CAMBRIDGE IGCSE PHYSICS · 0625

PHYSICS



EXAM QUESTION PACK

TOPIC 3: WAVES

SCORE	PERCENTAGE
/	%

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General Wave Properties

Question Paper 1

Level	IGCSE
Subject	Physics (0625/0972)
Exam Board	Cambridge International Examinations (CIE)
Topic	General Physics
Sub-Topic	General Wave Properties
Booklet	Question Paper 1

Time allowed: **19 minutes**

Score: **/15**

Percentage: **/100**

Grade Boundaries:

9	8	7	6	5	4	3	2	1
>85%	75%	68%	60%	55%	50%	43%	35%	<30%

Question 1

Sound waves of frequency 2.0 kHz travel through a substance at a speed of 800 m/s.

What is the wavelength of the waves?

A 0.40 m B 2.5 m C 400 m D 1600 m

Question 2

The frequency of a wave is doubled. The speed of the wave does not change.

What happens to the wavelength of the wave?

A. It becomes four times as large.

B. It does not change.

C. It doubles.

D. It halves.

Question 3

A water wave passes into a region where the wave travels more slowly.

As it passes into the slow region, what happens to the frequency and what happens to the wavelength of the wave?

	frequency	wavelength
A	decreases	remains the same
B	increases	remains the same
C	remains the same	decreases
D	remains the same	increases

Question 4

Which row shows the natures of light waves, sound waves and X-rays?

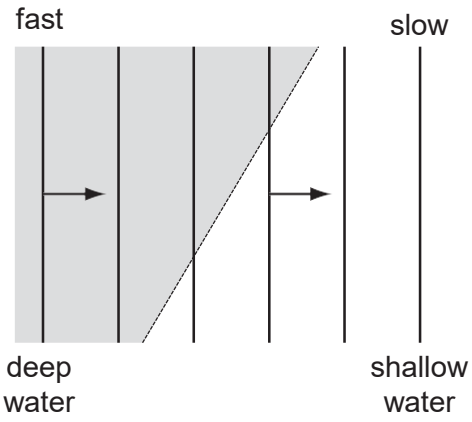
	light waves	sound waves	X-rays
A	longitudinal	longitudinal	transverse
B	longitudinal	transverse	longitudinal
C	transverse	longitudinal	transverse
D	transverse	transverse	longitudinal

Question 5

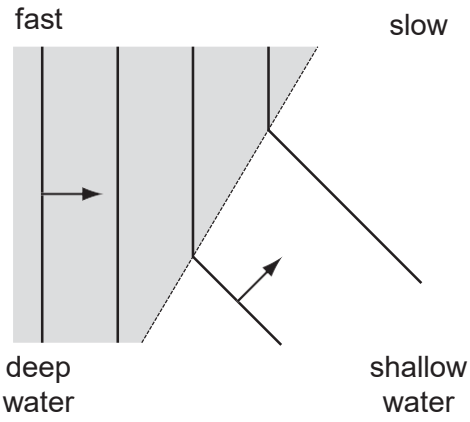
The diagrams show water waves that move more slowly after passing into shallow water.

Which diagram shows what happens to the waves?

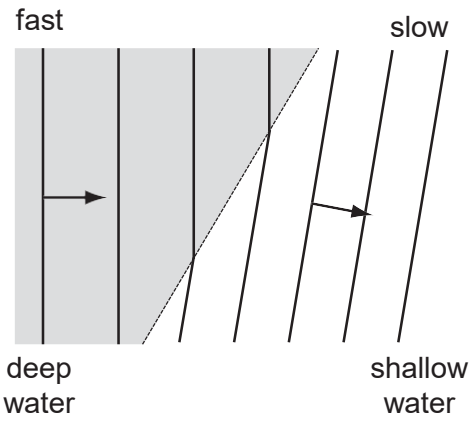
A



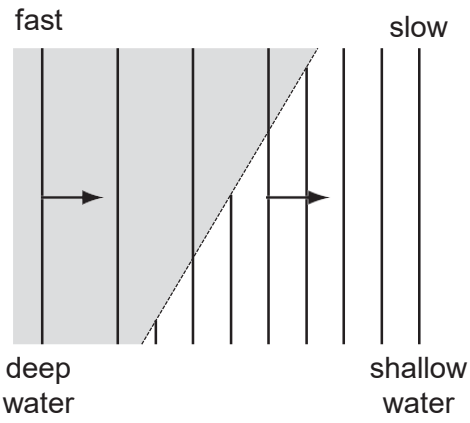
B



C



D



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Question 6

What is the number of wavefronts per second that pass a fixed point?

