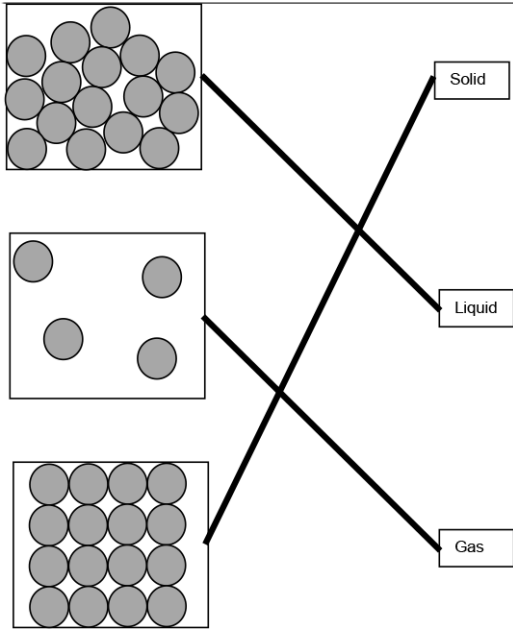


## Mark scheme – The Particle Model (F)

Question		Answer/Indicative content	Marks	Guidance
1		A	1 (AO 1.1)	
		<b>Total</b>	<b>1</b>	
2		B	1 (AO 1.1)	<b>Examiner's Comments</b> D was a popular incorrect response.
		<b>Total</b>	<b>1</b>	
3		B	1 (AO 2.1)	<b>Examiner's Comments</b> Candidates found this difficult; A and D were the more common incorrect responses.
		<b>Total</b>	<b>1</b>	
4	i		2 (AO2 x 1.1)	All correct = 2 marks 1 or 2 correct = 1 mark  If more than one line drawn to state of matter <b>DO NOT</b> award the mark.
	ii	<p><b>Any one from:</b> The particles remain the same / No new substance is made ✓</p> <p>The (changed) arrangement of the particles can be reversed / The change is reversible ✓</p>	1 (AO1.1)	<b>ALLOW</b> the particles <b>only</b> gain or lose energy
		<b>Total</b>	<b>3</b>	
5	a	<p>A new substance is made ✓</p> <p>The change is irreversible (by physical means) /</p>	2 (AO1.1)	<b>ALLOW</b> products look different to reactants/products are different to reactants/only one substance made/colour change

		impossible to reverse (by physical means) / difficult to reverse✓		<p><b>ALLOW</b> product has a fixed composition/formula OR mixture doesn't</p> <p><b>ALLOW</b> there is an energy/temperature change/exothermic/endothemic</p> <p><b>ALLOW</b> properties of product are different from</p> <p><b><u>Examiner's Comments</u></b></p> <p>Many candidates appreciated that a chemical change is irreversible or is accompanied by a change in appearance with few candidates citing two correct responses. Describing physical changes, including a change in state, were the most common incorrect responses.</p>
b	i	(particles) regular/in rows ✓  (particles) close together ✓	2 (AO1.1)	<p><b>ignore</b> fixed</p> <p><b>allow</b> touching/all touching/little space between or no space between/tightly packed</p> <p><b>ALLOW</b> compact</p> <p>both marks can be gained from a diagram</p> <p><b><u>Examiner's Comments</u></b></p> <p>The proximity of particles was well known, the regularity was less well known.</p>
	ii	Vibrating (about a fixed position) ✓	1 (AO1.1)	<p><b><u>Examiner's Comments</u></b></p> <p>Common incorrect responses included particles not moving or moving slightly or slowly.</p>
		<b>Total</b>	<b>5</b>	