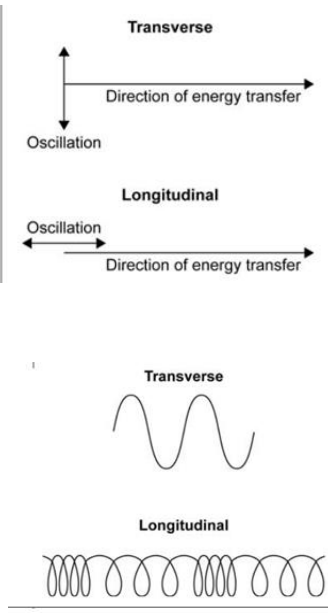


Transverse and Longitudinal Waves MS

QUESTION 1

QUESTION	ANSWER	EXTRA ONFFFORMATION	MARKS
a)	horizontal arrow drawn pointing to the right	judge by eye accept drawn anywhere on diagram	1
b)	Y		1
c)	any one from: any type of electromagnetic wave water (wave) (earthquake / seismic) S waves	accept electromagnetic wave(s) do not accept seismic waves do not accept P waves do not accept earthquakes	1
d)i)	3		2
d)ii)	3.6 or their (d)(i) 1.2 correctly calculated	$v = f \lambda$ allow 1 mark for correct substitution ie 3 or their (d)(i) 1.2 provided that no subsequent step is shown	1
Total marks			6

QUESTION 2

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)i)	<p>the oscillation / vibration (causing the wave)</p> <p>for a transverse wave is perpendicular to the direction of energy transfer and for a longitudinal wave is parallel to the direction of energy transfer</p>	<p>a movement causes the wave is insufficient</p> <p>answers given in terms of direction of wave travel and not energy transfer for both types of wave, score 1 mark for these two</p> <p>mark points</p> <p>the marks may be scored by the drawing of two correctly labelled diagrams</p> <p>two labelled diagrams showing the general form of a transverse and longitudinal wave gain 1 mark</p> <p>if no other mark has been awarded eg</p> 	<p>1</p> <p>1</p> <p>1</p>
a)ii)	mechanical wave	accept specific examples, eg waves on a spring / slinky / seismic / earthquake waves	1

		accept water waves do not accept shock waves	
b)	semicircular waves drawn	judged by eye do not need to be full semicircles ignore any rays	1
c)	sound (waves) will diffract (towards the person) or light (waves) do not diffract (towards the person) (because) width of door way similar to / less than wavelength of sound (waves) or (because) width of doorway much greater than wavelength of light (waves)	a general statement that waves (only) diffract when the width of a gap is similar to the wavelength of the waves can be awarded 1 mark	1 1
Total marks			7

QUESTION 3

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)i)	wavelength	accept frequency accept speed	1
a)ii)	amplitude	accept energy height is insufficient	1
a)iii)	sound		1
b)i)	diffraction	accept diffract a description is insufficient	1
b)ii)	0.12 metre per second or m/s or metre/second	allow 1 mark for correct substitution, ie 8×0.015 provided no subsequent step shown do not accept mps units must be consistent with numerical answers	2 1

Total marks			6
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QUESTION 4

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	letter C clearly marking a compression	accept C at any point in a compression if more than one letter C marked all must be correct	1
b)i)	straight continuous line drawn from loudspeaker to metal to sound sensor angle I = angle R	judge by eye judge by eye ignore any arrows on lines	1
b)ii)	less sound reflected or (some) sound passes through the glass	accept energy for sound accept (some) sound absorbed by the glass	1
b)iii)	makes the sound louder		1
b)iv)	340	$v = f \times \lambda$ allow 1 mark for correct substitution ie 850×0.4 provided no subsequent step shown	2
c)	echo		1
d)i)	from 250 Hz to 750 Hz		1
d)ii)	curtains reduce (percentage of) sound reflected more(than carpet) for all frequencies (shown)	accept curtains absorb more sound (than carpet) accept for both marks an answer in terms of walls having a larger (surface) area to reflect sound and curtains reducing the amount of reflected sound more (than carpet) answers less noisy or walls / curtains have a larger area gain 1 mark only do not accept curtains are	1 1

		cheaper	
Total marks			11

QUESTION 5

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)i)	perpendicular	accept correct description	1
a)ii)	light off – no / slow rotation light on – fast(er) rotation	accept starts rotating ignore references to energy transfers	2
Total marks			3

QUESTION 6

QUESTION	ANSWER
6	2 3 3 2 4 1 6 4
TOTAL MARKS=	4

QUESTION 7

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)i)	centre of X drawn at centre of pendulum bob	judged by eye accept dot drawn at centre of circle	1
b)i)	2	allow 1 mark for correct substitution, ie 0.51 provided no subsequent step shown	2
b)ii)	30 or 60 ÷ their (b)(i) correctly calculated	allow 1 mark for or their 60(b)(i) or 0.5 × 60 provided no subsequent step shown	2
Total marks			5