A the amplitude of the wave

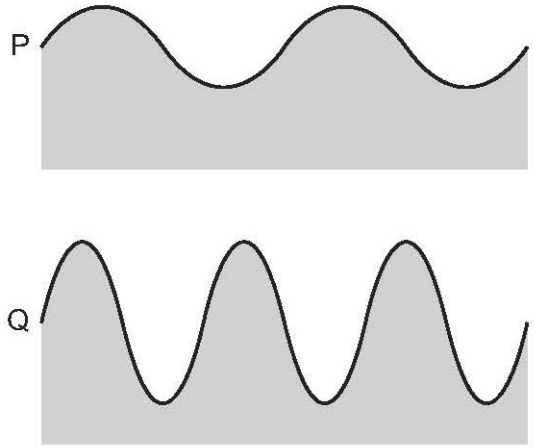
B the frequency of the wave

C the speed of the wave

D the wavelength of thewave

Question 7

The diagrams show two water waves P and Q that are travelling at the same speed on the surface of a pond. The diagrams are to the same scale.



Which wave has the greater amplitude and which wave has the greater frequency?

	greater amplitude	greater frequency
A	P	P
B	P	Q
C	Q	P
D	Q	Q

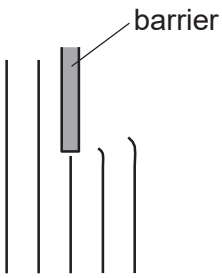
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Question 8

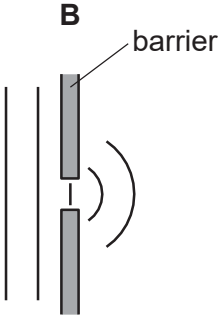
The diagrams represent water waves in a tank.

Which diagram represents a wave that changes speed?

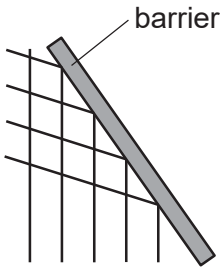
A



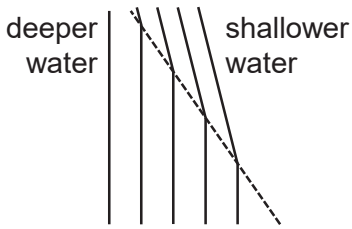
B



C



D



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Question 9

What is the frequency of a wave?

A. the distance that a wavefront travels every second

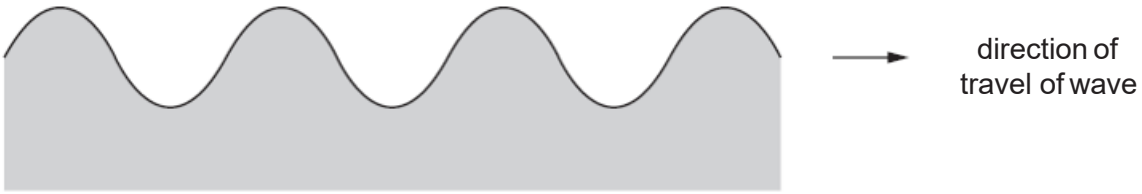
B. the distance from one wavefront to the next

C. the number of wavefronts produced per second

D. the time taken for a wavefront to pass a certain point

Question 10

The diagram shows a side view of a water wave at a particular time. The diagram is drawn full size.



Which statement about the wave is correct?

A The wave is longitudinal and the frequency can be measured from the diagram.

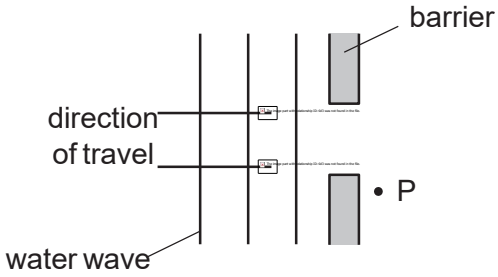
B The wave is longitudinal and the wavelength can be measured from the diagram.

