2.7 Rate and Extent of Chemical Change: 10-minute Pack

Total Marks

AQA 8462 · Calculator allowed · about 10 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Chemists can measure how quickly a reaction happens.

(a) State what is meant by the term 'rate of reaction'. **(1)**

(b) A reaction between a solid and an acid produces a gas. Give two different ways a student could measure the rate of this reaction. **(2)**

(Total for Question 1 is 3 marks)

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2 A student measures how fast magnesium ribbon reacts with dilute hydrochloric acid. Each test uses the same length of ribbon but different acid concentrations.

(a) State one practical way to increase the rate of this reaction other than changing concentration. **(1)**

(b) State one hazard the student should consider when carrying out this reaction and give one safety precaution. **(1)**

(Total for Question 2 is 2 marks)

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3 Concentration affects the rate of reaction in solutions.

(a) A student dissolves 0.10 mol of sodium thiosulfate in 0.50 litres of water. Calculate the concentration in mol per litre (molarity). **(2)**

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(b) State how increasing the concentration would affect the rate of the reaction and why, in one sentence. **(1)**

(Total for Question 3 is 3 marks)

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Mark scheme · 2.7 Rate and Extent of Chemical Change: 10-minute Pack

Question 1

(a) how quickly a reactant is used up or how quickly a product is formed oe **B1**

(a) Answer: The rate of reaction is how quickly a reactant is used up or a product is formed.

(b) measure the volume of gas produced (using a gas syringe) at regular time intervals oe **B1**

(b) measure the loss in mass of the reaction flask (using a balance) at regular time intervals oe **B1**

(b) Answer: Measure the volume of gas produced over time using a gas syringe; measure the loss in mass of the flask and its contents over time using a balance.

Question 2

(a) increase the temperature of the acid or use powdered magnesium (increase surface area) or use thinner ribbon, oe **B1**

(a) Answer: Increase the temperature of the acid.

(b) hazard: acid splashes or hydrogen gas produced; precaution: wear goggles and use small amounts of acid or work in a fume hood/keep away from flames, oe **B1**

(b) Answer: Hazard: acid may splash. Precaution: wear safety goggles and use small volumes of acid.

Question 3

(a) substitutes: concentration = moles / volume = 0.10 / 0.50 **M1**

(a) 0.20 mol per litre (0.20 mol l-1) cao **A1**

(a) Answer: 0.20 mol l-1

(b) rate increases because there are more particles per unit volume so more frequent collisions, oe **B1**

(b) Answer: Rate increases because there are more particles in the same volume so collisions are more frequent.

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