

Multiple Choice Answers

Q4: B

Multiple Choice Answers

Q4: C

Multiple Choice Answers

Q5: D

4(a)(i)	930 kg / m ³
4(a)(ii)	1400 N
	$(\Delta)p = \rho g(\Delta)h$ OR $930 \times 9.8 \times 1.1$ OR 10 000 (N / m ²)
	area = length $\times$ width OR 0.45×0.30 OR 0.14 (m ²)
	$(F=) p \times A$ OR $10\,000 \times 0.14$
	<u>Alternative method:</u>
	1400 N
	volume (of liquid above block) = length $\times$ width $\times$ height OR $0.45 \times 0.30 \times 1.1$ OR 0.15 (m ³)
	mass (of liquid above block) = $\rho \times v$ OR 930×0.15 OR 140 (kg)
	$(F =) mg$ OR 140×9.8
4(b)	thermal expansion
	OR to prevent buckling / bending when heated
4(c)	any one from: • particles vibrate faster • particles have greater speed / <u>kinetic</u> energy / momentum • vibrations (of particles) take up more space • (average) space / separation between particles increases
	(plastic is a good) insulator / poor conductor
	(handle) will not get too hot to touch OR reduces heat flow to hand

1(a)(i)	$l = 6.9$ (cm) $w = 2.5$ (cm) $h = 3.0$ (cm) <u>all</u> to nearest mm
1(a)(ii)	$V_A = 52$ (cm ³)
1(b)	irregular dimensions / owtte repeat in several places (for each dimension) <u>and</u> take averages
1(c)	effect of uncertainties increased/ larger % uncertainty/owtte
1(d)(i)	$V_1 = 152$ (cm ³)
1(d)(ii)	line of sight perpendicular / owtte
1(e)	V_2 present <u>and</u> $V_B = V_2 - V_1$
1(f)	suitable source of inaccuracy e.g. graduations on measuring cylinder too large / thread affects volume / cylinder is wide / clay may absorb water matching improvement e.g. use smaller measuring cylinder / more precise scale / thinner thread / no thread and place carefully / measure volume of thread / narrower cylinder / cover clay with paint or cling film

Multiple Choice Answers

Q3: D

1(a)(i)	two measurements in cm 2.7 and 2.5, both given to nearest mm
1(a)(ii)	correct average: expect 2.6 (cm)
1(a)(iii)	any reasonable advantage for the method in the question given OR it is difficult to measure the diameter directly OR hard to find centre of ball
	a ruler for measuring the diameter directly would give rise to parallax errors
1(b)	$V = 9.1(4)$
	unit: cm ³
1(c)	correct method for calculation of m_B shown
	$m_B = 11.6$ (g)
1(d)	ρ on answer line correctly calculated to 2 or more significant figures
	unit: g / cm ³
	answer given to 2 or 3 significant figures

Multiple Choice Answers

Q4: B

Multiple Choice Answers

Q4: A