GCSE Chemistry A (Gateway Science)

J248/01 Chemistry A C1-C3 and C7 (Foundation Tier)

Question Set 4

1 A student investigates some exothermic and endothermic reactions.

(a) He measures the temperature changes during some chemical reactions.

Look at his table of results.

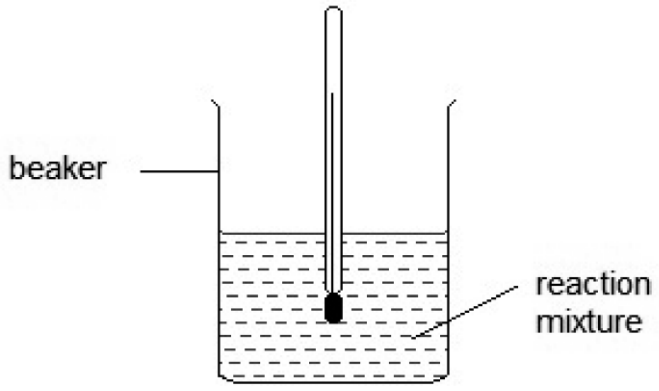
Reaction	Temperature at start (°C)	Temperature at end (°C)	Temperature change (°C)
1	15	25	+10
2	15	15	0
3	18	15	-3
4	15	20	+5

What can you conclude about the **type** of energy change in each reaction?

Explain your answer. **[4]**

A is exothermic as the temperature increases
B is neither exothermic nor endothermic as the temperature stays the same
C is endothermic as the temperature drops
D is exothermic as the temperature increases

(b) A student does an experiment with an acid and an alkali.



1. He adds the acid to a beaker and measures its temperature.
2. He then adds the alkali to the beaker and stirs the mixture.
3. At the end of the reaction, he removes the thermometer from the beaker and measures the temperature.

How should he improve his method? Explain your answer.

The thermometer should remain in reaction mixture for temperature at end otherwise temperature would be inaccurate **[2]**

(c) A student adds water to calcium oxide. A vigorous exothermic reaction takes place forming calcium hydroxide.

Calcium hydroxide has the formula $Ca(OH)_2$.

Show that the relative formula mass (M_r) of calcium hydroxide is 74.1.

Ca = 40.1 O = 16 H = 1

40.1 x 1 + (16 + 1) x 2 = 74.1

[2]

Total Marks for Question Set 4: 8