C The wave is transverse and the frequency can be measured from the diagram.

D The wave is transverse and the wavelength can be measured from the diagram.

Question 11

The diagram shows a water wave approaching a barrier with a gap.



The wave reaches point P.

What is the name of the effect that causes the wave to reach point P?

A diffraction

B dispersion

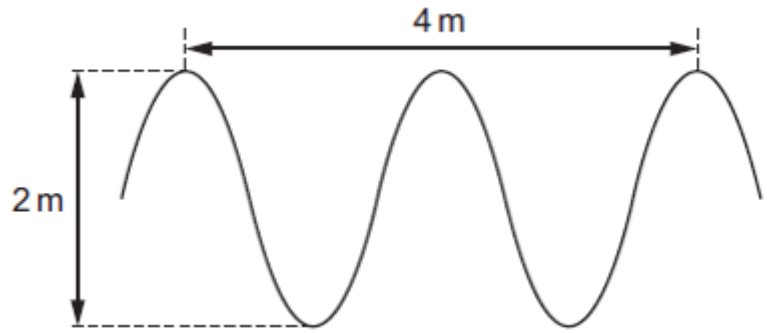
C reflection

D refraction

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Question 12

The diagram represents a water wave.



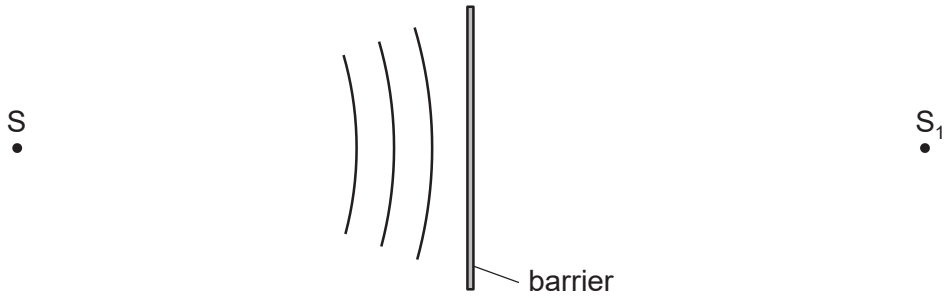
Which row shows the amplitude and the wavelength of the wave?

	amplitude / m	wavelength / m
A	1	2
B	1	4
C	2	2
D	2	4

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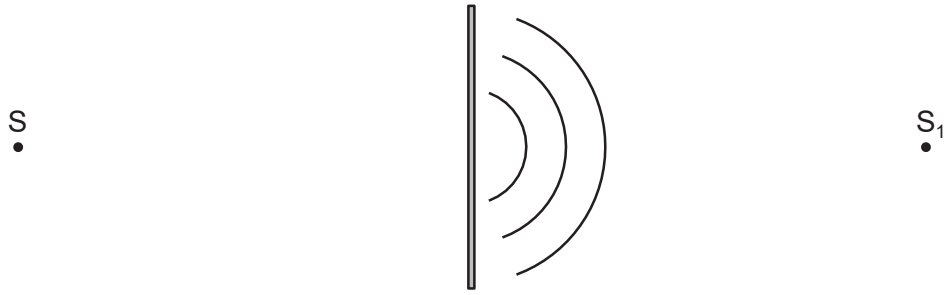
Question 13

The diagram represents circular wavefronts coming from point S. The wavefronts strike a barrier and are reflected so that they appear to come from point S_1.

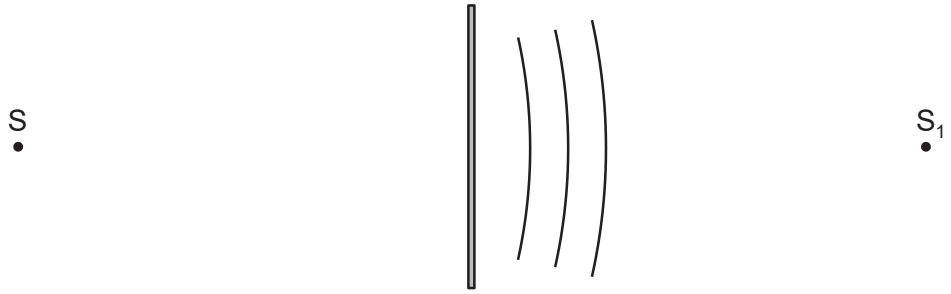


Which diagram shows the reflected wavefronts?

