MARK SCHEME

Total: 35 marks

Q	Answer	Marks
SECTION A – States of Matter (11 marks)		
1	**Solid:** particles touching, in regular rows (closely packed, fixed pattern) **Liquid:** particles mostly touching but random / irregular arrangement **Gas:** particles far apart, randomly spread out, few in the box	**3** (1 each)
2	Fixed shape: Yes / No / No Fixed volume: Yes / Yes / No Can be compressed: No / No / Yes *1 mark per fully correct row (Solid / Liquid / Gas)*	**3**
3	a) melting b) freezing c) boiling *(accept evaporating)* d) condensing e) sublimation	**5** (1 each)
SECTION B – Pressure & Temperature in Gases (12 marks)		
4a	The volume increases / the gas expands	**1**
4b	• Particles gain (kinetic) energy and move faster • Particles move further apart / take up more space, so the air expands	**2**
5a	No – the number of particles stays the same	**1**
5b	The volume decreases / gets smaller	**1**
5c	• Same number of particles in a smaller space (volume) • Particles hit the container walls more often / more frequently	**2**
5d	• Heating gives the gas particles more energy, so they move faster • They hit the walls of the can more often and harder, so the pressure increases • If the pressure gets too high, the can could leak or explode	**3**
6	• Cold air: particles lose energy and move more slowly • They hit the inside of the ball less often, so the pressure falls / the gas takes up less volume *Any two points*	**2**
SECTION C – Diffusion (12 marks)		
7	a) liquids b) high … low c) randomly	**3** (1 each)
8	• Smell particles move randomly / diffuse through the air • From high concentration (kitchen) to low concentration (living room)	**2**
9a	By diffusion – the particles move randomly through the air in the tube until they meet	**1**
9b	• Ammonia particles move / diffuse **faster** (they travel further in the same time) • Because ammonia particles are **lighter** (smaller mass) than hydrogen chloride particles	**2**
9c	• The ring forms **faster** (takes less time) • Particles have more kinetic energy at higher temperature, so they move faster	**2**
10	• **Hot** water • Particles have more kinetic energy / move faster, so diffusion is faster	**2**