TAKE 5 ... BOUNDS

Q1.

Q	Working	Answer	Mark		Notes
	9.55 or 9.65 or 3.75 or 3.85 or 1.835 or 1.845		3	B1	accept $9.64\dot{9}$ for 9.65, $3.84\dot{9}$ for 3.85, $1.844\dot{9}$ for 1.845
	$a = \dfrac{UB_v - LB_u}{LB_t}$ e.g. $a = \dfrac{9.65 - 3.75}{1.835} (= 3.2152...)$			M1	for correct substitution of $9.6 < UB_v \leq 9.65$ and $3.75 \leq LB_u < 3.8$ and $1.835 \leq LB_t < 1.84$
		3.22		A1	accept $3.21 - 3.22$ from correct working
					Total 3 marks

Q2.

Question	Working	Answer	Mark		Notes
	$8.305 - 0.655$		2	M1	For either bound correct (used or seen). Accept $0.654\dot{9}$
		7.65		A1	dep on correct method shown
					Total 2 marks

Q3.

Q	Working	Answer	Mark		Notes
	9.65, 9.75, 5.85, 5.95, 2.5, 3.5		3	B1	for any one of these stated or used, accept $9.74\dot{9}$, $5.94\dot{9}$, $3.4\dot{9}$
	$\dfrac{9.75 - 5.85}{2.5}$			M1	for $\dfrac{UB_t - LB_w}{LB_y}$ where $9.7 < UB_t \leq 9.75$, $5.85 \leq LB_w < 5.9$, $2.5 \leq LB_y < 3$ This allows for the student who uses some sort of lower/upper value, but are slightly inaccurate eg using 9.74 for t
	Working required	1.56		A1	dep on previous marks (as working is requested)
					Total 3 marks

Q4.

Q	Working	Answer	Mark	Notes	
	5025 or 5.025 or 4975 or 4.975		4	B1	Accept $5024.\dot{9}$ for 5025 or $5.024\dot{9}$ for 5.025
	1.845×10^{-3} oe or 1.835×10^{-3} oe			B1	Accept $1.844\dot{9} \times 10^{-3}$ for 1.845×10^{-3}
	$\dfrac{5.025}{1.835\times10^{-3}}(= 2738.4...)$ oe			M1	for correct substitution into $\dfrac{m_{UB}}{v_{LB}}$ where $5 < m_{UB} \leq 5.025$ and $1.835 \times 10^{-3} \leq v_{LB} < 1.84 \times 10^{-3}$
		2738.4		A1	dep on correct working
					Total 4 marks

Q5.

Q	Working	Answer	Mark	Notes	
	12.45, 12.55, 135 or 145		4	B1	For sight of 12.45, 12.55, 124.5, 125.5, 135 or 145
	Largest volume of cube = 12.55^3			M1	12.55^3
	Greatest number of spheres $= 12.55^3 \div 135$ $(=14.641899...)$	14		M1 M1 A1	Units must be consistent Dep on M1
					Total 4 marks