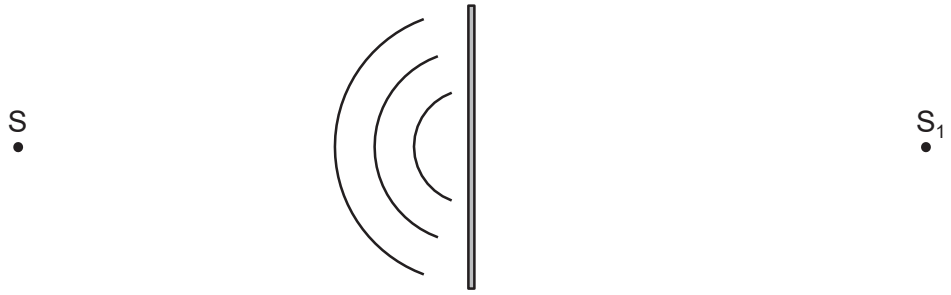
A



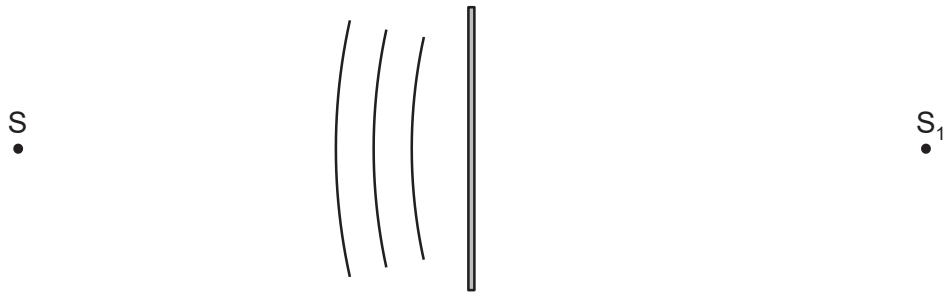
B



C



D



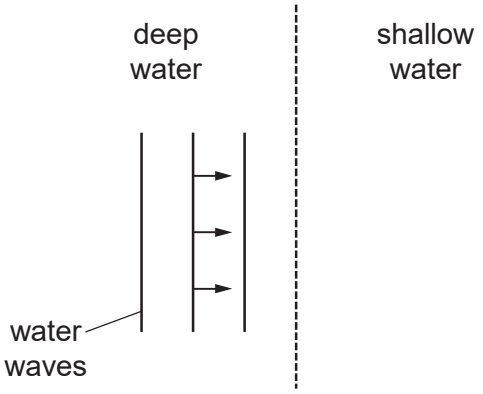
Question 14

Which row correctly defines a type of wave and gives a correct example?

	wave type	direction of vibrations	example
A	longitudinal	parallel to direction of wave travel	radio waves
B	longitudinal	perpendicular to direction of wave travel	light waves
C	transverse	parallel to direction of wave travel	light waves
D	transverse	perpendicular to direction of wave travel	radio waves

Question 15

A water wave moves quickly in deep water.



The wave now enters shallow water and its speed decreases.

Which row shows what happens to the frequency of the wave, and what happens to the wavelength of the wave?

	frequency	wavelength
A	decreases	decreases
B	decreases	does not change
C	does not change	decreases
D	does not change	does not change

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General Wave Properties

Question Paper 2

Level	IGCSE
Subject	Physics (0625/0972)
Exam Board	Cambridge International Examinations (CIE)
Topic	General Physics
Sub-Topic	General Wave Properties
Booklet	Question Paper 2

