

MARK SCHEME

GCSE

CHEMISTRY

AQA - COMBINED SCIENCE

C5 - TEST 2

ENERGY CHANGES

Beginner

Mark schemes

- 1.** (a) goes up 1
- (b) (i) B 1
- (ii) A 1
- (iii) a catalyst 1
- activation energy 1
- (c) (i) eg (ensures) complete reaction
allow spread heat / energy
- or** even heating
allow mixes properly or mix them together or to get correct temperature
ignore dissolves 1
- (ii) lid (on beaker)
accept cover beaker
- or**
- insulate (beaker) / use a plastic cup 1
- [7]**
- 2.** (a) carbon dioxide
must be name
*do **not** accept carbon oxide* 1
- (b) (i) the temperature of the solution will decrease
(list principle) 1
- (ii) energy is taken in from the surroundings
(list principle) 1
- [3]**
- 3.** (a) the bag gets cold because heat energy is taken in from the surroundings 1
- (b) endothermic 1

(c) any **two** from:

- mix / spread (the ammonium nitrate and water)
- dissolve faster(*)
- get cold faster **or** so the whole bag gets cold(*)
(*)allow increase rate **or** quicker reaction
- particles collide more **or** more collisions

2

[4]

4.

(a) hydrogen + oxygen → water

*accept $2H_2 + O_2 \rightarrow 2H_2O$ or balanced multiples or fractions
allow 1 or 2 correct formulae substituted for words
allow hydrogen oxide **or** steam for water*

1

(b) supplied

released

both needed, must be in this order

1

(c) (i) B

1

(ii) A

1

(iii) to overcome activation energy to react **or** (activation) energy needed to start reaction

allow to provide energy

1

[5]

5.

(a) (i) 42 000

*correct answer gains 2 marks with or without working
allow 42 kJ*

if answer incorrect : correct substitution $500 \times 4.2 \times 20$ gains 1 mark

2

(ii) any **two** from:

- eye protection
- lab coat
- heat-proof mat
- (heat-proof) gloves
- (long) hair tied back
- stand up
- secure the beaker

2

(iii) Stir the water before measuring the temperature.

1

Place a lid on the beaker.

1

(b) the products → S

1

the activation energy → Q

1

the energy released by the reaction → P

1

(c) carbon dioxide produced

it = propane

allow converse arguments

allow greenhouse gas / global warming / atmospheric pollution

(crude oil / propane) non-renewable

1

allow crude oil running out

1

[11]