AQA GCSE Chemistry

The rate and extent of chemical change mark scheme · goes with “The rate and extent of chemical change · Foundation tier” · whiteboardchemistry.com/revision/gcse-chemistry/exam-questions

Mark schemes

The rate and extent of chemical change · Foundation tier · 6 questions

Q1 · June 2022 · Paper 2 Foundation · Q6 · [8 marks]

06.1

$Na_2S_2O_3 + 2HCl \rightarrow \mathbf{2}NaCl + H_2O + SO_2 + S$

allow multiples

[1 mark]

06.2

(s)

[1 mark]

06.3

a cross on a piece of paper

[1 mark]

06.4

the rate of reaction decreased

[1 mark]

06.5

one of the reactants was used up

[1 mark]

06.6

initially the line of best fit would be steeper

[1 mark]

06.7

fewer reactant particles have the activation energy

the reactant particles move more slowly

[2 marks]

Q2 · June 2022 · Paper 2 Foundation · Q9 · Paper 2 Higher · Q2 · [8 marks]

09.1

24.5 (g)

[1 mark]

09.2

allow steam for water vapour

water vapour was produced

allow water was produced as a gas

(so) water (vapour) escaped (from the tube)

allow (so) the mass of the water (vapour) was not measured

[2 marks]

09.3

(so that) the reaction was complete

allow (so that) no more water (vapour) was produced

[1 mark]

09.4

(energy =)

(2.00)/(238) × 88.1

= 0.740336134 (kJ)

= 0.740 (kJ)

allow an answer correctly calculated to 3 significant figures from an incorrect calculation which uses all the values in the question

[3 marks]

09.5

endothermic (reaction)

allow reversible (reaction)

allow (thermal) decomposition (reaction)

[1 mark]

Q3 · June 2023 · Paper 2 Foundation · Q4 · [9 marks]

04.1

water (vapour) is colourless

allow water vapour cannot be seen

(calcium hydroxide and calcium oxide are) both white (powders / solids)

or

there is no change in the appearance of the powder / solids

[2 marks]

04.2

the stopper would be pushed out

allow test tube may break

[1 mark]

04.3

the mass of the empty test tube

[1 mark]

04.4

5 minutes

[1 mark]

04.5

(mass =) 2.00 – 1.51

= 0.49 (g)

[2 marks]

04.6

5.90 kJ

[1 mark]

04.7

endothermic

[1 mark]

Q4 · June 2023 · Paper 2 Foundation · Q8 · Paper 2 Higher · Q1 · [10 marks]

08.1

to reduce the escape of gas

[1 mark]

08.2

(mean rate =)

$$\frac{0.78 + 0.81 + 0.81}{3}$$

allow $\frac{0.78 + 0.81 + 0.68 + 0.81}{4}$

0.80 (cm^3/s)

= 0.77 (cm^3/ s) for 1 mark

$$0.80 = \frac{20}{\text{mean time taken}}$$

allow correct use of incorrectly determined mean rate

(mean time taken =) $\frac{20}{0.80}$

= 25 (s)

alternative approach:

$0.78 = \frac{20}{\text{time}}$

or

$0.81 = \frac{20}{\text{time}}$ (1)

(trial 1 time = $\frac{20}{0.78}$ =) 25.6 (1)

(trial 2 and 4 time = $\frac{20}{0.81}$ =) 24.7 (1)

(mean time =)

$\frac{25.6 + (2 \times 24.7)}{3}$ (1)

allow correct use of incorrectly determined value(s) for time

= 25 (s) (1)

allow $\frac{25.6 + 29.4 + (2 \times 24.7)}{4}$

= 26.1 (s)

for 1 mark

[5 marks]

08.3

use a lower temperature

use sulfuric acid of a lower concentration

[2 marks]

08.4

MP2 is dependent upon MP1 being awarded

(test)

burning / lit splint

allow flame

do not accept glowing splint

(result)

burns with a (squeaky) pop sound

allow pops

[2 marks]

Q5 · June 2024 · Paper 2 Foundation · Q5 · [11 marks]

05.1

volume (of reactants) is 90 cm^3

allow volume (of reactants) is greater than 50 cm^3

(so conical) flask will overflow

allow (so) solutions will not fit (in conical flask)

[2 marks]

