mechanism for the formation of *cis*-platin from $[\text{PtCl}_3(\text{NH}_3)]^-$. Use curly arrows and lone pairs where appropriate.



(b) Paracetamol is a solid organic compound used in tablets as a painkiller. [2]



(i) Name the functional groups present in paracetamol. [2]

(ii)* A chemist prepares a pure solid sample of paracetamol from 4-nitrophenol in two stages:



Describe a two-stage synthesis of 5.00 g of pure paracetamol from 4-nitrophenol. The overall percentage yield of paracetamol from 4-nitrophenol is 40.0%.

In your answer, include the mass of 4-nitrophenol required, the reagents and intermediate, and details of the purification of paracetamol. [6]

Total Marks for Question Set 9: 11

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