

# 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  $5.0 \times 10^{14}$  Hz.

M and N are two other types of electromagnetic radiation.

The frequency of M is  $5.0 \times 10^6$  Hz.

The frequency of N is  $5.0 \times 10^{15}$  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.

$\gamma$ -rays	X-rays	P	visible light	Q	microwaves	R
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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
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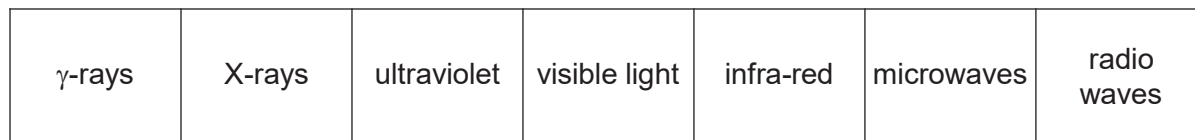
## Question 5


Which group contains only electromagnetic waves?

- A. light waves, radio waves,  $\gamma$ -rays
- B. light waves, radio waves, sound waves
- C. light waves, sound waves,  $\gamma$ -rays
- D. radio waves, sound waves,  $\gamma$ -rays

## Question 6

The diagram shows the electromagnetic spectrum.



increasing ..... 

A word is missing from the label below the spectrum.

Which word is missing?

- A amplitude
- B frequency
- C speed
- D wavelength

## 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,  $\gamma$ -rays
- B visible light,  $\gamma$ -rays, X-rays
- C X-rays,  $\gamma$ -rays, visible light
- D  $\gamma$ -rays, X-rays, visiblelight

## 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