Name of the Student:_____
Max. Marks : 17 Marks **Time : 17 Minutes**

Mark Schemes

Q1.

Question number	Indicative content	Mark
*	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. 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. **AO1 (strand 2) (6 marks)** Indicative content • measure the length and width of a strip with the ruler / a metre rule • measure the thickness of the strip with a more accurate device e.g. digital callipers OR place 5 (say) of the same strip on top of each other and measure their thickness with the ruler then ÷5 to calculate a single thickness [plus air gap] • measure the mass of a strip with an electronic balance • measure the mass of (say) 5 strips then ÷5 to calculate the mass of one of them • calculate the volume (= l x w x t) in m^3 and the mass in kg • use displacement can/measuring cylinder to find the volume • mass / volume to get density • check if it's near one of the teacher's two values of density given • if it's close / not so far off it's safe to assume that strip is of the identified material • repeat for the other strip • other repeat measurements	**(6)** **AO1**

AO targeting: AO1.2		
Level	Mark	Descriptor
	0	• No rewardable material.
Level 1	1-2	• 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	• 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	• 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)

Summary for guidance			
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	Additional guidance Partially complete description of a suitable procedure with at least two measurements OR one measurement and another procedural point	Possible candidate responses measure the length measure the width of a strip measure the mass/weight of a strip e.g. repeat measurements
Level 2	3–4	Additional guidance Mostly complete description of a suitable procedure with at least three measurements and some description of processing the results.	Possible candidate responses As above with measure the thickness of the strip calculate the volume (= l x w x t) OR immerse in liquid to get volume
Level 3	5–6	Additional guidance Detailed description of a suitable procedure with all necessary measurements and a clear description of processing the results.	Possible candidate responses As above with extra detail e.g. measure the mass of (say) 5 strips then ÷5 to calculate the mass of one of them detail of obtaining volume by immersion use density =mass /volume check if density value obtained is near one of the teacher's two values

Q2.

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

Q3.

Question number	Answer	Mark
	C	**(1)**

Q4.

Question Number	Answer	Acceptable answers	Mark
(i)	an explanation **linking** two of the following three points:- particles move (1) bombarding/colliding (1) with wall/side (1) (only give if one of the previous marks is there) (of container)	 molecules/they move hit ignore 'pushing' e.g. molecules push on walls = 0 bounce off inside of container =2	**(2)**

Question Number	Answer	Acceptable answers	Mark
(ii)	substitution $P_2 = \frac{101\ 000 \times 340}{2.5}$ (1) Evaluation 13.7 to any power of 10 (1) 13 700 000(Pa), 13 700kPa (1)	 1.37(36) X 10^7/ 13736000 14 to any power of 10 14 000 000 (Pa), 14 000 (kPa) Full marks are awarded for the correct answer with no working	**(3)**

Q5.

Question number	Answer	Additional guidance	Mark
	statements to include any **two** from use cladding / (extra) insulation (1) use double thicknesses of the concrete (1) use silver / reflective / white (paint) (1) plant trees around (wind break) (1) use double glazed windows (1) (properly) close window(s)/door	 create cavity draft exclusion	**(2)** **AO1**

Q6.

Question number	Answer	Mark
	A 293 K	**(1)**

Q7.

Question number	Answer			Mark
	[x] **B**	bigger than in water	less than water	**(1)** **AO1**
	A is incorrect because the density of steam is less than water. C is incorrect because the space between the particles increases. D is incorrect because the space between the particles increases and density of steam is less than water.			