**Marks submitted to the IB by the school**

**Research design** 3/6
*The introductory paragraph is mostly unnecessary, apart from the reference to decomposition. The research question is not clear or specific enough, but it is outlined. The background information is relevant and provides a broad context. The chemical notation is not consistent and not always appropriate. Variables that need to be controlled are identified. Risk assessment information is given. A method is described that will (just about) allow the collection of relevant and sufficient data, although the method lacks some detail and explanation. Therefore, it would be difficult to reproduce the method without additional details.*
Overall best fit:
**The research question is outlined within a broad context. (3−4)**
**Methodological considerations associated with collecting relevant and sufficient data to answer the research question are described. (3−4)**
**The description of the methodology…lacks the detail for the investigation to be reproduced. (1−2)**

**Data analysis:** 2/6
Although the reader can determine which run is which, the data displayed is neither clear nor precise; units are not given, notation is not used correctly, and the precision of the data is not consistent. No uncertainties are given. Graphs that are relevant to addressing the research question have been produced from the data, which is indicative of some processing, even if the necessary information has not been extracted from the graphs.
Overall best fit:
**1−2 in all descriptors.** (*Arguably zero in the uncertainties strand*)

**Conclusion:** 2/6
*The conclusion is very difficult to follow. There is a statement that the hydrogen peroxide is a first-order reactant (which may well be implied in the data), but this has not been explicitly shown. There is no direct measurement of the rate, which makes any conclusion conjecture. There is a conclusion about the relative effect of the catalysts, but it is superficial.*
Overall best fit:
**1−2 in all descriptors.**

**Evaluation:** 0/6
*There is only one relevant comment with respect to evaluation:* ‘attaching the rubber stopper allowed gas to escape’. *This is creditworthy, but given the lack of any wider evaluation, the criterion was assigned a zero as a best fit, especially as the candidate was given the benefit of the doubt in assigning marks for both* Data analysis *and* Conclusion*.*

**Total mark submitted by school:  7/24**

**Mark awarded by the IB after external moderation and scaled to a maximum mark of 20.**

**5.8**/20

The moderator supported the mark of 7/24, and this scaled to a mark of 5.8/20.