

Question number	Answer	Notes	Marks
4 (a)	zero/0 (N);		1
(b) (i)	pressure = depth × density × gravitational field strength;	allow use of standard symbols e.g. $p = h \times \rho \times g$ allow 'd' for 'h' reject 'gravity' for 'g' in formula	1
(ii)	substitution; evaluation; e.g. pressure = depth × density × gravitational field strength pressure = $0.041 \times 1000 \times 10$ pressure = 410 (Pa)	-1 POT error allow use of 9.8(1) for 'g' giving 401.8...	2
(iii)	pressure = force ÷ area;	allow use of standard symbols e.g. $P = F \div A$	1
(iv)	substitution or re-arrangement; evaluation; e.g. pressure = force ÷ area $400 = \text{force} \div 0.0017$ force = $400 \times 0.0017 = 0.68$ (N)	substitution and rearrangement in either order allow correctly rounded values e.g. 0.697 allow use of candidate's unrounded value even if not approx 400	2
(v)	upwards force greater than weight of cube; resultant force upwards;	allow idea of ice being less dense than water for 1 mark.	2

(Total for Question 4 = 9 marks)