Time allowed: **19 minutes**

Score: **/15**

Percentage: **/100**

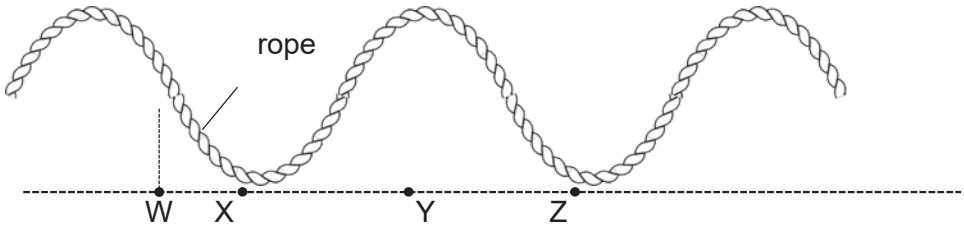
Grade Boundaries:

9	8	7	6	5	4	3	2	1
>85%	75%	68%	60%	55%	50%	43%	35%	<30%

Question 1

A transverse wave moves along a rope.

The diagram shows the position of the rope at one particular time.

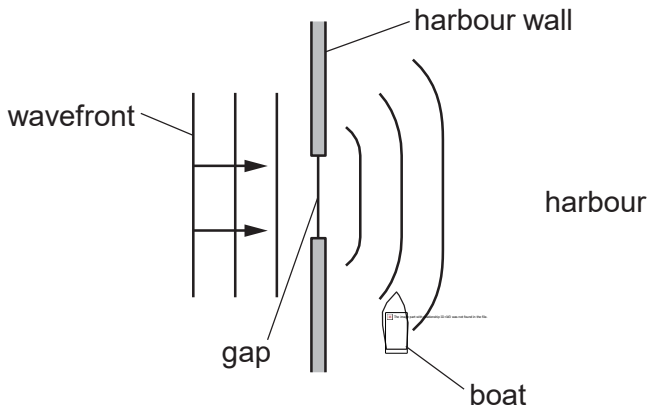


Which two labelled points are one wavelength apart?

A W and X B W and Z C X and Z D Y and Z

Question 2

The diagram shows a water wave passing through a gap in a harbour wall. The wavefronts curve round the wall and reach a small boat in the harbour.



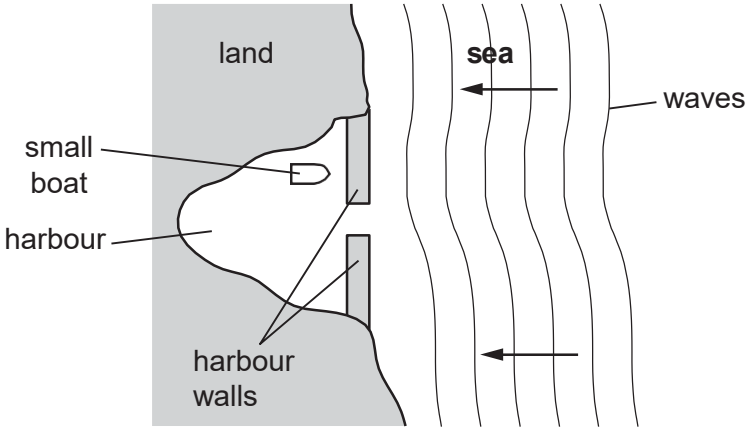
What is the name of this curving effect, and how can the gap be changed so that the wavefronts do not reach the boat?

	name of effect	change to the gap
A	diffraction	make the gap slightly bigger
B	diffraction	make the gap slightly smaller
C	refraction	make the gap slightly bigger
D	refraction	make the gap slightly smaller

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Question 3

A small boat in a harbour is protected from waves on the sea by harbour walls.



Some waves can curve round the harbour walls and reach the boat.

What is the name of this effect?

