

3.3 Electromagnetic Spectrum

Question Paper

Level	IGCSE
Subject	Physics (0625)
Exam Board	Cambridge International Examinations(CIE)
Topic	Properties of waves, including light and sound
Sub Topic	3.3 Electromagnetic Spectrum
Booklet	Question Paper

Time Allowed: 17 minutes

Score: /14

Percentage: /100

Grade Boundaries:

A*	A	B	C	D	E	U
>85%	75%	60%	45%	35%	25%	<25%

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

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.

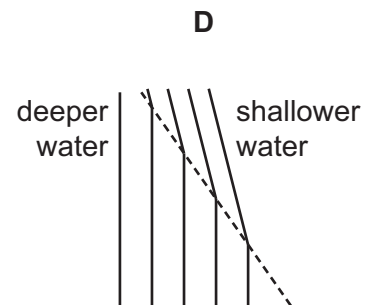
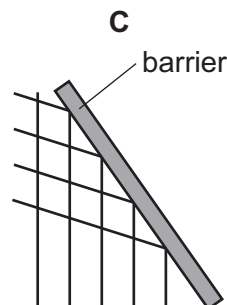
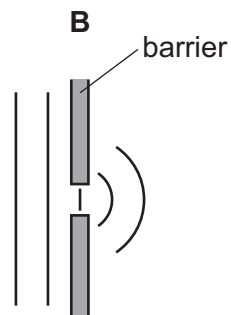
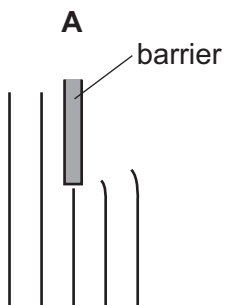
The frequency of N is 5.0×10^{15} Hz.

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

3 The diagrams represent water waves in a tank.

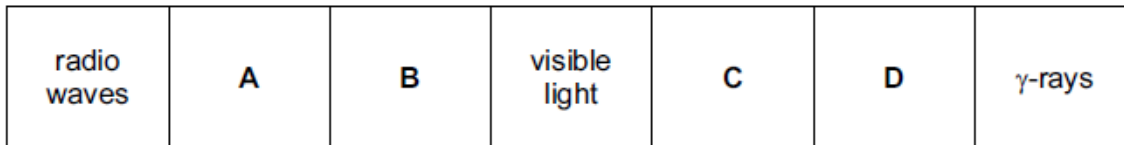
Which diagram represents a wave that changes speed?



4 The diagram represents the electromagnetic spectrum.

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

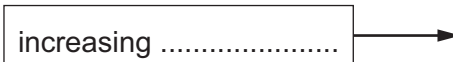
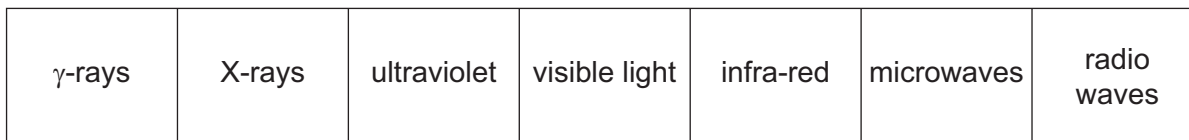
Which region should be labelled as infra-red waves?



5 Which group contains only electromagnetic waves?

- 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

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

- 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.
- 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
- 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.
- 10 Which type of electromagnetic wave is used in airport security scanners?
- A infra-red
 - B microwaves
 - C radio waves
 - D X-rays

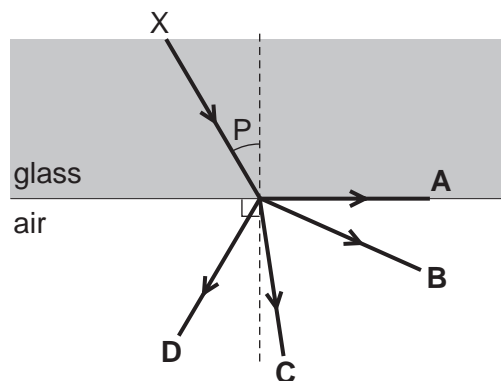
- 11 An intruder alarm sensor detects that a human is warmer than his surroundings.

Which type of electromagnetic wave does the sensor detect?

- A infra-red
- B radio
- C ultraviolet
- D visible light

- 12 The diagram shows a ray of light travelling from X. Angle P is less than the critical angle.

In which direction does the ray continue?

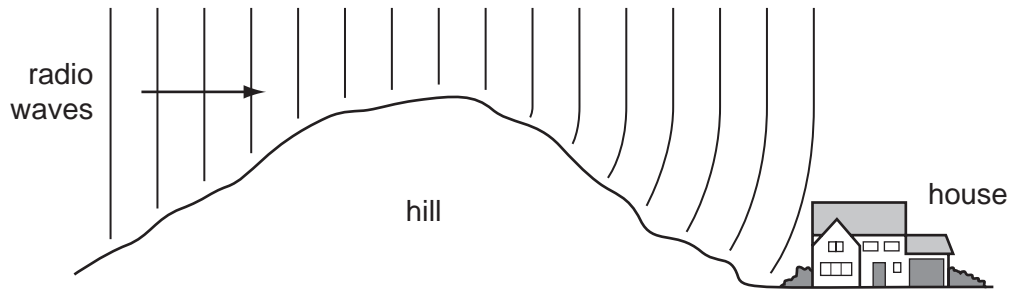


- 13 Infra-red waves, microwaves, radio waves and sound waves are all used for communications.

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

14 Radio waves are received at a house at the bottom of a hill.



The waves reach the house because the hill has caused them to be

- A** diffracted.
- B** radiated.
- C** reflected.
- D** refracted.