

**GCSE Chemistry A (Gateway Science)**

**J248/02 C4-C6 and C7 Foundation (Foundation Tier)**

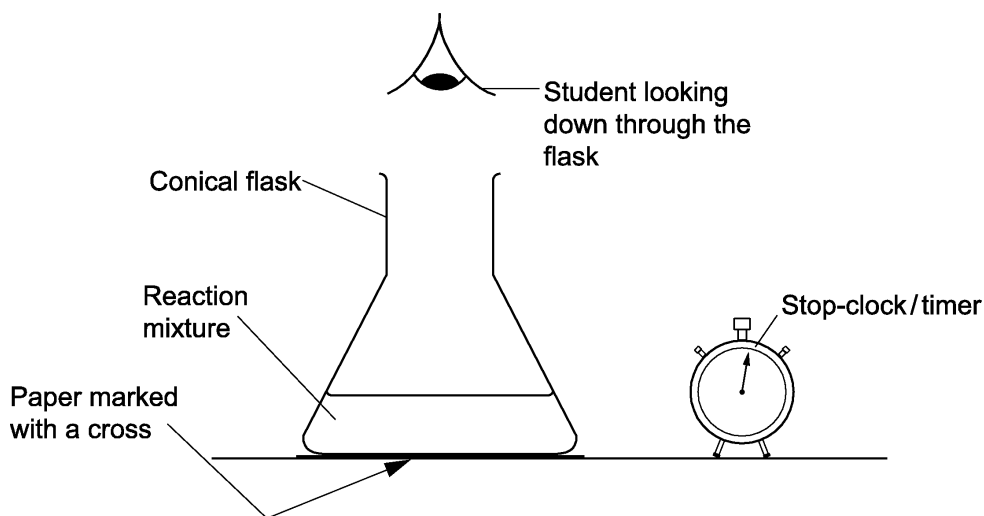
**Question Set 2**

Multiple Choice Questions

C5: Monitoring and controlling chemical reactions

- 1 A student investigates the reaction between sodium thiosulfate and hydrochloric acid.

Look at the diagram below. It shows the apparatus he uses.



- After a time he cannot see the cross because the liquid in the conical flask goes cloudy. The student measures the time taken until the cross **cannot** be seen.
- He does the experiment four times. For each experiment he uses a different concentration of sodium thiosulfate solution.

Which of the following must **not** be changed to do a fair test?

- A** Concentration of sodium thiosulfate
- B** Stop-clock or timer
- C** Total volume of the reaction mixture
- D** Volume of sodium thiosulfate added

Your answer

[1]

2 A student investigates the reaction between sodium carbonate and dilute nitric acid.

She does all the experiments using the

- same temperature
- same mass of sodium carbonate
- same volume of nitric acid.

She uses four different concentrations (**A**, **B**, **C** and **D**) of nitric acid.

For each concentration, she measures the time for the reaction to complete. Which concentration of nitric acid gives the **fastest** reaction?

Concentration	Time for reaction to complete (in seconds)
<b>A</b>	41
<b>B</b>	74
<b>C</b>	135
<b>D</b>	67

Your answer

[1]

3 Urea,  $(\text{NH}_2)_2\text{CO}$ , is a fertiliser.

A student makes 1 mole of urea from 2 moles of ammonia. What is the mass of urea that the student makes?

- A** 43.0 g
- B** 44.0 g
- C** 58.0 g
- D** 60.0 g

Your answer

[1]

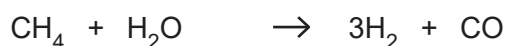
4 Which statement about catalysts is correct?

- A A catalyst decreases the activation energy of a reaction.
- B A catalyst increases the activation energy of a reaction.
- C A catalyst increases the time for a reaction to go to completion.
- D A catalyst slows down a reaction.

Your answer

[1]

5 Hydrogen gas can be made by reacting methane and steam (H<sub>2</sub>O).



6 g of hydrogen gas can be made from 18 g of steam, H<sub>2</sub>O.

How much hydrogen gas can be made from 3.6 g of steam, H<sub>2</sub>O?

- A 0.4 g
- B 0.6 g
- C 1.2 g
- D 6.8 g

Your answer

[1]

6 Which statement is true for a reversible reaction when it is at dynamic equilibrium?

- A The concentration of the products is increasing.
- B The rate of the backward reaction is greater than the rate of the forward reaction.
- C The rate of the forward reaction is equal to the rate of the backward reaction.
- D The rate of the forward reaction is greater than the rate of the backward reaction.

Your answer

[1]

7 The rate of a reaction can be changed by adding a catalyst to the reaction mixture.

Which line of the table shows how the **rate of reaction** and the **mass of the catalyst** change as the reaction takes place?

	<b>Change in rate of reaction</b>	<b>Change in mass of catalyst</b>
<b>A</b>	decreases	no change
<b>B</b>	no change	decreases
<b>C</b>	increases	no change
<b>D</b>	increases	decreases

Your answer

[1]

8 Which statement describes the **atom economy** of a reaction?

- A** A measure of how many atoms in the reactants form the waste products.
- B** A measure of how many atoms in the reactants form the desired product.
- C** A measure of the actual yield of product compared to the predicted yield of product.
- D** A measure of how many atoms form waste products compared to desired products.

Your answer

[1]

**Total Marks for Question Set 2: 8**

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