

1. In order to identify an unknown solution **A**, a few drops of the solution was added separately to two test tubes:

- o a test tube containing solution of dilute hydrochloric acid, and
- o a test tube containing dilute sodium hydroxide solution.

In both test tubes there was no visible reaction.

Which of the following could be solution **A**?

- (a)  $\text{Na}_2\text{CO}_3(\text{aq})$
- (b)  $\text{CuSO}_4(\text{aq})$
- (c)  $\text{BaCl}_2(\text{aq})$
- (d)  $\text{AgNO}_3(\text{aq})$

(d) Approximately 80 g of solid copper sulfate is added to water in a beaker and stirred. When the mixture settles, it has become a clear blue liquid with some blue crystals at the bottom of the beaker. Which of the following statements is true?

- a. The clear liquid is a saturated solution.
- b. Adding more copper sulfate crystals will make the blue colour deeper.
- c. The beaker contains a homogeneous mixture.
- d. Adding more water will increase the concentration of the solution as more solid will dissolve.

#### Question 27

(4 marks)

For each of the following reactions, describe expected observations, including any

- Colours
- Odours
- Precipitates (give the colour)
- Gases evolved (give the colour or describe as colourless)

(a) Solid copper(II) carbonate is added to dilute sulfuric acid to produce copper(II) sulfate, carbon dioxide and water. (2 marks)

(b)  $\text{FeCl}_2(\text{aq}) + \text{AgNO}_3(\text{aq}) \rightarrow 2 \text{AgCl}(\text{s}) + \text{Fe}(\text{NO}_3)_2(\text{aq})$  (2 marks)

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Description	Marks
Green solid dissolves to form blue solution	1
Colourless odourless gas produced	1
<b>Total</b>	<b>2</b>



Description	Marks
White solid/precipitate	1
In pale green solution	1
<b>Total</b>	<b>2</b>