

Question	Answer	Marks	AO Element	Notes	Guidance
1(a)	decreases	1			
1(b)	slow(er) / less (kinetic) energy (1) hit (wall / flask) <u>less</u> often (1) hit (wall / flask) with <u>less</u> force (1)	3			
2	(pressure) increases (1) any <b>two</b> from: (2) (because) particles move faster collide more frequently (with walls of container) collide with greater force (with walls of container)	3			
3	any <b>two</b> from: larger area (1) lower pressure (on ground) (1) does not sink in (1)	2			
4	(pressure =) $6(.0) \text{ (N/cm}^2\text{)}$ (1) (pressure =) $24 \div 4(.0)$ (1) (pressure =) force $\div$ area (1)	3			

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5(a)	$P = F \div A$ in any form (1) $120 \div 0.5$ (1) $240 \text{ (N/cm}^2\text{)}$ (1)	3			
5(b)	less (than)	1			
6	<u>moment</u>	1			
7	...(the) force $\times$ its <u>perpendicular</u> distance from pivot / a point	1			
8	$6000 \text{ (Ncm)}$ (1) (moment of force $=$ ) $200 \times 30$ (1) (moment of force $=$ ) force $\times$ (perpendicular) distance (of force from pivot) (1)	3			
9	$45 \text{ (Nm)}$ (3) OR ALLOW (moment of force $=$ ) force $\times$ (perpendicular) distance (of force from pivot) (1) $50 \times 0.9$ (1)	3			

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10	moment = force $\times$ distance from pivot in any form (1) (distance of force from pivot = $(25 - 10) = 15$ (cm) (1) $8 \times 15$ (1) $120$ (1) $\text{N cm}$ (1)	5			
11	moment = force $\times$ (perpendicular) distance (from pivot) (1) $700 \times 3.5$ (1) $2450$ (N m) (1)	3			
12	normal(s)	1			

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13	normal correctly positioned (1) correct reflected ray at 50° to normal (1)	2			
14(a)	B	1			
14(b)	C	1			
15(a)	normal at X correct by eye	1			
15(b)	reflected ray for Y has angle $i$ = angle $r$ by eye	1			
16(a)	normal	1			
16(b)	(angle of) incidence	1			
16(c)	double(s)	1			
17	orange yellow green blue indigo	2			
18	A	1			