A diffraction

B dispersion

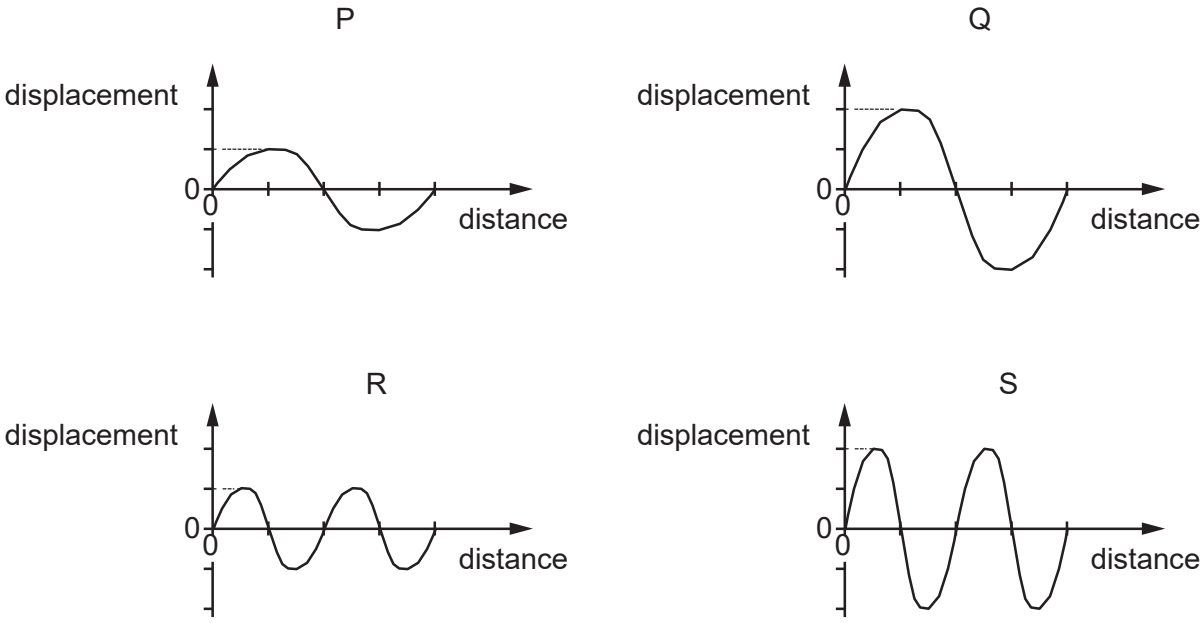
C reflection

D refraction

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Question 4

The diagram shows four waves drawn to the same scale.



Which statement is correct?

A. The amplitude of wave P is the same as the amplitude of wave R.

B. The amplitude of wave S is double the amplitude of wave Q.

C. The wavelength of wave Q is double the wavelength of wave P.

D. The wavelength of wave S is the same as the wavelength of wave Q.

Question 5

Light waves pass from air into glass and are refracted.

What always remains constant when this happens?

A direction

B frequency

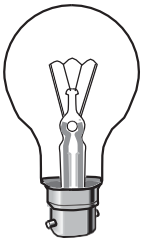
C speed

D wavelength.

Question 6

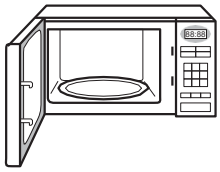
Which waves are longitudinal?

A



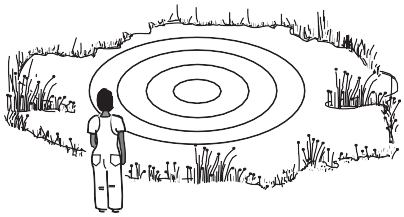
light waves
from a lamp

B



microwaves
in an oven

C



water waves
on a pond

D



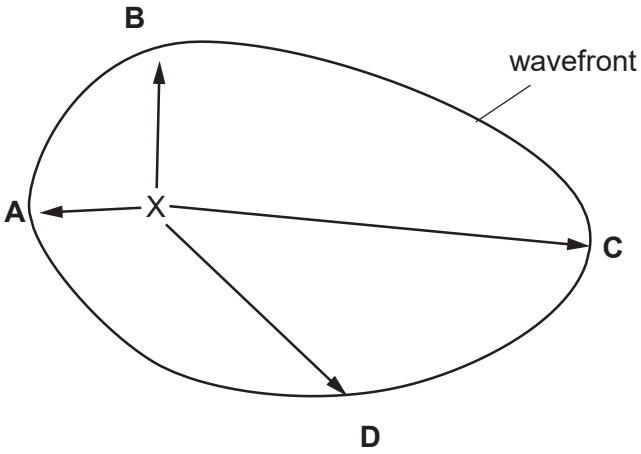
sound waves
from a trumpet

Question 7

Waves travel more quickly on the surface of water when the water is deep.

A stone is dropped at point X into a pool of varying depth. The diagram shows the first wavefront on the surface of the pool.

