

## Energy transfer in chemical reactions

### Mark scheme

1.	(a)	carbon <u>dioxide</u> <i>must be name</i> <i>do <b>not</b> accept carbon oxide</i>	1	
	(b)	(i) the temperature of the solution will decrease <i>(list principle)</i>	1	
		(ii) energy is taken in from the surroundings <i>(list principle)</i>	1	[3]
2.	(a)	(i) high <b>and</b> low <i>both needed for mark</i>	1	
		(ii) reversible	1	
		(iii) to prevent ammonium chloride / solid / particles escaping <i>idea of a filter</i> <i>do <b>not</b> accept 'to prevent gases escaping'</i>	1	
	(b)	endothermic	1	[4]
3.	(a)	the bag gets cold because heat energy is taken in from the surroundings	1	
	(b)	endothermic	1	
	(c)	any <b>two</b> from: • mix / spread (the ammonium nitrate and water) • dissolve <u>faster</u> (*) • get cold <u>faster</u> <b>or</b> so the <u>whole</u> bag gets cold(*) <i>(*)allow increase rate <b>or</b> quicker reaction</i> • particles collide <u>more</u> <b>or</b> <u>more</u> collisions	2	[4]
4.	(a)	endothermic <b>and</b> because it takes in heat / energy <i>both for one mark</i>	1	
	(b)	(i) reversible reaction (or explanation)	1	
		(ii) add water <i>do <b>not</b> accept cooling <b>or</b> reverse the reaction</i>	1	[3]