

Question 26**(9 marks)**

Dilute hydrochloric acid, $\text{HCl}(\text{aq})$, is added to three labelled test tubes.

- (I) Excess copper metal, $\text{Cu}(\text{s})$, is added to the first test tube.
- (II) Excess copper(II) oxide, $\text{CuO}(\text{s})$, is added to the second test tube.
- (III) Excess copper(II) carbonate, $\text{CuCO}_3(\text{s})$, is added to the third test tube.

- (a) Describe the contents of the first and second test tubes once **any** reactions are complete. (4 marks)

Test Tube	Description
(I)	
(II)	

- (b) Write the balanced equation, with appropriate state symbols, for the reaction that takes place between the copper(II) oxide and the hydrochloric acid. (3 marks)

- (c) If the labels of test tubes (II) and (III) became smudged, describe **all** the observations that could be used to distinguish between these test tubes once **any** reactions are complete. (2 marks)