The region between X and which labelled point is likely to be the deepest?



Question 8

Which row shows an example of a transverse wave and an example of a longitudinal wave?

	transverse	longitudinal
A	light	radio
B	radio	sound
C	sound	water
D	water	light

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Question 9

A boy throws a small stone into a pond. Waves spread out from where the stone hits the water and travel to the side of the pond.

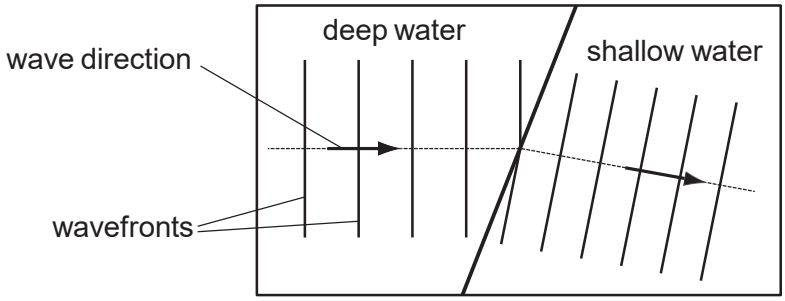
The boy notices that eight waves reach the side of the pond in a time of 5.0 s.

What is the frequency of the waves?

A 0.20 Hz B 0.63 Hz C 1.6 Hz D 40 Hz

Question 10

Water waves may be used to demonstrate refraction by making them pass into water of a different depth.



Why does the water wave change direction as it passes into the shallow water?

A The frequency of the wave decreases.

B The frequency of the wave increases.

C The speed of the wave decreases.

D The speed of the wave increases.

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Question 11

What is the unit of wavelength?

A. hertz

B. metre

C. metre per second

D. Second.

Question 12

Which row correctly describes light waves and radio waves?

	light waves	radio waves
A	longitudinal	longitudinal
B	longitudinal	transverse
C	transverse	longitudinal
D	transverse	transverse

Question 13

Water waves can be used to show reflection, refraction and diffraction.

For each of these, which row shows whether or not the speed of the water waves changes?

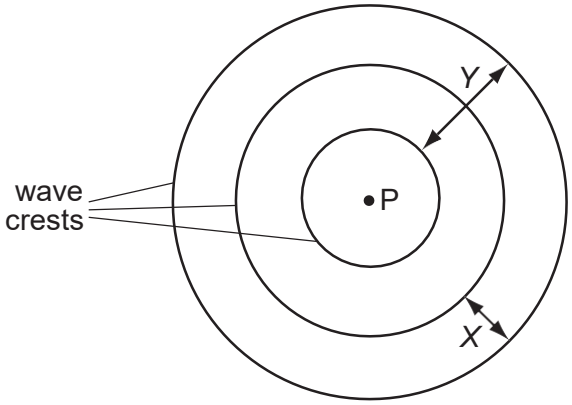
	reflection	refraction	diffraction
A	no	no	yes
B	no	yes	no
C	yes	no	no
D	yes	yes	yes

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Question 14

A vertical stick is dipped up and down in water at P.

In two seconds, three wave crests are produced on the surface of the water.



Which statement is correct?

A Distance *X* is the amplitude of the waves.

B Distance *Y* is the wavelength of the waves.

C Each circle represents a wavefront.

D The frequency of the waves is 3Hz.

Question 15

Which of these waves is longitudinal?

A. infra-red

B. radio

C. sound

D. water

Electromagnetic Spectrum

Question Paper 1

Level	IGCSE
Subject	Physics (0625/0972)
Exam Board	Cambridge International Examinations (CIE)
Topic	General Physics
Sub-Topic	Electromagnetic Spectrum
Booklet	Question Paper 1

Time allowed: **16 minutes**

Score: **/13**

Percentage: **/100**

Grade Boundaries:

9	8	7	6	5	4	3	2	1
>85%	75%	68%	60%	55%	50%	43%	35%	<30%

Question 1

Which row shows the natures of light waves, sound waves and X-rays?

	light waves	sound waves	X-rays
A	longitudinal	longitudinal	transverse
B	longitudinal	transverse	longitudinal
C	transverse	longitudinal	transverse
D	transverse	transverse	longitudinal

Question 2

Visible light has a frequency of approximately 5.0×10^{14} Hz.

