

Question Number	Answer	Mark
2(a)(i)	<p>2(a)(i). The only correct answer is B 33.51cm³</p> <p><i>A is not correct because volume needs cm³</i></p> <p><i>C is not correct because volume needs cm³</i></p> <p><i>D is not correct because the equation requires the diameter to be halved</i></p>	(1)

Question Number	Answer	Additional Guidance	Mark
2 (a) (ii)	<p>A description that makes reference to two of the following:</p> <ul style="list-style-type: none"> • they can rely on diffusion to {take in oxygen / remove wastes} (1) • large surface area to volume ratio (allows diffusion to occur at a sufficient rate) (1) • short diffusion distance (1) 		(2)

Question Number	Answer	Additional Guidance	Mark
2(b)	<p>An explanation that makes reference to the following:</p> <ul style="list-style-type: none"> • many alveoli provide a large surface area (1) • {alveoli / capillaries} have walls that are one cell thick providing a short distance for diffusion (1) • high concentration gradient maintained by {circulation / ventilation} (1) • extensive capillary network around alveoli provides large surface area for gas exchange (1) 	ALLOW thin walls	(4)

Question Number	Answer	Additional Guidance	Mark
2(c)	<ul style="list-style-type: none"> • correct numbers inserted into equation (1) • correct answer (1) 	<p>{104/105/106} ÷ 10 000</p> <p>= 1 in 95 / 0.0104 / 0.0105 / 0.0106 / 1.04% / 1.05% / 1.06%</p> <p>(0.011 or 0.01 if correctly rounded)</p> <p>Correct answer with no working gains full marks</p>	(2)

Question Number	Answer	Additional Guidance	Mark
2(d)	<p>An explanation that makes reference to two of the following:</p> <ul style="list-style-type: none"> • smaller surface area of alveoli (with emphysema) (1) • therefore need a larger concentration gradient (1) • to maintain the rate of diffusion (1) 	<p>ALLOW smaller SA:vol Allow smaller surface area for gas exchange</p> <p>ALLOW diffusion gradient</p>	(2)