

Question number	Answer	Notes	Marks
7 (a)	(i) as pressure increases, volume decreases; pattern statement relating to gradient; e.g. 'at a decreasing rate'	ORA	2
	(ii) pressure = depth × gravitational field strength × density;	'inversely proportional' scores 2 marks. allow recognised symbols e.g. P or p for pressure d or h for depth ρ for density reject d for density, reject gravity for g	1
	(iii) substitution; evaluation; e.g. pressure = $0.22 \times 10 \times 1080$ pressure = 2 400 (Pa)		2
	(iv) 103 000 (Pa)	Accept use of $g=9.8(1)$ (N/kg) 2376 (Pa) -1 for POT error provided g is used accept 103 400 (Pa) allow ECF	1
	(v) substitution into given formula; rearrangement; evaluation; e.g. $p_1 \times V_1 = p_2 \times V_2$ $101\,000 \times 0.084 = 103\,000 \times V_2$ $V_2 = 0.082 \text{ (cm}^3\text{)}$	allow ECF from (iv) e.g. 98624 gives 0.086 (cm ³) 0.082368932 -1 for POT error	3
(b)	vertical arrow upwards labelled upthrust; vertical arrow downwards labelled weight; upthrust > weight;	ignore drag reject this mark if there are more than two arrows	3

(Total for Question 7 = 12 marks)