M and N are two other types of electromagnetic radiation.

The frequency of M is 5.0×10^{6} Hz.

The frequency of N is 5.0×10^{15} Hz.

Which types of radiation are M and N?

	M	N
A	radio waves	infra-red
B	radio waves	ultraviolet
C	ultraviolet	X-rays
D	X-rays	infra-red

Question 3

The diagram shows the electromagnetic spectrum, in order of increasing wavelength.

Three types of radiation, P, Q and R, are missing from the spectrum diagram.

γ-rays	X-rays	P	visible light	Q	microwaves	R

Which types of electromagnetic radiation are represented by P, by Q and by R?

	P	Q	R
A	infra-red	radio waves	ultraviolet
B	infra-red	ultraviolet	radio waves
C	ultraviolet	infra-red	radio waves
D	ultraviolet	radio waves	infra-red

Question 4

The diagram represents the electromagnetic spectrum.

Some regions have been labelled, and some labels are missing.

Which region should be labelled as infra-red waves?

radio waves	A	B	visible light	C	D	γ-rays

Question 5

Which group contains only

A. light waves, radio waves, γ-rays

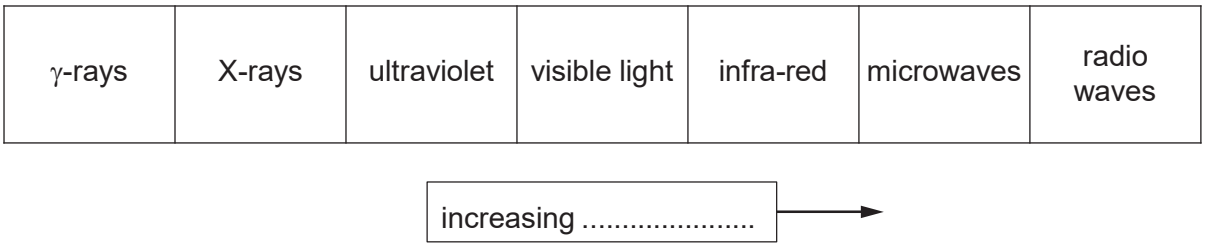
B. light waves, radio waves, sound waves

C. light waves, sound waves, γ-rays

D. radio waves, sound waves, γ-rays

Question 6

The diagram shows the electromagnetic spectrum.



A word is missing from the label below the spectrum.

Which word is missing?

A amplitude

B frequency

C speed

D wavelength

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Question 7

How do infra-red waves differ from ultraviolet waves?

A. Infra-red waves are longitudinal.

B. Infra-red waves have a lower speed *in vacuo* (in a vacuum).

C. Infra-red waves have lower frequencies.

D. Infra-red waves have smaller wavelengths.

Question 8

Which list shows electromagnetic waves in order of increasing frequency?

A visible light, X-rays, γ-rays

B visible light, γ-rays, X-rays

C X-rays, γ-rays, visible light

D γ-rays, X-rays, visible light

Question 9

Which statement about ultraviolet waves is correct?

A They are used in television remote controllers.

B They can be detected by the human eye.

C. They travel as longitudinal waves.

D. They have the same speed in a vacuum as radio waves.

Question 10

Which type of electromagnetic wave is used in airport security scanners?

A. infra-red

B. microwaves

C radio waves

D X-rays

Question 11

An intruder alarm sensor detects that a human is warmer than his surroundings.

Which type of electromagnetic wave does the sensor detect?

A. infra-red

B. radio

C. ultraviolet

D. visible light

Question 12

The table gives common uses for three types of electromagnetic wave.

Which row correctly identifies the waves?

	satellite television	terrestrial television (not satellite)	television remote controllers
A	infra-red waves	microwaves	radio waves
B	microwaves	radio waves	infra-red waves
C	radio waves	infra-red waves	microwaves
D	radio waves	microwaves	infra-red waves

Question 13

Infra-red waves, microwaves, radio waves and sound waves are all used for communications.

Which waves travel at the same high speed in a vacuum?

A infra-red waves, microwaves and radio waves

B infra-red waves, microwaves and sound waves

C infra-red waves, radio waves and sound waves

D microwaves, radio waves and sound waves