Merit Minds
www.merit-minds.com
Exam Preparation and Free Resources

Name of the Student:_____

Max. **Marks : 20 Marks**   **Time : 20 Minutes**

Mark Schemes

Q1.

Question Number	Answer	Additional guidance	Mark
(i)	substitution (1) (ΔQ) = 1.5 x 4200 x 50 evaluation (1) 320 000 (J)	 accept 315 000 (J) 310 000 (J) award full marks for the correct answer without working 320 000 000 315 000 000 310 000 000 score 1 mark (mass in grams)	**(2)**

Question Number	Answer	Additional guidance	Mark
(ii)	substitution (1) 3500 = $\dfrac{670\,000}{t}$ rearrangement (1) (t=) $\dfrac{670\,000}{3500}$ evaluation (1) 190(s)	accept substitution and rearrangement in either order accept any answer that round to 190(s) power of ten error award 2 marks maximum award full marks for the correct answer without working	**(3)**

Q2.

Question	Answer	Additional guidance	Mark
(i)	30 (°C) (1)		(1) AO3.1

Question	Answer	Additional guidance	Mark
(ii)	substitution (1) $(c =) \dfrac{96\,000}{0.82 \times 30}$ evaluation (1) $(c =)$ 3900 (J/kg°C)	allow ECF from (a)(i) throughout allow values that round to 3900 e.g. 3902.4 (J/kg°C) award full marks for the correct answer without working	(2) AO3.1

Q3.

Question Number	Answer	Additional guidance	Mark
(i)	29(g)		**(1)**

Question Number	Answer	Additional guidance	Mark
(ii)	25(cm^3)		**(1)**

Question Number	Answer	Mark
(iii)	**D** density = $\dfrac{\text{mass}}{\text{volume}}$ **D** is the only correct answer **A** is incorrect because the equation density = mass + volume is incorrect **B** is incorrect because the equation density = mass − volume is incorrect **C** is incorrect because the equation density = mass x volume is incorrect	**(1)**

Question Number	Answer	Additional guidance	Mark
(iv)	Any two improvements from: use balance that reads to one or more decimal places/more decimal places (1) use tare/zero balance for first measurement (1) use measuring cylinder with smaller divisions (1) use larger volume of liquid (1) repeat <u>and</u> average (1) read measuring cylinder at eye level (1)	Accept use more accurate/precise balance in this context Allow reset for tare Allow more accurate/ different scale / different divisions / thinner measuring cylinder Allow use more liquid / larger mass of liquid Allow avoid parallax error / read from bottom of meniscus	(2)

Q4.

Question number	Answer	Additional guidance	Mark
	volume substitution (1) 1.5 x 1.0 x 0.2(0) (= 0.3)		**(3)** **AO2**
	substitution in equation (1) mass = 2100 x (0.3(0))	ecf from calculated value of volume for this mark only	
	evaluation (1) = 630 (kg)	award 2 marks for 6.3 x any other power of 10 5670 gains 1 mark from use of 1.5+1.0+0.2=2.7 award full marks for correct answer without working	

Q5.

Question number	Answer	Additional guidance	Mark
	calculation of change in volume (1) (530 cm³ − 490 cm³) = 40 (cm³)	measurement mark − using scale	**(4)** **AO2**
	substitution (1) $7.9 = \dfrac{mass}{40}$	allow use of incorrect volume	
	rearrangement and evaluation (1) (mass = 7.9 x 40) (mass =) 316 (g)	answers without working 316 scores 3 marks 0.316 kg scores 3 marks 316 to any other power of 10 scores 2 marks 4187 or 3871 scores 2 marks (incorrect volume)	
	evaluation to 2 sig fig (1) 320 (g)	any answer written to 2sf independent mark answers without working 320 scores 4 marks 320 to any other power of ten scores 3 marks 4200 scores 3 marks 3900 scores 3 marks	