

Q1. (2018)

04.6	the particles vibrate about a fixed position regular arrangement	allow the particles are in a regular arrangement	1	AO1 6.3.1.1
	(the particles change) to being free to move around	allow correct description of translational kinetic energy	1	

Q2. (2019)

a)

03.4	1100 (°C)		1	AO3/2b 6.3.2.3	G
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b)

03.5	8 (minutes)	allow 12 (minutes)	1	AO3/2b 6.3.2.3	G
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c)

03.6	the rate of change of temperature of the gold		1	AO3/1a 6.1.1.3, 6.3.2.2	A
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Q3. (2019)

a)

07.3

Substance	Solid	Liquid	Gas
Oxygen		✓	
Nitrogen			✓
Carbon dioxide	✓		

2 correct answers scores 1 mark.
if more than one tick in a row, neither can score a mark

2

AO3/2b
6.3.1.1

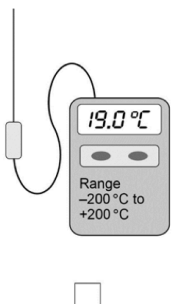
E

b)

07.4	Level 3: Relevant points (reasons/causes) are identified, given in detail and logically linked to form a clear account.	5–6	AO1.1 6.3.1.2	E
	Level 2: Relevant points (reasons/causes) are identified, and there are attempts at logical linking. The resulting account is not fully clear.	3–4		
	Level 1: Points are identified and stated simply, but their relevance is not clear and there is no attempt at logical linking.	1–2		
	No relevant content	0		
	Indicative content cooling <ul style="list-style-type: none"> as the argon cools the particles slow down particles in a liquid move slower than particles in a gas particles in a solid move slower than particles in a liquid as the liquid/solid cools the particles get closer together as the liquid/solid cools the density increases gas to liquid <ul style="list-style-type: none"> particles change from being spread apart to touching each other particles will (collide with other particles more often and) change direction more often liquid to solid <ul style="list-style-type: none"> particles change from a random arrangement to a regular pattern particles change from moving freely to fixed positions particles change from moving freely/randomly to vibrating explanation <ul style="list-style-type: none"> (internal) energy (of the argon) decreases (kinetic) energy (of the particles) decreases with temperature (potential) energy (of the particles) changes with change of state (of the argon) forces between particles in a gas are negligible/zero attractive forces act between atoms when they are close to each other attractive forces between particles are stronger in a solid than in a liquid to access level 3 there must be an explanation of changes to arrangement and movement of particles during either cooling or a change of state			

Q4. (2020)

a)

04.2	3rd thermometer ticked		1	AO2 6.3.2
				

b)

04.5	$860 = 0.00320 \times c \times 215$ $c = \frac{860}{0.00320 \times 215}$ $c = 1250 \text{ (J/kg}^\circ\text{C)}$		1 1 1	AO2/1 4-5 6.3.2.2 6.1.1.3
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c)

04.6	temperature stays the same	1	AO2 6.3.2.3
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d)

04.7	a change of state from liquid to gas	1	AO1 6.3.2.3
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e)

04.8	$1440 = 0.0072 \times L$	1	AO2 6.3.2.3
	$L = \frac{1440}{0.0072}$	1	
	$L = 200\,000 \text{ (J/kg)}$	1	

Q5. (2022)

06.7	the water will recover its original properties if the steam is cooled	1	AO1 6.3.1.2
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Q6. (2023)

03.2	the total kinetic energy and potential energy of the steel particles	1	AO1 6.3.2.1
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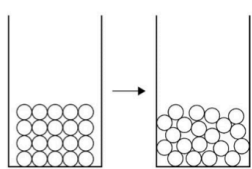
Q7. (2023)

03.3	the particles are in fixed positions	1	AO1 6.3.1.1
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Q8. (2023)

03.4	stays the same	1	AO1 6.3.1.2
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Q9. (2023)

03.5		1	AO1 6.3.1.1
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Q10. (2023)

03.7	physical	1	AO1 6.3.1.2
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