

Question	Answers	Extra information	Mark
1(a)	wavelength – distance from one point on a wave to the same point on the next wave amplitude – distance from the middle to the top of a wave frequency – number of waves per second	1 mark for one correctly matched	2
(b)	B		1
2(a)	you can hear through walls		1
(b)	vibrating energy matter microphones		1 1 1 1
3(a)	B		1
(b)	C		1
(c)	F		1
4(a)	A and B	Both needed for the mark	1
(b)	B		1
(c)	C		1
5(a)	50 000 Hz		1
(b)	echo		1
(c)	distance = speed × time = $\frac{(1500 \text{ m/s} \times 6 \text{ s})}{2}$ = 4500 (m)		1 1 1
(d)	imaging/physiotherapy/cleaning		1

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6(a)	A		1
(b)	B the speed of sound is the highest		1 1
7(a)	vibrating making the air vibrate/compressions and rarefactions		1 1
(b)	wave with larger amplitude drawn with the same frequency		1 1
(c)	the amplitude is larger because the ruler is pulled down more the frequency is the same because the student has not moved the ruler		1 1
8(a)	depth = 3800 m so total distance travelled = $2 \times 3800 \text{ m} = 7600 \text{ m}$ distance = speed \times time, so time = $\frac{\text{distance}}{\text{speed}}$ $= \frac{7600 \text{ m}}{1500 \text{ m/s}}$ = 5.1 s	Answer must be rounded up to 2 sig. fig.	1 1 1 1
(b)	the distance to MV <i>Bukoba</i> is much smaller so the time would be very short/difficult to measure		1 1
(c)	take lots of measurements of time take an average reading		1 1
9(a)	superposition happens when waves join together to add up or cancel out		1
(b)	a loud sound		1
(c)	the waves add up to produce a loud sound the waves cancel out to produce a quiet sound		1 1

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(d)	the waves spread out from the speakers the amplitude decreases but does not completely cancel out		1 1
SPACED LEARNING QUESTIONS			
10(a)	C		1
(b)	A		1
(c)	B or D	Award mark for either answer	1
(d)	line graph continuous		1 1
11(a)	weight is the force of Earth mass is the amount of stuff		1 1
(b)	$weight = mass \times g$ $10 \text{ N/kg} \times 100 \text{ kg} = 1000 \text{ N}$		1 1