05.2

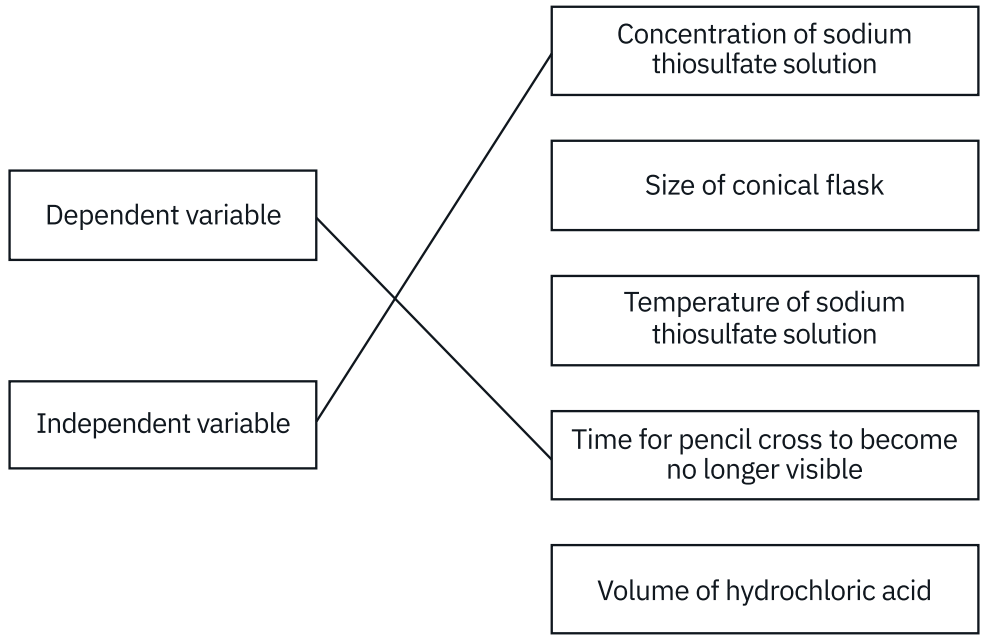
measuring cylinder

allow (volumetric / graduated) pipette

allow burette

[1 mark]

05.3



*allow **1** mark if dependent variable and independent variable are identified the wrong way round*

do not accept more than one line drawn from a box on the left

[2 marks]

05.4

the time taken will increase

[1 mark]

05.5

32 g/dm^3

[1 mark]

05.6

the particles are closer together

the particles collide more frequently

[2 marks]

05.7

decreases

increases

[2 marks]

Q6 · June 2025 · Paper 2 Foundation · Q3 · [8 marks]

03.1

(the sign) ⇌

allow a description of the reversible sign

[1 mark]

03.2

endothermic

allow (thermal) decomposition

[1 mark]

03.3

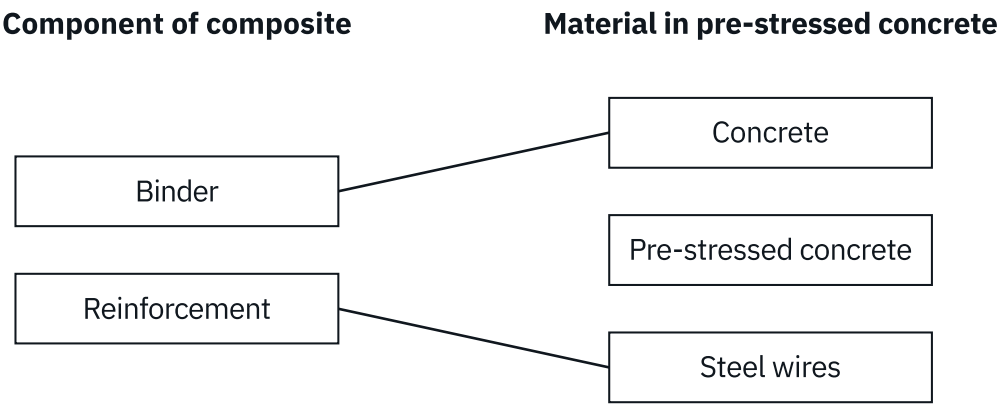
(energy released =)

(4)/(20) × 23

= 4.6 (kJ)

[2 marks]

03.4



do not accept more than one line from a box on the left

[2 marks]

03.5

iron

allow Fe

[1 mark]

03.6

clay

[1 mark]

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