

Q1.

Question Number:	Answer	Additional Guidance	Mark
	100 (°C) (1)	accept any answer between and including 95 and 102 (possibility that it is not pure water and possibility of heat loss prevents reaching boiling point)	(1) AO 2 1

Q2.

Question number	Answer	Additional guidance	Mark
	An answer that combines any four of the following points of understanding to provide a logical description: <ul style="list-style-type: none">• chooses either thermocouple or infra-red thermometer (1)• molten steel is poured into a crucible (1)• a stopwatch is started (1)• the crucible + contents are allowed to cool down (in the room) (1)• temperatures are taken at regular intervals (e.g. every minute) (1)	any interval with steel – every 10 minutes etc.	(4)

Q3.

Question	Indicative content	Mark
	<p>Answers will be credited according to candidate's deployment of knowledge and understanding of the material in relation to the qualities and skills outlined in the generic mark scheme.</p> <p>The indicative content below is not prescriptive and candidates are not required to include all the material which is indicated as relevant. Additional content included in the response must be scientific and relevant.</p> <p style="text-align: center;">AO1</p> <ul style="list-style-type: none"> • ice melts at 0 °C • water boils at 100 °C • 0 to 1 minute temperature of ice rising • 1 to 7 minutes ice melting • 1 to 7 minutes energy supplied is used to increase (potential) energy of ice particles • 1 to 7 minutes energy supplied is used to break bonds (between ice particles) • 7 to about 15 minutes temperature of water rising • 7 to about 15 minutes energy supplied is used to increase (kinetic) energy of water particles • about 15 to 20 minutes water boiling • about 15 to 20 minutes energy supplied is used to break bonds (between water particles) 	<p>(6) AO1.2</p>

Level	Mark	Descriptor
	0	<ul style="list-style-type: none"> • No rewardable material.
Level 1	1-2	<ul style="list-style-type: none"> • Demonstrates elements of physics understanding, some of which is inaccurate. Understanding of scientific, enquiry, techniques and procedures lacks detail. (AO1) • Presents a description which is not logically ordered and with significant gaps. (AO1)
Level 2	3-4	<ul style="list-style-type: none"> • Demonstrates physics understanding, which is mostly relevant but may include some inaccuracies. Understanding of scientific ideas, enquiry, techniques and procedures is not fully detailed and/or developed. (AO1) • Presents a description of the procedure that has a structure which is mostly clear, coherent and logical with minor steps missing. (AO1)

Level 3	5-6	<ul style="list-style-type: none"> • Demonstrates accurate and relevant physics understanding throughout. Understanding of the scientific ideas, enquiry, techniques and procedures is detailed and fully developed. (AO1) • Presents a description that has a well-developed structure which is clear, coherent and logical. (AO1)
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Level	Mark	Additional Guidance	General additional guidance - the decision within levels e.g. - At each level, as well as content, the scientific coherency of what is stated will help place the answer at the top, or the bottom, of that level.
	0	No rewardable material	
Level 1	1-2	<u>Additional guidance</u> limited description including isolated facts for any section	<u>Possible candidate responses</u> temperature of ice/solid increases OR ice melts OR water boils
Level 2	3-4	<u>Additional guidance</u> limited description relating knowledge and understanding to interpretation of graph in one section plus an isolated fact	<u>Possible candidate responses</u> temperature of ice/solid increases for 1 minute AND temperature of the water increases
Level 3	5-6	<u>Additional guidance</u> detailed description relating knowledge and understanding to interpretation of graph in two sections plus an isolated fact	<u>Possible candidate responses</u> temperature of ice/solid increases for 1 minute AND ice melting while 0 °C for 6 minutes AND water boils