Practice Question Set For GCSE
Subject : Physics
Paper-2 Topic : 14_Particle Model

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Name of the Student:_____
Max. Marks : 22 Marks **Time : 22 Minutes**

Mark Schemes

Q1.

Question	Answer	Additional guidance	Mark
	substitution (1) $8.96 = \frac{14.1}{V}$ rearrangement (1) $(V =) \frac{14.1}{8.96}$ evaluation (1) $(V =) 1.57\ (cm^3)$	allow substitution and rearrangement in either order allow substitution of correct values into a visible, incorrectly rearranged algebraic equation for this mark only $(V =) \frac{m}{\rho}$ accept numbers that round to 1.57 allow 1.6	**(3)** **AO2.1**
		award full marks for the correct answer without working allow 1.6 or answers rounding to 1.57 to any other power of 10 scores 2 marks	

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Q2.

Question Number:	Answer	Additional guidance	Mark
	recall and substitution (1) (density ρ)=$\frac{380}{410}$ evaluation (1) 0.93 (g/cm^3)	 allow substitution of a mass / a volume accept any value that rounds to 0.9 allow truncated 0.92 (g/cm^3) only accept 1(g/cm^3) if working shown. award full marks for correct answer without working	**(2)** AO 2 1

Q3.

Question Number:	Answer	Additional guidance	Mark
	substitution (1) (Q =) $\frac{380\times3.34\ (\times10^5)}{(1000)}$ evaluation (1) 1.27 x 10^5 (J)	 127 kJ 126920 (J) accept answers that round to 1.27 x 10^5 e.g. 1.2692 x 10^5 accept 130 kJ or 1.3 x 10^5 (J) POT error max. 1 mark award full marks for correct answer without working	**(2)** AO 2 1

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Q4.

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 (6 marks)** • Use of top pan balance to measure mass • Insulate beaker to reduce heat loss • Ammeter connected in series with heater • Voltmeter connected in parallel with heater • Use of $E = I \times V \times t$ to determine energy supplied to the water • Accept use of joule-meter to measure energy supplied • Use of $\Delta E = m \times c \times \Delta\theta$ to determine the specific heat capacity of the water • Measure p.d. across heater • Use stopwatch to measure time liquid is heating • Measure current in heater • Determine mass of water as mass of (beaker and water) – mass of beaker • Measure temperature before and after heating	**(6)**

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Level	Mark	Descriptor
	0	No awardable content.
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)

Q5.

Question number	Answer	Additional guidance	Mark
	An answer that provides a description by making reference to: • part fill a measuring cylinder with water and record the starting volume (1) • completely immerse the stone in the water and record the final volume of water and stone (1) • volume of stone = final volume – initial volume (1)	accept valid alternative methods, e.g. fill a displacement can until some water overflows/flows out of spout completely immerse the stone in the displacement can and collect the displaced water in a measuring cylinder volume of water displaced = volume of stone	**(3)**

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Q6.

Question	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 • 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)	**(6)** **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)

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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)

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 limited description including isolated facts for any section	Possible candidate responses temperature of ice/solid increases OR ice melts OR water boils
Level 2	3–4	Additional guidance limited description relating knowledge and understanding to interpretation of graph in **one** section plus an isolated fact	Possible candidate responses temperature of ice/solid increases for 1 minute AND temperature of the water increases
Level 3	5–6	Additional guidance detailed description relating knowledge and understanding to interpretation of graph in **two** sections plus an isolated fact	Possible candidate responses temperature of ice/solid increases for 1 minute AND ice melting while 0 °C for 6 minutes AND water boils

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